Appendix
for
Darrell Water Tanks Replacement Project

Draft IS/MND

Prepared for

Town of Hillsborough
Public Works Department
Contact: Natalie Gribben, P.E., QSD

Prepared by

300 Spectrum Center Drive Suite 400
Irvine, CA 92618
Lori Trottier, AICP CEP

April 16, 2021

Appendices for the DRAFT IS/MND

for

Darrell Water Tanks Replacement Project

Prepared for:

Town of Hillsborough
Public Works Department
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Contact:

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APRIL 16 2021

Appendices

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Appendix A:

Air Quality, GHG, Energy

March 26, 2021

Ms. Lori Trottier, Vice President of Planning & Development
INFRASTRUCTURE ENGINEERING CORPORATION
300 Spectrum Center Drive, Suite 400
Irvine, California 92618

RE: Darrell Water Tank Replacement Project Air Quality, Greenhouse Gas and Energy Analysis Technical Memorandum
Project No. 19296

Dear Ms. Trottier:

INTRODUCTION

Ganddini Group, Inc. is pleased to provide this air quality, greenhouse gas, and energy analysis technical memorandum for the proposed Darrell Water Tank Replacement project. The project site is located east of the Junipero Serra Freeway and west of Darrell Road between Pullman Road and Ralston Avenue in the Town of Hillsborough. A vicinity map showing the project location is provided on Figure 1. To assist the reader with technical terms related to air quality sciences, a definition of terms has been provided in Appendix A.

PROJECT DESCRIPTION

The 1.34-acre project site is currently developed with three existing steel tanks. Tank 1 and Tank 2 each have a 500 Million Gallon capacity (60 feet diameter and 24 feet height) and Tank 3 has a one-million-gallon capacity (85 feet diameter and 24 feet height), built in 1950 and 1958, respectively.

The proposed project involves demolition of two of the existing steel Tanks, Tank 1 and Tank 2, and construction of a single American Water Works Association (AWWA) D110 Type- I pre-stressed concert tank, and ancillary piping, electrical and control systems necessary to integrate the new tank into the existing water network system. The proposed water storage tank shall be designed to hold two million gallons (2 MG) of potable water. It should match the height of the existing Tank 3 that is to remain (24 feet) so that both tanks can be used in conjunction with one another or independently. The proposed project site plan is illustrated on Figure 2.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT (BAAQMD) SCREENING CRITERIA

Table 1 shows the Bay Area Air Quality Management District's (BAAQMD) Air Quality California Environmental Quality Act (CEQA) Significance Thresholds for project-level analyses.

For construction period air emissions impacts, the significance threshold for construction dust is based on using BAAQMD-prescribed construction dust controls. If these construction dust controls are implemented, then air pollutant emissions for construction activities would be considered by BAAQMD to be mitigated to a less-than-significant level.

Furthermore, BAAQMD has developed preliminary screening criteria to provide lead agencies with a way to identify whether a proposed project could result in potentially significant air quality impacts. The screening levels generally represent new development on undeveloped sites without any form of mitigation measures taken into consideration. If a proposed project meets all of the screening criteria, then the lead agency would not need to perform a detailed air quality assessment of project air pollutant emissions, and the construction of the project would result in a less-than-significant impact from criteria air pollutant and precursor emissions.

The following are the BAAQMD screening criteria:

1. The project is below the construction and operational screening size.

2. The project design and implementation includes all BAAQMD Basic Construction Mitigation Measures.

3. Construction-related activities would not include any of the following:

    a. Demolition.
    b. Simultaneous occurrence of more than two construction phases (e.g., paving and building construction would occur simultaneously).
    c. Simultaneous construction of more than one land use type (e.g., the project would develop residential and commercial uses on the same site).
    d. Extensive site preparation (i.e., greater than default assumptions used by the Urban Land Use Emissions Model [URBEMIS] for grading, cut/fill, or earth movement); or
    e. Extensive material transport (e.g., greater than 10,000 cubic yards of soil import/export) requiring a considerable amount of haul truck activity.

The proposed project includes demolition of two existing water tanks and would be expected to exceed screening criterion 3.a. Therefore, the project would not meet all BAAQMD screening criteria, and an air quality analysis has been prepared.

SHORT-TERM AIR QUALITY CONSTRUCTION IMPACTS

An analysis of the potential short-term air quality impacts associated with the demolition and construction of the proposed water tanks is provided. As stated previously, two of the three existing water tanks will be demolished to make way for the construction of one new water tank.

Construction Schedule

Construction for the Project is anticipated to begin late 2021 and end in early 2023. Construction will occur in five phases – 1) Mobilization, 2) Demolition, 3) Site Preparation, 4) Tank Construction and 5) Final Site Work and the following activities will occur during each phase:

- Mobilization: Groom temporary access road at Skyline, install construction trailer (one week).
- Demolition: Remove existing tanks and foundations for two steel tanks, approximately 100 cubic yards of material, from the site and cut valves (one month).
- Site Preparation: Perform tree removals, remedial earthwork and soils stabilization, install column foundation supports, construct retaining walls, install underground inlet/outlet piping and install concrete at grade foundations for tanks. Earthwork quantities are estimated at approximately 3,850 cubic yards. Site soils will be mixed on site with lime and cement; import of base material is estimated at 1,000 cubic yards. Over excavation for tank foundations will be 3 feet to 5 feet below existing

ground surface (2 months).
- Tank Construction: Build new tank, concrete work, construction stairs and appurtenances (12 months).
- Final Site Work: Install Pipe and valves, landscaping/trees, paving, clean up, restore site, replace fencing (2 weeks).. CalEEMod output is shown in Appendix B.

Demolition and Construction Activities

Activity on the Project Site will occur during work hours between 8:00 AM to 5:00 PM, Monday through Friday. Arrival, tailgate training and plan for the day will occur in the morning at approximately 8:00 AM. The Project Site will be cleaned up and locked up by 5:00 PM. Deliveries will occur between 8:00 AM and 4:00 PM.

The contractor's crew will be at the site between 8:00 AM and 5:00 PM. Truck trips will vary according to phase. The haul route would be via Skyline Boulevard to Hayne Road at I-280.

Equipment in Use During Construction

The following types and quantities of equipment will be in use at the Project Site but not limited to:

- **Mobilization:** Field office trailer, backhoe for potholing, two service trucks.
- **Demolition:** Cat 235 Excavator with demolition hammer attachment, Front End Loader, Two 15 cubic-yard dump trucks, two service trucks, crane, two chain saws, stump grinder. There will be not more than 1-2 truck trips daily during demolition with not more than 70 total truck trips during demolition.
- **Site Preparation:** Pug Mill Mixer, Bulldozer, Front End Loader Cat 235 Excavator, two service trucks and haulers. This phase will include up to 50 truck trips using haulers to import 1,000 cubic yards of base material for soils stabilization.
- **Tank Construction:** Crane, Cat 235 Excavator, up to 5 Concrete Trucks per day maximum over a three-month duration, two service trucks. Concrete delivery for tank and vaults will be approximately 655 cubic yards with an estimated 130 to 140 truck trips occurring during the 12-month construction period.

Ongoing Maintenance and Operations

The tank will continue to function via gravity flow, which is supplemented with off-site pumps. Maintenance will consist of yearly inspection conducted by a diver, as such, operational emissions would be negligible. Project landscaping will continue to be maintained by the City.

Methodology

Construction-related emissions are estimated using the CalEEMod (Version 2016.3.2) software, which is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions from a variety of land use projects. CalEEMod was developed in collaboration with the air districts of California. Regional data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The CalEEMod output is available in Appendix B.

As shown in Table 2, potential construction emissions would be below all BAAQMD significance thresholds for construction equipment exhaust emissions. However, BAAQMD considers dust from construction

activities to be a criteria air pollutant. In order to minimize construction period dust impacts, BAAQMD construction-period BMPs would need to be implemented.

For all project-related demolition, site preparation or construction activity, construction contractors shall implement the following BAAQMD-recommended best management practices, where applicable:

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.
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 help ensure compliance with applicable regulations.
9. All exposed surfaces shall be watered at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe.
10. All excavation, grading/site preparation, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.
11. Wind breaks (e.g., trees, fences) shall be installed on the windward side(s) of actively disturbed areas of construction. Wind breaks should have at maximum 50 percent air porosity.
12. The simultaneous occurrence of excavation, grading/site preparation, and ground-disturbing construction activities on the same area at any one time shall be limited. Activities shall be phased to reduce the amount of disturbed surfaces at any one time.
13. Site accesses to a distance of 100 feet from the paved road shall be treated with a 6 to 12-inch compacted layer of wood chips, mulch, or gravel.
14. Sandbags or other erosion control measures shall be installed to prevent silt runoff to public roadways from sites with a slope greater than one percent.
15. Minimize the idling time of diesel-powered construction equipment to two minutes.
16. The project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent PM reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after- treatment products, add-on devices such as particulate filters, and/or other options as such become available.
17. Use low VOC (i.e., ROG) coatings beyond the local requirement (i.e., Regulation 8, Rule 3: Architectural Coatings).
18. Require that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emissions reductions of NOx and PM.
19. Require all contractors use equipment that meets CARB's most recent certification standard for off-

road heavy-duty diesel engines.

These BMPs shall be incorporated into a construction management plan, per Town municipal code (chapter 15.26), and shall be subject to Town approval prior to issuance of a grading permit. Implementation of these measures would reduce localized PM10 impacts due to fugitive dust and would be consistent with BAAQMD CEQA Guidelines; therefore Project air quality impacts related to construction-period activities would be less-than-significant with mitigation.

GLOBAL CLIMATE CHANGE ANALYSIS

The proposed water tanks are anticipated to generate GHG emissions from construction activities. The following provides the methodology used to calculate the GHG emissions and discusses the impacts.

Methodology

The BAAQMD has not adopted thresholds for evaluating GHG emissions from construction activities. However, the BAAQMD recommends that the lead agency quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals. The CalEEMod Version 2016.3.2 was used to calculate the GHG emissions from the construction of the proposed project. The construction-related GHG emissions were based on a 30 year amortization rate as recommended by BAAQMD. It is estimated that approximately 0.3 acres of trees will be removed; therefore, the loss in CO_2 sequestration from removal of those trees was also factored into the analysis.

Greenhouse Gas Emissions

The proposed project's construction-related GHG emissions have been calculated with the CalEEMod model based on the parameters detailed above. A summary of the results is shown in Table 3 and CalEEMod model run for the proposed project are provided in Appendix C.

As stated in the CEQA Guidelines, the BAAQMD "*does not have an adopted Threshold of Significance for construction-related GHG emissions. However, the Lead Agency should quantify and disclose GHG emissions that would occur during construction, and make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals, as required by the Public Resources Code, Section 21082.2. The Lead Agency is encouraged to incorporate best management practices to reduce GHG emissions during construction, as feasible and applicable.*" The data provided in Table 3 shows that the proposed project's total construction-related emissions would be 9.72 $MTCO_2e$ per year, which is well below the BAAQMD's Project Level GHG threshold of 1,100 $MTCO_2e$ per year.

Greenhouse Gas Plan Consistency

The proposed project would have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. In 2010, the Town of Hillsborough adopted a Climate Action Plan (CAP) to identify methods to reduce GHG emissions in an effort to meet the requirements of AB 32. The CAP includes an emissions reduction target of reducing GHG emissions 15 percent below 2005 levels by 2020, consistent with AB 32, and 80 percent by 2050. To meet this goal, the Town selected four major strategies in the areas of energy efficiency, water conservation, and green building; waste reduction and recycling; education and promotion; and municipal operations.

As shown in Table 3, the proposed project's GHG emissions would be 9.72 $MTCO_2e$ per year, which is substantially below the BAAQMD's Project Level threshold of significance of 1,100 $MTCO_2e$ per year. This threshold was developed to ensure compliance with GHG reduction goals outlined in AB 32 and CARB's Climate Change Scoping Plan. The project is not subject to any GHG reporting regulation (as it does not include any stationary sources) and would comply with the Town's construction recycling and demolition waste requirements as well as the Town's Climate Action Plan (whose programs are generally geared toward existing development and sustainable practices/workshops). Therefore, the proposed project would not conflict with AB 32, nor have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases and impacts are considered to be less than significant.

ENERGY ANALYSIS

Section 15126.2 of the CEQA Guidelines, states that potential energy impacts must be considered in an Environmental Impact Report (EIR). Although, this project does not require an EIR, energy impacts have been analyzed for discussion purposes.

The project would utilize construction contractors which practice compliance with applicable CARB regulation regarding retrofitting, repowering, or replacement of diesel off-road construction equipment. Additionally, CARB has adopted the Airborne Toxic Control Measure to limit heavy-duty diesel motor vehicle idling to reduce public exposure to diesel particulate matter and other Toxic Air Contaminants. Compliance with these measures would result in a more efficient use of construction-related energy and would minimize or eliminate wasteful or unnecessary consumption of energy. Idling restrictions and the use of newer engines and equipment would result in less fuel combustion and energy consumption. Enforcement of idling limitations is realized through periodic site inspections conducted by City building officials, and/or in response to citizen complaints.

The Project would require the use of diesel and other fuels for trucks and equipment during construction, but these activities would be short-term and completed as efficiently as possible for practical and financial reasons, among other considerations. There would be no ongoing energy consumption in the operational phase of the project in excess of the current baseline condition. Given the importance of replacing the corroded water tanks for public health and safety reasons, the minor and temporary amount of energy used for construction is not wasteful, inefficient, or unnecessary. Impacts in this regard would be less than significant.

Therefore, project construction would not result in the inefficient, wasteful, or unnecessary consumption of energy. Further, the energy demands of the project can be accommodated within the context of available resources and energy delivery systems. The project would therefore not cause or result in the need for additional energy producing or transmission facilities. The project would not engage in wasteful or inefficient uses of energy and aims to achieve energy conservations goals within the State of California. Notwithstanding, the project proposes water tank replacement and will not have any long-term effects on an energy provider's future energy development or future energy conservation strategies.

CONCLUSIONS

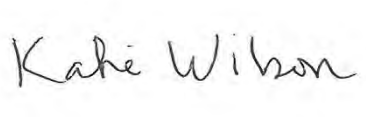
As discussed above, the proposed project would not exceed BAAQMD thresholds for construction-related emissions. The project would not generate a significant amount of GHGs and would not conflict with AB 32, nor have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases. Furthermore, the project would not result in an

environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources or conflict with a state or local plan for renewable energy or energy efficiency.

Therefore, this technical memorandum found that air quality, greenhouse gas, and energy-related impacts are considered to be less than significant. No further analysis or mitigation is required.

It has been a pleasure to assist you with this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Respectfully submitted,
GANDDINI GROUP, INC.



Katie Wilson, M.S.
Senior Air Quality Analyst

Table 1
BAAQMD Project-Level Air Quality CEQA Thresholds of Significance

Pollutant	Construction-Related	Operational-Related	
Criteria Air Pollutants and Precursors (Regional)	Average Daily Emissions (lb/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tpy)
ROG	54	54	10
NOx	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Managemnt Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
GHGs - Projects other than Stationary Sources	None	Compliance with Qualified GHG Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents+employees)	
GHGs - Stationary Sources	None	10,000 MT/yr	
Risk and Hazards for new sources and receptors (Individual Project)*	Same as Operational Thresholds**	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million increased non-cancer risk of >1.0 Hazard Index (Chronic or Acute) Ambeint $PM_{2.5}$ increase > 0.3 ug/M^3 annual average Zone of Influence: 1,000-foot radius from property line of source or receptor.	
Risk and Hazards for new sources and receptors (Cumulative Threshold)*	Same as Operational Thresholds**	Compliance with Qualified Community Risk Reduction Plan OR Cancer: >100 in a million (from all local sources) Non-cancer: >10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$:> 0.8 ug/M^3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from property line of source or receptor.	
Accidental Release of Acutely Hazardous Air Pollutants*	None	Storage or use of acutely hazardous materials locating near receptors or new receptors locating near stored or used acutely hazardous materials considered significant	
Odors*	None	5 confirmed complaints per year averaged over three years	

Notes:
Source: Bay Area Air Quality Management District Californai Environmental Quality Act Air Quality Guidelines, May 2017.

ROG = reactive organic gases; NOX = oxides of nitrogen; PM10 = respirable particulate matter of 10 micrometers or less in diameter; PM2.5 = fine particulate matter of 2.5 micrometers or less in diameter; CO = carbon monoxide; lb/day = pounds per day; ppm = parts per million

* The receptor thresholds were the subject of litigation in California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal. 4th 369. In their decision, the California Supreme Court held that: "CEQA generally does not require an analysis of how existing environmental conditions will impact a project's future users or residents . . . " but upheld "evaluating a project's potentially significant exacerbating effects on existing environmental hazards . . ." The Supreme Court also determined that CEQA requires an analysis of exposing new receptors to existing environmental hazards in some specific cases (i.e., certain airport and school construction projects, and some housing development projects) but that these "constitute specific exceptions to CEQA's general rule requiring consideration only of a project's effect on the environment, not the environment's effects on project users." However, the Supreme Court also indicated that nothing in CEQA prevents local agencies from considering the impact of locating new development in areas subject to existing environmental hazards.

** The Air District recommends that for construction projects that are less than one year duration, Lead Agencies should annualize impacts over the scope of actual days that peak impacts are to occur, rather than the full year.

Table 2
Construction-Related Maximum Daily Pollutant Emissions

Source	Pollutant Emissions (pounds/day)						
				PM10		PM2.5	
	ROG	NOx	CO	Dust	Exhaust	Dust	Exhaust
2021	1.68	16.77	14.75	5.41	0.82	2.93	0.75
2022	1.41	13.82	12.81	5.52	0.66	2.96	0.61
2023	0.60	5.76	6.62	0.38	0.25	0.63	0.23
BAAQMD Thresholds	54	54	-	-	82	-	54
Exceeds Thresholds?	No	No	No	No	No	No	No

Notes:
(1) Source: CalEEMod Version 2016.3.2

Table 3
Project-Related Greenhouse Gas Emissions

Category	Greenhouse Gas Emissions (Metric Tons/Year)					
	Bio-CO2	NonBio-CO_2	CO_2	CH_4	N_2O	CO_2e
Total Emissions	0.00	235.00	235.00	0.07	0.00	**236.66**
30-Year Amortization	0.00	7.83	7.83	0.00	0.00	**9.72**

Notes:
(1) Source: CalEEMod Version 2016.3.2 Annual Ouput (includes 36.63 MTCO2/20 years for loss of trees).

Figure 1
Project Location Map

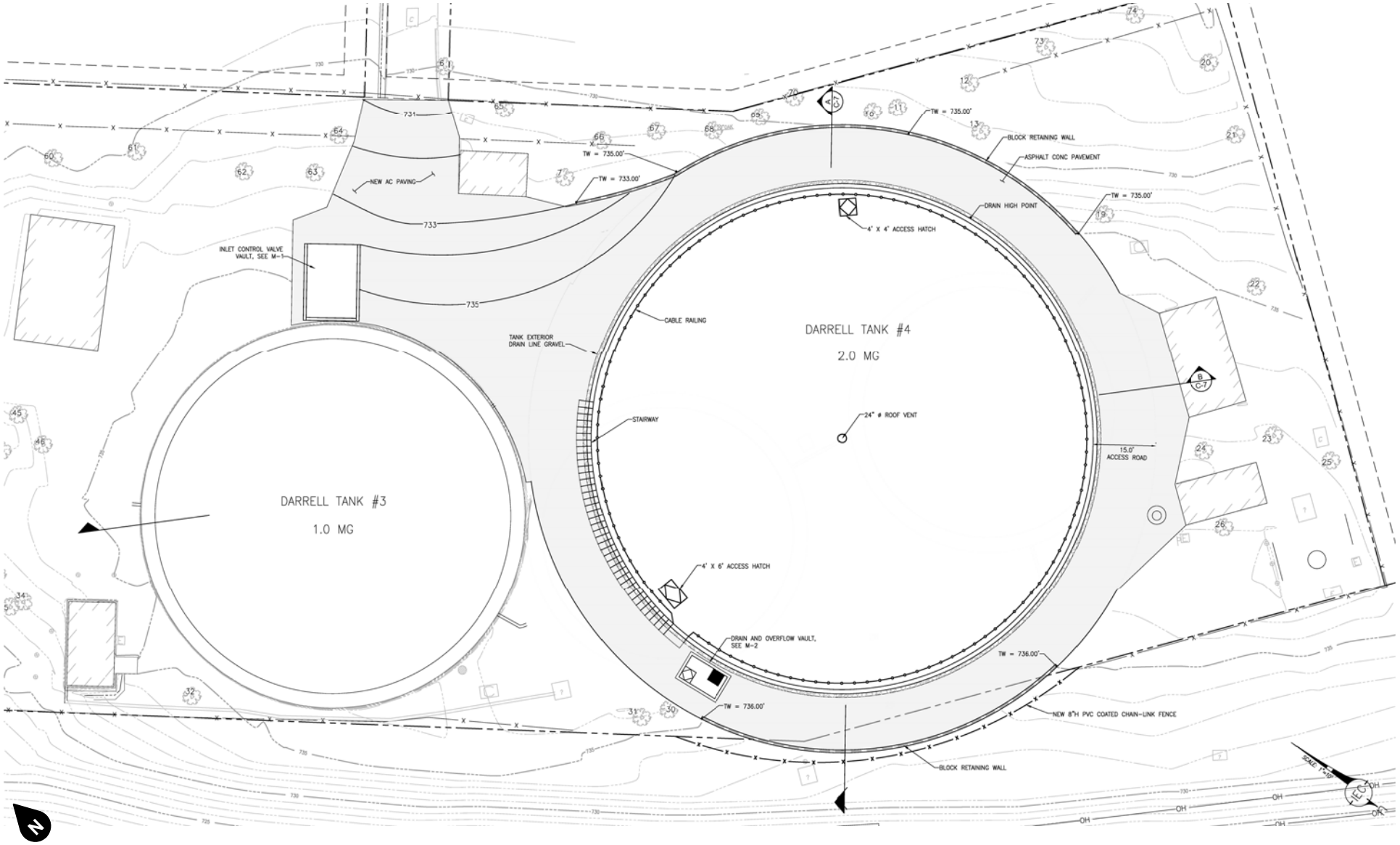


Figure 2
Site Plan

APPENDIX A

GLOSSARY

AQMP	Air Quality Management Plan
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technologies
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCAR	California Climate Action Registry
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CH_4	Methane
CNG	Compressed natural gas
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DPM	Diesel particulate matter
EPA	U.S. Environmental Protection Agency
GHG	Greenhouse gas
GWP	Global warming potential
HIDPM	Hazard Index Diesel Particulate Matter
HFCs	Hydrofluorocarbons
IPCC	International Panel on Climate Change
LCFS	Low Carbon Fuel Standard
LST	Localized Significant Thresholds
$MTCO_2e$	Metric tons of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides
NO_2	Nitrogen dioxide
N_2O	Nitrous oxide
O_3	Ozone
OPR	Governor's Office of Planning and Research
PFCs	Perfluorocarbons
PM	Particle matter
PM10	Particles that are less than 10 micrometers in diameter
PM2.5	Particles that are less than 2.5 micrometers in diameter
PMI	Point of maximum impact
PPM	Parts per million
PPB	Parts per billion
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan
SF_6	Sulfur hexafluoride
SIP	State Implementation Plan
SOx	Sulfur Oxides
TAC	Toxic air contaminants
VOC	Volatile organic compounds

APPENDIX B

CALEEMOD MODEL DAILY EMISSIONS PRINTOUTS

Darrell Water Tank - San Mateo County, Summer

Darrell Water Tank

San Mateo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	20.36	1000sqft	1.34	20,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2023
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 - Construction of an ~ 20,360 SF (24 ft tall x 120 feet wide) water tank on 1.34 acres

Construction Phase - Construction for the Project is anticipated to begin late 2021 and end in early 2023.

Off-road Equipment -

Off-road Equipment - List per PD

Off-road Equipment - List per PD

Off-road Equipment - List per PD

Trips and VMT - ~ 70 total haul trips during demo and 2 service trucks/day. Up to 50 truck trips total during site prep plus 2 service trucks. Up to 140 total concrete trucks and 2 service trucks during tank constrcn (service trucks added as MHDT vendor trips)

Demolition - ~14,703 SF of existing tanks to be demo'd

Grading -

Vehicle Trips - No operational mobile sources

Construction Off-road Equipment Mitigation - Water site 2x per day and limit speed on unpaved road to 15 mph or less.

Consumer Products -

Energy Use - Electricity for water pump only.

Water And Wastewater - No indoor water use, only outdoor irrigation.

Solid Waste - No waste generated.

Land Use Change - Trees cover ~1/2 of the (0.67 acres). Approx 1/2 of those trees (0.335 ac) will be replaced.

Area Coating - Outside of water tank to be painted only.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Nonresidential_Interior	100	0
tblAreaCoating	Area_Nonresidential_Exterior	10180	20360
tblAreaCoating	Area_Nonresidential_Interior	30540	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	200.00	262.00
tblConstructionPhase	NumDays	20.00	27.00
tblConstructionPhase	NumDays	2.00	44.00
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24NG	6.90	0.00
tblEnergyUse	T24NG	17.85	0.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LotAcreage	0.47	1.34
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	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	0.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblSolidWaste	SolidWasteGenerationRate	25.25	0.00
tblTripsAndVMT	HaulingTripNumber	67.00	70.00
tblTripsAndVMT	HaulingTripNumber	125.00	50.00
tblTripsAndVMT	HaulingTripNumber	0.00	140.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	3.00	2.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblTripsAndVMT	WorkerTripNumber	9.00	12.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	4,708,250.00	0.00
tblWater	OutdoorWaterUseRate	0.00	4,708,250.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6716	16.7516	14.7450	0.0275	5.4064	0.8187	6.2252	2.9332	0.7533	3.6864	0.0000	2,689.8144	2,689.8144	0.6895	0.0000	2,705.1836
2022	1.4091	13.8011	12.8063	0.0237	5.5217	0.6647	6.1864	2.9615	0.6115	3.5730	0.0000	2,311.5065	2,311.5065	0.6893	0.0000	2,328.7399
2023	0.5998	5.7549	6.6182	0.0134	0.3795	0.2530	0.6325	0.0962	0.2328	0.3289	0.0000	1,313.1014	1,313.1014	0.3784	0.0000	1,322.5610
Maximum	**1.6716**	**16.7516**	**14.7450**	**0.0275**	**5.5217**	**0.8187**	**6.2252**	**2.9615**	**0.7533**	**3.6864**	**0.0000**	**2,689.8144**	**2,689.8144**	**0.6895**	**0.0000**	**2,705.1836**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6716	16.7516	14.7450	0.0275	2.5069	0.8187	3.3256	1.3399	0.7533	2.0932	0.0000	2,689.8144	2,689.8144	0.6895	0.0000	2,705.1836
2022	1.4091	13.8011	12.8063	0.0237	2.6222	0.6647	3.2868	1.3682	0.6115	1.9797	0.0000	2,311.5065	2,311.5065	0.6893	0.0000	2,328.7399
2023	0.5998	5.7549	6.6182	0.0134	0.3795	0.2530	0.6325	0.0962	0.2328	0.3289	0.0000	1,313.1014	1,313.1014	0.3784	0.0000	1,322.5610
Maximum	**1.6716**	**16.7516**	**14.7450**	**0.0275**	**2.6222**	**0.8187**	**3.3256**	**1.3682**	**0.7533**	**2.0932**	**0.0000**	**2,689.8144**	**2,689.8144**	**0.6895**	**0.0000**	**2,705.1836**

	ROG	NOx	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**	**51.28**	**0.00**	**44.46**	**53.19**	**0.00**	**41.99**	**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	Mobilization and Demolition	Demolition	10/1/2021	11/8/2021	5	27	
2	Site Preparation	Site Preparation	11/9/2021	1/9/2022	5	44	
3	Tank Construction	Building Construction	1/10/2022	1/10/2023	5	262	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mobilization and Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Mobilization and Demolition	Cranes	1	8.00	231	0.29
Mobilization and Demolition	Crushing/Proc. Equipment	1	8.00	85	0.78
Mobilization and Demolition	Excavators	1	8.00	158	0.38
Mobilization and Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Mobilization and Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Other Material Handling Equipment	1	8.00	168	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Tank Construction	Cranes	1	6.00	231	0.29
Tank Construction	Excavators	1	8.00	158	0.38
Tank Construction	Forklifts	0	6.00	89	0.20
Tank Construction	Generator Sets	0	8.00	84	0.74

Tank Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Tank Construction	Welders	0	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
Mobilization and Demolition	5	12.00	2.00	70.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT
Site Preparation	4	12.00	2.00	50.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT
Tank Construction	3	12.00	2.00	140.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization and Demolition - 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	lb/day										lb/day					
Fugitive Dust					0.5360	0.0000	0.5360	0.0812	0.0000	0.0812			0.0000			0.0000
Off-Road	1.5288	14.2895	14.1145	0.0242		0.7330	0.7330		0.6910	0.6910		2,325.2610	2,325.2610	0.5827		2,339.8290
Total	**1.5288**	**14.2895**	**14.1145**	**0.0242**	**0.5360**	**0.7330**	**1.2691**	**0.0812**	**0.6910**	**0.7722**		**2,325.2610**	**2,325.2610**	**0.5827**		**2,339.8290**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0217	0.7528	0.3587	2.0700e-003	0.0450	2.3200e-003	0.0473	0.0123	2.2100e-003	0.0145		235.7780	235.7780	0.0300		236.5272
Vendor	4.3800e-003	0.0926	0.0418	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		40.0029	40.0029	4.8000e-004		40.0149
Worker	0.0308	0.0176	0.2300	8.9000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		88.7725	88.7725	1.6000e-003		88.8125
Total	**0.0569**	**0.8629**	**0.6304**	**3.3400e-003**	**0.1579**	**3.1100e-003**	**0.1610**	**0.0428**	**2.9400e-003**	**0.0457**		**364.5534**	**364.5534**	**0.0321**		**365.3546**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2412	0.0000	0.2412	0.0365	0.0000	0.0365			0.0000			0.0000
Off-Road	1.5288	14.2895	14.1145	0.0242		0.7330	0.7330		0.6910	0.6910	0.0000	2,325.2610	2,325.2610	0.5827		2,339.8289
Total	**1.5288**	**14.2895**	**14.1145**	**0.0242**	**0.2412**	**0.7330**	**0.9742**	**0.0365**	**0.6910**	**0.7275**	**0.0000**	**2,325.2610**	**2,325.2610**	**0.5827**		**2,339.8289**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0217	0.7528	0.3587	2.0700e-003	0.0450	2.3200e-003	0.0473	0.0123	2.2100e-003	0.0145		235.7780	235.7780	0.0300		236.5272
Vendor	4.3800e-003	0.0926	0.0418	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		40.0029	40.0029	4.8000e-004		40.0149
Worker	0.0308	0.0176	0.2300	8.9000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		88.7725	88.7725	1.6000e-003		88.8125
Total	**0.0569**	**0.8629**	**0.6304**	**3.3400e-003**	**0.1579**	**3.1100e-003**	**0.1610**	**0.0428**	**2.9400e-003**	**0.0457**		**364.5534**	**364.5534**	**0.0321**		**365.3546**

3.3 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	lb/day										lb/day					
Fugitive Dust					5.2719	0.0000	5.2719	2.8968	0.0000	2.8968			0.0000			0.0000
Off-Road	1.6269	16.3114	12.8535	0.0215		0.8169	0.8169		0.7516	0.7516		2,084.7020	2,084.7020	0.6742		2,101.5578
Total	**1.6269**	**16.3114**	**12.8535**	**0.0215**	**5.2719**	**0.8169**	**6.0888**	**2.8968**	**0.7516**	**3.6484**		**2,084.7020**	**2,084.7020**	**0.6742**		**2,101.5578**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.5100e-003	0.3300	0.1572	9.1000e-004	0.0217	1.0100e-003	0.0227	5.8700e-003	9.7000e-004	6.8400e-003		103.3442	103.3442	0.0131		103.6726
Vendor	4.3800e-003	0.0926	0.0418	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		40.0029	40.0029	4.8000e-004		40.0149
Worker	0.0308	0.0176	0.2300	8.9000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		88.7725	88.7725	1.6000e-003		88.8125
Total	**0.0447**	**0.4401**	**0.4289**	**2.1800e-003**	**0.1345**	**1.8000e-003**	**0.1363**	**0.0363**	**1.7000e-003**	**0.0380**		**232.1196**	**232.1196**	**0.0152**		**232.5000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3724	0.0000	2.3724	1.3036	0.0000	1.3036			0.0000			0.0000
Off-Road	1.6269	16.3114	12.8535	0.0215		0.8169	0.8169		0.7516	0.7516	0.0000	2,084.7020	2,084.7020	0.6742		2,101.5578
Total	**1.6269**	**16.3114**	**12.8535**	**0.0215**	**2.3724**	**0.8169**	**3.1893**	**1.3036**	**0.7516**	**2.0552**	**0.0000**	**2,084.7020**	**2,084.7020**	**0.6742**		**2,101.5578**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.5100e-003	0.3300	0.1572	9.1000e-004	0.0217	1.0100e-003	0.0227	5.8700e-003	9.7000e-004	6.8400e-003		103.3442	103.3442	0.0131		103.6726
Vendor	4.3800e-003	0.0926	0.0418	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		40.0029	40.0029	4.8000e-004		40.0149
Worker	0.0308	0.0176	0.2300	8.9000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		88.7725	88.7725	1.6000e-003		88.8125
Total	**0.0447**	**0.4401**	**0.4289**	**2.1800e-003**	**0.1345**	**1.8000e-003**	**0.1363**	**0.0363**	**1.7000e-003**	**0.0380**		**232.1196**	**232.1196**	**0.0152**		**232.5000**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2719	0.0000	5.2719	2.8968	0.0000	2.8968			0.0000			0.0000
Off-Road	1.3670	13.3916	12.3916	0.0215		0.6630	0.6630		0.6100	0.6100		2,084.5869	2,084.5869	0.6742		2,101.4418
Total	**1.3670**	**13.3916**	**12.3916**	**0.0215**	**5.2719**	**0.6630**	**5.9349**	**2.8968**	**0.6100**	**3.5068**		**2,084.5869**	**2,084.5869**	**0.6742**		**2,101.4418**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.0700e-003	0.3036	0.1627	8.9000e-004	0.1369	8.9000e-004	0.1378	0.0342	8.5000e-004	0.0350		101.5669	101.5669	0.0133		101.8985
Vendor	4.0300e-003	0.0901	0.0374	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.8347	39.8347	4.3000e-004		39.8454
Worker	0.0290	0.0158	0.2145	8.6000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		85.5180	85.5180	1.4500e-003		85.5542
Total	**0.0421**	**0.4095**	**0.4146**	**2.1300e-003**	**0.2498**	**1.6400e-003**	**0.2514**	**0.0646**	**1.5500e-003**	**0.0662**		**226.9196**	**226.9196**	**0.0151**		**227.2981**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3724	0.0000	2.3724	1.3036	0.0000	1.3036			0.0000			0.0000
Off-Road	1.3670	13.3916	12.3916	0.0215		0.6630	0.6630		0.6100	0.6100	0.0000	2,084.5869	2,084.5869	0.6742		2,101.4418
Total	**1.3670**	**13.3916**	**12.3916**	**0.0215**	**2.3724**	**0.6630**	**3.0354**	**1.3036**	**0.6100**	**1.9136**	**0.0000**	**2,084.5869**	**2,084.5869**	**0.6742**		**2,101.4418**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.0700e-003	0.3036	0.1627	8.9000e-004	0.1369	8.9000e-004	0.1378	0.0342	8.5000e-004	0.0350		101.5669	101.5669	0.0133		101.8985
Vendor	4.0300e-003	0.0901	0.0374	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.8347	39.8347	4.3000e-004		39.8454
Worker	0.0290	0.0158	0.2145	8.6000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		85.5180	85.5180	1.4500e-003		85.5542
Total	**0.0421**	**0.4095**	**0.4146**	**2.1300e-003**	**0.2498**	**1.6400e-003**	**0.2514**	**0.0646**	**1.5500e-003**	**0.0662**		**226.9196**	**226.9196**	**0.0151**		**227.2981**

3.4 Tank Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6057	6.1719	6.3529	0.0118		0.2838	0.2838		0.2611	0.2611		1,145.0673	1,145.0673	0.3703		1,154.3257
Total	**0.6057**	**6.1719**	**6.3529**	**0.0118**		**0.2838**	**0.2838**		**0.2611**	**0.2611**		**1,145.0673**	**1,145.0673**	**0.3703**		**1,154.3257**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.2600e-003	0.1427	0.0765	4.2000e-004	9.4800e-003	4.2000e-004	9.8900e-003	2.5900e-003	4.0000e-004	2.9900e-003		47.7597	47.7597	6.2400e-003		47.9156
Vendor	4.0300e-003	0.0901	0.0374	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.8347	39.8347	4.3000e-004		39.8454
Worker	0.0290	0.0158	0.2145	8.6000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		85.5180	85.5180	1.4500e-003		85.5542
Total	**0.0373**	**0.2486**	**0.3284**	**1.6600e-003**	**0.1224**	**1.1700e-003**	**0.1235**	**0.0330**	**1.1000e-003**	**0.0341**		**173.1124**	**173.1124**	**8.1200e-003**		**173.3152**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6057	6.1719	6.3529	0.0118		0.2838	0.2838		0.2611	0.2611	0.0000	1,145.0673	1,145.0673	0.3703		1,154.3257
Total	**0.6057**	**6.1719**	**6.3529**	**0.0118**		**0.2838**	**0.2838**		**0.2611**	**0.2611**	**0.0000**	**1,145.0673**	**1,145.0673**	**0.3703**		**1,154.3257**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.2600e-003	0.1427	0.0765	4.2000e-004	9.4800e-003	4.2000e-004	9.8900e-003	2.5900e-003	4.0000e-004	2.9900e-003		47.7597	47.7597	6.2400e-003		47.9156
Vendor	4.0300e-003	0.0901	0.0374	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.8347	39.8347	4.3000e-004		39.8454
Worker	0.0290	0.0158	0.2145	8.6000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		85.5180	85.5180	1.4500e-003		85.5542
Total	**0.0373**	**0.2486**	**0.3284**	**1.6600e-003**	**0.1224**	**1.1700e-003**	**0.1235**	**0.0330**	**1.1000e-003**	**0.0341**		**173.1124**	**173.1124**	**8.1200e-003**		**173.3152**

3.4 Tank Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5658	5.5620	6.3071	0.0118		0.2522	0.2522		0.2320	0.2320		1,145.4024	1,145.4024	0.3705		1,154.6636
Total	**0.5658**	**5.5620**	**6.3071**	**0.0118**		**0.2522**	**0.2522**		**0.2320**	**0.2320**		**1,145.4024**	**1,145.4024**	**0.3705**		**1,154.6636**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1200e-003	0.0996	0.0773	4.0000e-004	0.2666	2.0000e-004	0.2668	0.0657	1.9000e-004	0.0659		45.9078	45.9078	6.2500e-003		46.0641
Vendor	3.4700e-003	0.0789	0.0336	3.8000e-004	0.0143	1.0000e-004	0.0144	4.2900e-003	9.0000e-005	4.3800e-003		39.5074	39.5074	3.8000e-004		39.5169
Worker	0.0275	0.0144	0.2002	8.2000e-004	0.0986	5.5000e-004	0.0991	0.0262	5.1000e-004	0.0267		82.2837	82.2837	1.3100e-003		82.3165
Total	**0.0340**	**0.1929**	**0.3111**	**1.6000e-003**	**0.3795**	**8.5000e-004**	**0.3804**	**0.0962**	**7.9000e-004**	**0.0969**		**167.6990**	**167.6990**	**7.9400e-003**		**167.8974**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5658	5.5620	6.3071	0.0118		0.2522	0.2522		0.2320	0.2320	0.0000	1,145.4024	1,145.4024	0.3705		1,154.6636
Total	**0.5658**	**5.5620**	**6.3071**	**0.0118**		**0.2522**	**0.2522**		**0.2320**	**0.2320**	**0.0000**	**1,145.4024**	**1,145.4024**	**0.3705**		**1,154.6636**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1200e-003	0.0996	0.0773	4.0000e-004	0.2666	2.0000e-004	0.2668	0.0657	1.9000e-004	0.0659		45.9078	45.9078	6.2500e-003		46.0641
Vendor	3.4700e-003	0.0789	0.0336	3.8000e-004	0.0143	1.0000e-004	0.0144	4.2900e-003	9.0000e-005	4.3800e-003		39.5074	39.5074	3.8000e-004		39.5169
Worker	0.0275	0.0144	0.2002	8.2000e-004	0.0986	5.5000e-004	0.0991	0.0262	5.1000e-004	0.0267		82.2837	82.2837	1.3100e-003		82.3165
Total	**0.0340**	**0.1929**	**0.3111**	**1.6000e-003**	**0.3795**	**8.5000e-004**	**0.3804**	**0.0962**	**7.9000e-004**	**0.0969**		**167.6990**	**167.6990**	**7.9400e-003**		**167.8974**

Darrell Water Tank - San Mateo County, Winter

Darrell Water Tank

San Mateo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	20.36	1000sqft	1.34	20,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2023
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 - Construction of an ~ 20,360 SF (24 ft tall x 120 feet wide) water tank on 1.34 acres

Construction Phase - Construction for the Project is anticipated to begin late 2021 and end in early 2023.

Off-road Equipment -

Off-road Equipment - List per PD

Off-road Equipment - List per PD

Off-road Equipment - List per PD

Trips and VMT - ~ 70 total haul trips during demo and 2 service trucks/day. Up to 50 truck trips total during site prep plus 2 service trucks. Up to 140 total concrete trucks and 2 service trucks during tank constrcn (service trucks added as MHDT vendor trips)

Demolition - ~14,703 SF of existing tanks to be demo'd

Grading -

Vehicle Trips - No operational mobile sources

Construction Off-road Equipment Mitigation - Water site 2x per day and limit speed on unpaved road to 15 mph or less.

Consumer Products -

Energy Use - Electricity for water pump only.

Water And Wastewater - No indoor water use, only outdoor irrigation.

Solid Waste - No waste generated.

Land Use Change - Trees cover ~1/2 of the (0.67 acres). Approx 1/2 of those trees (0.335 ac) will be replaced.

Area Coating - Outside of water tank to be painted only.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Nonresidential_Interior	100	0
tblAreaCoating	Area_Nonresidential_Exterior	10180	20360
tblAreaCoating	Area_Nonresidential_Interior	30540	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	200.00	262.00
tblConstructionPhase	NumDays	20.00	27.00
tblConstructionPhase	NumDays	2.00	44.00
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24NG	6.90	0.00
tblEnergyUse	T24NG	17.85	0.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LotAcreage	0.47	1.34
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	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	0.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblSolidWaste	SolidWasteGenerationRate	25.25	0.00
tblTripsAndVMT	HaulingTripNumber	67.00	70.00
tblTripsAndVMT	HaulingTripNumber	125.00	50.00
tblTripsAndVMT	HaulingTripNumber	0.00	140.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	3.00	2.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblTripsAndVMT	WorkerTripNumber	9.00	12.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	4,708,250.00	0.00
tblWater	OutdoorWaterUseRate	0.00	4,708,250.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6756	16.7689	14.7487	0.0274	5.4064	0.8188	6.2252	2.9332	0.7533	3.6865	0.0000	2,681.7600	2,681.7600	0.6895	0.0000	2,697.1330
2022	1.4131	13.8169	12.8053	0.0236	5.5217	0.6647	6.1864	2.9615	0.6116	3.5730	0.0000	2,305.0860	2,305.0860	0.6894	0.0000	2,322.3202
2023	0.6037	5.7632	6.6150	0.0134	0.3795	0.2530	0.6326	0.0962	0.2328	0.3289	0.0000	1,307.4836	1,307.4836	0.3784	0.0000	1,316.9429
Maximum	**1.6756**	**16.7689**	**14.7487**	**0.0274**	**5.5217**	**0.8188**	**6.2252**	**2.9615**	**0.7533**	**3.6865**	**0.0000**	**2,681.7600**	**2,681.7600**	**0.6895**	**0.0000**	**2,697.1330**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	1.6756	16.7689	14.7487	0.0274	2.5069	0.8188	3.3256	1.3399	0.7533	2.0932	0.0000	2,681.7600	2,681.7600	0.6895	0.0000	2,697.1330
2022	1.4131	13.8169	12.8053	0.0236	2.6222	0.6647	3.2868	1.3682	0.6116	1.9798	0.0000	2,305.0860	2,305.0860	0.6894	0.0000	2,322.3202
2023	0.6037	5.7632	6.6150	0.0134	0.3795	0.2530	0.6326	0.0962	0.2328	0.3289	0.0000	1,307.4836	1,307.4836	0.3784	0.0000	1,316.9429
Maximum	**1.6756**	**16.7689**	**14.7487**	**0.0274**	**2.6222**	**0.8188**	**3.3256**	**1.3682**	**0.7533**	**2.0932**	**0.0000**	**2,681.7600**	**2,681.7600**	**0.6895**	**0.0000**	**2,697.1330**

	ROG	NOx	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**	**51.28**	**0.00**	**44.46**	**53.19**	**0.00**	**41.99**	**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	Mobilization and Demolition	Demolition	10/1/2021	11/8/2021	5	27	
2	Site Preparation	Site Preparation	11/9/2021	1/9/2022	5	44	
3	Tank Construction	Building Construction	1/10/2022	1/10/2023	5	262	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mobilization and Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Mobilization and Demolition	Cranes	1	8.00	231	0.29
Mobilization and Demolition	Crushing/Proc. Equipment	1	8.00	85	0.78
Mobilization and Demolition	Excavators	1	8.00	158	0.38
Mobilization and Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Mobilization and Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Other Material Handling Equipment	1	8.00	168	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Tank Construction	Cranes	1	6.00	231	0.29
Tank Construction	Excavators	1	8.00	158	0.38
Tank Construction	Forklifts	0	6.00	89	0.20
Tank Construction	Generator Sets	0	8.00	84	0.74

Tank Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Tank Construction	Welders	0	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
Mobilization and Demolition	5	12.00	2.00	70.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT
Site Preparation	4	12.00	2.00	50.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT
Tank Construction	3	12.00	2.00	140.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization and Demolition - 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	lb/day										lb/day					
Fugitive Dust					0.5360	0.0000	0.5360	0.0812	0.0000	0.0812			0.0000			0.0000
Off-Road	1.5288	14.2895	14.1145	0.0242		0.7330	0.7330		0.6910	0.6910		2,325.2610	2,325.2610	0.5827		2,339.8290
Total	**1.5288**	**14.2895**	**14.1145**	**0.0242**	**0.5360**	**0.7330**	**1.2691**	**0.0812**	**0.6910**	**0.7722**		**2,325.2610**	**2,325.2610**	**0.5827**		**2,339.8290**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0221	0.7760	0.3655	2.0500e-003	0.0450	2.3700e-003	0.0474	0.0123	2.2700e-003	0.0146		233.2702	233.2702	0.0302		234.0245
Vendor	4.6800e-003	0.0957	0.0469	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		39.9177	39.9177	5.1000e-004		39.9305
Worker	0.0344	0.0217	0.2218	8.4000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		83.3110	83.3110	1.5200e-003		83.3491
Total	**0.0612**	**0.8933**	**0.6342**	**3.2700e-003**	**0.1579**	**3.1600e-003**	**0.1611**	**0.0428**	**3.0000e-003**	**0.0458**		**356.4990**	**356.4990**	**0.0322**		**357.3041**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2412	0.0000	0.2412	0.0365	0.0000	0.0365			0.0000			0.0000
Off-Road	1.5288	14.2895	14.1145	0.0242		0.7330	0.7330		0.6910	0.6910	0.0000	2,325.2610	2,325.2610	0.5827		2,339.8289
Total	**1.5288**	**14.2895**	**14.1145**	**0.0242**	**0.2412**	**0.7330**	**0.9742**	**0.0365**	**0.6910**	**0.7275**	**0.0000**	**2,325.2610**	**2,325.2610**	**0.5827**		**2,339.8289**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0221	0.7760	0.3655	2.0500e-003	0.0450	2.3700e-003	0.0474	0.0123	2.2700e-003	0.0146		233.2702	233.2702	0.0302		234.0245
Vendor	4.6800e-003	0.0957	0.0469	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		39.9177	39.9177	5.1000e-004		39.9305
Worker	0.0344	0.0217	0.2218	8.4000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		83.3110	83.3110	1.5200e-003		83.3491
Total	**0.0612**	**0.8933**	**0.6342**	**3.2700e-003**	**0.1579**	**3.1600e-003**	**0.1611**	**0.0428**	**3.0000e-003**	**0.0458**		**356.4990**	**356.4990**	**0.0322**		**357.3041**

3.3 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	lb/day										lb/day					
Fugitive Dust					5.2719	0.0000	5.2719	2.8968	0.0000	2.8968			0.0000			0.0000
Off-Road	1.6269	16.3114	12.8535	0.0215		0.8169	0.8169		0.7516	0.7516		2,084.7020	2,084.7020	0.6742		2,101.5578
Total	**1.6269**	**16.3114**	**12.8535**	**0.0215**	**5.2719**	**0.8169**	**6.0888**	**2.8968**	**0.7516**	**3.6484**		**2,084.7020**	**2,084.7020**	**0.6742**		**2,101.5578**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.7000e-003	0.3401	0.1602	9.0000e-004	0.0217	1.0400e-003	0.0227	5.8700e-003	1.0000e-003	6.8700e-003		102.2451	102.2451	0.0132		102.5757
Vendor	4.6800e-003	0.0957	0.0469	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		39.9177	39.9177	5.1000e-004		39.9305
Worker	0.0344	0.0217	0.2218	8.4000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		83.3110	83.3110	1.5200e-003		83.3491
Total	**0.0487**	**0.4574**	**0.4289**	**2.1200e-003**	**0.1345**	**1.8300e-003**	**0.1364**	**0.0363**	**1.7300e-003**	**0.0380**		**225.4738**	**225.4738**	**0.0153**		**225.8552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3724	0.0000	2.3724	1.3036	0.0000	1.3036			0.0000			0.0000
Off-Road	1.6269	16.3114	12.8535	0.0215		0.8169	0.8169		0.7516	0.7516	0.0000	2,084.7020	2,084.7020	0.6742		2,101.5578
Total	**1.6269**	**16.3114**	**12.8535**	**0.0215**	**2.3724**	**0.8169**	**3.1893**	**1.3036**	**0.7516**	**2.0552**	**0.0000**	**2,084.7020**	**2,084.7020**	**0.6742**		**2,101.5578**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.7000e-003	0.3401	0.1602	9.0000e-004	0.0217	1.0400e-003	0.0227	5.8700e-003	1.0000e-003	6.8700e-003		102.2451	102.2451	0.0132		102.5757
Vendor	4.6800e-003	0.0957	0.0469	3.8000e-004	0.0143	2.1000e-004	0.0145	4.2900e-003	2.0000e-004	4.4900e-003		39.9177	39.9177	5.1000e-004		39.9305
Worker	0.0344	0.0217	0.2218	8.4000e-004	0.0986	5.8000e-004	0.0992	0.0262	5.3000e-004	0.0267		83.3110	83.3110	1.5200e-003		83.3491
Total	**0.0487**	**0.4574**	**0.4289**	**2.1200e-003**	**0.1345**	**1.8300e-003**	**0.1364**	**0.0363**	**1.7300e-003**	**0.0380**		**225.4738**	**225.4738**	**0.0153**		**225.8552**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.2719	0.0000	5.2719	2.8968	0.0000	2.8968			0.0000			0.0000
Off-Road	1.3670	13.3916	12.3916	0.0215		0.6630	0.6630		0.6100	0.6100		2,084.5869	2,084.5869	0.6742		2,101.4418
Total	**1.3670**	**13.3916**	**12.3916**	**0.0215**	**5.2719**	**0.6630**	**5.9349**	**2.8968**	**0.6100**	**3.5068**		**2,084.5869**	**2,084.5869**	**0.6742**		**2,101.4418**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.2500e-003	0.3128	0.1654	8.8000e-004	0.1369	9.1000e-004	0.1378	0.0342	8.7000e-004	0.0350		100.4858	100.4858	0.0133		100.8193
Vendor	4.3000e-003	0.0929	0.0422	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.7493	39.7493	4.6000e-004		39.7607
Worker	0.0325	0.0195	0.2061	8.0000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		80.2641	80.2641	1.3700e-003		80.2984
Total	**0.0461**	**0.4253**	**0.4137**	**2.0600e-003**	**0.2498**	**1.6600e-003**	**0.2515**	**0.0646**	**1.5700e-003**	**0.0662**		**220.4991**	**220.4991**	**0.0152**		**220.8784**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.3724	0.0000	2.3724	1.3036	0.0000	1.3036			0.0000			0.0000
Off-Road	1.3670	13.3916	12.3916	0.0215		0.6630	0.6630		0.6100	0.6100	0.0000	2,084.5869	2,084.5869	0.6742		2,101.4418
Total	**1.3670**	**13.3916**	**12.3916**	**0.0215**	**2.3724**	**0.6630**	**3.0354**	**1.3036**	**0.6100**	**1.9136**	**0.0000**	**2,084.5869**	**2,084.5869**	**0.6742**		**2,101.4418**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	9.2500e-003	0.3128	0.1654	8.8000e-004	0.1369	9.1000e-004	0.1378	0.0342	8.7000e-004	0.0350		100.4858	100.4858	0.0133		100.8193
Vendor	4.3000e-003	0.0929	0.0422	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.7493	39.7493	4.6000e-004		39.7607
Worker	0.0325	0.0195	0.2061	8.0000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		80.2641	80.2641	1.3700e-003		80.2984
Total	**0.0461**	**0.4253**	**0.4137**	**2.0600e-003**	**0.2498**	**1.6600e-003**	**0.2515**	**0.0646**	**1.5700e-003**	**0.0662**		**220.4991**	**220.4991**	**0.0152**		**220.8784**

3.4 Tank Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6057	6.1719	6.3529	0.0118		0.2838	0.2838		0.2611	0.2611		1,145.0673	1,145.0673	0.3703		1,154.3257
Total	**0.6057**	**6.1719**	**6.3529**	**0.0118**		**0.2838**	**0.2838**		**0.2611**	**0.2611**		**1,145.0673**	**1,145.0673**	**0.3703**		**1,154.3257**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.3500e-003	0.1471	0.0778	4.1000e-004	9.4800e-003	4.3000e-004	9.9000e-003	2.5900e-003	4.1000e-004	3.0000e-003		47.2513	47.2513	6.2700e-003		47.4082
Vendor	4.3000e-003	0.0929	0.0422	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.7493	39.7493	4.6000e-004		39.7607
Worker	0.0325	0.0195	0.2061	8.0000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		80.2641	80.2641	1.3700e-003		80.2984
Total	**0.0412**	**0.2595**	**0.3260**	**1.5900e-003**	**0.1224**	**1.1800e-003**	**0.1235**	**0.0330**	**1.1100e-003**	**0.0341**		**167.2647**	**167.2647**	**8.1000e-003**		**167.4672**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6057	6.1719	6.3529	0.0118		0.2838	0.2838		0.2611	0.2611	0.0000	1,145.0673	1,145.0673	0.3703		1,154.3257
Total	**0.6057**	**6.1719**	**6.3529**	**0.0118**		**0.2838**	**0.2838**		**0.2611**	**0.2611**	**0.0000**	**1,145.0673**	**1,145.0673**	**0.3703**		**1,154.3257**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.3500e-003	0.1471	0.0778	4.1000e-004	9.4800e-003	4.3000e-004	9.9000e-003	2.5900e-003	4.1000e-004	3.0000e-003		47.2513	47.2513	6.2700e-003		47.4082
Vendor	4.3000e-003	0.0929	0.0422	3.8000e-004	0.0143	1.9000e-004	0.0145	4.2900e-003	1.8000e-004	4.4700e-003		39.7493	39.7493	4.6000e-004		39.7607
Worker	0.0325	0.0195	0.2061	8.0000e-004	0.0986	5.6000e-004	0.0991	0.0262	5.2000e-004	0.0267		80.2641	80.2641	1.3700e-003		80.2984
Total	**0.0412**	**0.2595**	**0.3260**	**1.5900e-003**	**0.1224**	**1.1800e-003**	**0.1235**	**0.0330**	**1.1100e-003**	**0.0341**		**167.2647**	**167.2647**	**8.1000e-003**		**167.4672**

3.4 Tank Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5658	5.5620	6.3071	0.0118		0.2522	0.2522		0.2320	0.2320		1,145.4024	1,145.4024	0.3705		1,154.6636
Total	**0.5658**	**5.5620**	**6.3071**	**0.0118**		**0.2522**	**0.2522**		**0.2320**	**0.2320**		**1,145.4024**	**1,145.4024**	**0.3705**		**1,154.6636**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1900e-003	0.1023	0.0783	3.9000e-004	0.2666	2.1000e-004	0.2669	0.0657	2.0000e-004	0.0659		45.4221	45.4221	6.2800e-003		45.5791
Vendor	3.7300e-003	0.0811	0.0380	3.8000e-004	0.0143	1.0000e-004	0.0144	4.2900e-003	1.0000e-004	4.3800e-003		39.4240	39.4240	4.1000e-004		39.4342
Worker	0.0310	0.0177	0.1916	7.7000e-004	0.0986	5.5000e-004	0.0991	0.0262	5.1000e-004	0.0267		77.2350	77.2350	1.2400e-003		77.2660
Total	**0.0379**	**0.2012**	**0.3079**	**1.5400e-003**	**0.3795**	**8.6000e-004**	**0.3804**	**0.0962**	**8.1000e-004**	**0.0970**		**162.0812**	**162.0812**	**7.9300e-003**		**162.2793**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5658	5.5620	6.3071	0.0118		0.2522	0.2522		0.2320	0.2320	0.0000	1,145.4024	1,145.4024	0.3705		1,154.6636
Total	**0.5658**	**5.5620**	**6.3071**	**0.0118**		**0.2522**	**0.2522**		**0.2320**	**0.2320**	**0.0000**	**1,145.4024**	**1,145.4024**	**0.3705**		**1,154.6636**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.1900e-003	0.1023	0.0783	3.9000e-004	0.2666	2.1000e-004	0.2669	0.0657	2.0000e-004	0.0659		45.4221	45.4221	6.2800e-003		45.5791
Vendor	3.7300e-003	0.0811	0.0380	3.8000e-004	0.0143	1.0000e-004	0.0144	4.2900e-003	1.0000e-004	4.3800e-003		39.4240	39.4240	4.1000e-004		39.4342
Worker	0.0310	0.0177	0.1916	7.7000e-004	0.0986	5.5000e-004	0.0991	0.0262	5.1000e-004	0.0267		77.2350	77.2350	1.2400e-003		77.2660
Total	**0.0379**	**0.2012**	**0.3079**	**1.5400e-003**	**0.3795**	**8.6000e-004**	**0.3804**	**0.0962**	**8.1000e-004**	**0.0970**		**162.0812**	**162.0812**	**7.9300e-003**		**162.2793**

APPENDIX C

CALEEMOD MODEL ANNUAL EMISSIONS PRINTOUTS

Darrell Water Tank - San Mateo County, Annual

Darrell Water Tank

San Mateo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	20.36	1000sqft	1.34	20,360.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	70
Climate Zone	5			**Operational Year**	2023
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 - Construction of an ~ 20,360 SF (24 ft tall x 120 feet wide) water tank on 1.34 acres

Construction Phase - Construction for the Project is anticipated to begin late 2021 and end in early 2023.

Off-road Equipment -

Off-road Equipment - List per PD

Off-road Equipment - List per PD

Off-road Equipment - List per PD

Trips and VMT - ~ 70 total haul trips during demo and 2 service trucks/day. Up to 50 truck trips total during site prep plus 2 service trucks. Up to 140 total concrete trucks and 2 service trucks during tank constrcn (service trucks added as MHDT vendor trips)

Demolition - ~14,703 SF of existing tanks to be demo'd

Grading -

Vehicle Trips - No operational mobile sources

Construction Off-road Equipment Mitigation - Water site 2x per day and limit speed on unpaved road to 15 mph or less.

Consumer Products -

Energy Use - Electricity for water pump only.

Water And Wastewater - No indoor water use, only outdoor irrigation.

Solid Waste - No waste generated.

Land Use Change - Trees cover ~1/2 of the (0.67 acres). Approx 1/2 of those trees (0.335 ac) will be replaced.

Area Coating - Outside of water tank to be painted only.

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	100
tblAreaCoating	Area_EF_Nonresidential_Interior	100	0
tblAreaCoating	Area_Nonresidential_Exterior	10180	20360
tblAreaCoating	Area_Nonresidential_Interior	30540	0
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	200.00	262.00
tblConstructionPhase	NumDays	20.00	27.00
tblConstructionPhase	NumDays	2.00	44.00
tblEnergyUse	LightingElect	2.99	0.00
tblEnergyUse	NT24NG	6.90	0.00
tblEnergyUse	T24NG	17.85	0.00
tblGrading	MaterialImported	0.00	1,000.00
tblLandUse	LotAcreage	0.47	1.34
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	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	0.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblSolidWaste	SolidWasteGenerationRate	25.25	0.00
tblTripsAndVMT	HaulingTripNumber	67.00	70.00
tblTripsAndVMT	HaulingTripNumber	125.00	50.00
tblTripsAndVMT	HaulingTripNumber	0.00	140.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	3.00	2.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	MHDT
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	10.00	12.00
tblTripsAndVMT	WorkerTripNumber	9.00	12.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	4,708,250.00	0.00
tblWater	OutdoorWaterUseRate	0.00	4,708,250.00

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					
2021	0.0540	0.5318	0.4577	8.3000e-004	0.1146	0.0259	0.1405	0.0588	0.0241	0.0829	0.0000	73.7508	73.7508	0.0197	0.0000	74.2439
2022	0.0855	0.8541	0.8825	1.7700e-003	0.0288	0.0380	0.0668	0.0115	0.0350	0.0464	0.0000	157.0973	157.0973	0.0453	0.0000	158.2306
2023	2.1000e-003	0.0202	0.0231	5.0000e-005	1.2700e-003	8.9000e-004	2.1500e-003	3.2000e-004	8.1000e-004	1.1400e-003	0.0000	4.1534	4.1534	1.2000e-003	0.0000	4.1835
Maximum	**0.0855**	**0.8541**	**0.8825**	**1.7700e-003**	**0.1146**	**0.0380**	**0.1405**	**0.0588**	**0.0350**	**0.0829**	**0.0000**	**157.0973**	**157.0973**	**0.0453**	**0.0000**	**158.2306**

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	0.0540	0.5318	0.4577	8.3000e-004	0.0541	0.0259	0.0800	0.0272	0.0241	0.0512	0.0000	73.7507	73.7507	0.0197	0.0000	74.2438
2022	0.0855	0.8541	0.8825	1.7700e-003	0.0215	0.0380	0.0595	7.4700e-003	0.0350	0.0424	0.0000	157.0971	157.0971	0.0453	0.0000	158.2304
2023	2.1000e-003	0.0202	0.0231	5.0000e-005	1.2700e-003	8.9000e-004	2.1500e-003	3.2000e-004	8.1000e-004	1.1400e-003	0.0000	4.1534	4.1534	1.2000e-003	0.0000	4.1835
Maximum	**0.0855**	**0.8541**	**0.8825**	**1.7700e-003**	**0.0541**	**0.0380**	**0.0800**	**0.0272**	**0.0350**	**0.0512**	**0.0000**	**157.0971**	**157.0971**	**0.0453**	**0.0000**	**158.2304**

	ROG	NOx	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**	**46.86**	**0.00**	**32.37**	**50.51**	**0.00**	**27.34**	**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	10-1-2021	12-31-2021	0.5827	0.5827
2	1-1-2022	3-31-2022	0.2537	0.2537
3	4-1-2022	6-30-2022	0.2296	0.2296
4	7-1-2022	9-30-2022	0.2321	0.2321
5	10-1-2022	12-31-2022	0.2326	0.2326
6	1-1-2023	3-31-2023	0.0227	0.0227
		Highest	0.5827	0.5827

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	-36.6300
Total	**-36.6300**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Mobilization and Demolition	Demolition	10/1/2021	11/8/2021	5	27	
2	Site Preparation	Site Preparation	11/9/2021	1/9/2022	5	44	
3	Tank Construction	Building Construction	1/10/2022	1/10/2023	5	262	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Mobilization and Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Mobilization and Demolition	Cranes	1	8.00	231	0.29
Mobilization and Demolition	Crushing/Proc. Equipment	1	8.00	85	0.78
Mobilization and Demolition	Excavators	1	8.00	158	0.38
Mobilization and Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Mobilization and Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Excavators	1	8.00	158	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Other Material Handling Equipment	1	8.00	168	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Tank Construction	Cranes	1	6.00	231	0.29
Tank Construction	Excavators	1	8.00	158	0.38
Tank Construction	Forklifts	0	6.00	89	0.20
Tank Construction	Generator Sets	0	8.00	84	0.74
Tank Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Tank Construction	Welders	0	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
Mobilization and Demolition	5	12.00	2.00	70.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT
Site Preparation	4	12.00	2.00	50.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT
Tank Construction	3	12.00	2.00	140.00	10.80	7.30	20.00	LD_Mix	MHDT	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Mobilization and Demolition - 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					7.2400e-003	0.0000	7.2400e-003	1.1000e-003	0.0000	1.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0206	0.1929	0.1906	3.3000e-004		9.9000e-003	9.9000e-003		9.3300e-003	9.3300e-003	0.0000	28.4775	28.4775	7.1400e-003	0.0000	28.6559
Total	**0.0206**	**0.1929**	**0.1906**	**3.3000e-004**	**7.2400e-003**	**9.9000e-003**	**0.0171**	**1.1000e-003**	**9.3300e-003**	**0.0104**	**0.0000**	**28.4775**	**28.4775**	**7.1400e-003**	**0.0000**	**28.6559**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-004	0.0104	4.8700e-003	3.0000e-005	5.9000e-004	3.0000e-005	6.2000e-004	1.6000e-004	3.0000e-005	1.9000e-004	0.0000	2.8747	2.8747	3.7000e-004	0.0000	2.8839
Vendor	6.0000e-005	1.2800e-003	6.0000e-004	1.0000e-005	1.9000e-004	0.0000	1.9000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.4895	0.4895	1.0000e-005	0.0000	0.4896
Worker	4.1000e-004	2.7000e-004	2.9100e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0242	1.0242	2.0000e-005	0.0000	1.0247
Total	**7.7000e-004**	**0.0120**	**8.3800e-003**	**5.0000e-005**	**2.0600e-003**	**4.0000e-005**	**2.0900e-003**	**5.6000e-004**	**4.0000e-005**	**6.0000e-004**	**0.0000**	**4.3883**	**4.3883**	**4.0000e-004**	**0.0000**	**4.3981**

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					3.2600e-003	0.0000	3.2600e-003	4.9000e-004	0.0000	4.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0206	0.1929	0.1906	3.3000e-004		9.9000e-003	9.9000e-003		9.3300e-003	9.3300e-003	0.0000	28.4774	28.4774	7.1400e-003	0.0000	28.6558
Total	**0.0206**	**0.1929**	**0.1906**	**3.3000e-004**	**3.2600e-003**	**9.9000e-003**	**0.0132**	**4.9000e-004**	**9.3300e-003**	**9.8200e-003**	**0.0000**	**28.4774**	**28.4774**	**7.1400e-003**	**0.0000**	**28.6558**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-004	0.0104	4.8700e-003	3.0000e-005	5.9000e-004	3.0000e-005	6.2000e-004	1.6000e-004	3.0000e-005	1.9000e-004	0.0000	2.8747	2.8747	3.7000e-004	0.0000	2.8839
Vendor	6.0000e-005	1.2800e-003	6.0000e-004	1.0000e-005	1.9000e-004	0.0000	1.9000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.4895	0.4895	1.0000e-005	0.0000	0.4896
Worker	4.1000e-004	2.7000e-004	2.9100e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.0242	1.0242	2.0000e-005	0.0000	1.0247
Total	**7.7000e-004**	**0.0120**	**8.3800e-003**	**5.0000e-005**	**2.0600e-003**	**4.0000e-005**	**2.0900e-003**	**5.6000e-004**	**4.0000e-005**	**6.0000e-004**	**0.0000**	**4.3883**	**4.3883**	**4.0000e-004**	**0.0000**	**4.3981**

3.3 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					0.1028	0.0000	0.1028	0.0565	0.0000	0.0565	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0317	0.3181	0.2506	4.2000e-004		0.0159	0.0159		0.0147	0.0147	0.0000	36.8786	36.8786	0.0119	0.0000	37.1768
Total	**0.0317**	**0.3181**	**0.2506**	**4.2000e-004**	**0.1028**	**0.0159**	**0.1187**	**0.0565**	**0.0147**	**0.0712**	**0.0000**	**36.8786**	**36.8786**	**0.0119**	**0.0000**	**37.1768**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.5900e-003	3.0800e-003	2.0000e-005	4.1000e-004	2.0000e-005	4.3000e-004	1.1000e-004	2.0000e-005	1.3000e-004	0.0000	1.8200	1.8200	2.3000e-004	0.0000	1.8258
Vendor	9.0000e-005	1.8500e-003	8.7000e-004	1.0000e-005	2.7000e-004	0.0000	2.7000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.7070	0.7070	1.0000e-005	0.0000	0.7072
Worker	6.0000e-004	3.9000e-004	4.2000e-003	2.0000e-005	1.8400e-003	1.0000e-005	1.8500e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.4794	1.4794	3.0000e-005	0.0000	1.4800
Total	**8.8000e-004**	**8.8300e-003**	**8.1500e-003**	**5.0000e-005**	**2.5200e-003**	**3.0000e-005**	**2.5500e-003**	**6.8000e-004**	**3.0000e-005**	**7.2000e-004**	**0.0000**	**4.0064**	**4.0064**	**2.7000e-004**	**0.0000**	**4.0131**

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					0.0463	0.0000	0.0463	0.0254	0.0000	0.0254	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0317	0.3181	0.2506	4.2000e-004		0.0159	0.0159		0.0147	0.0147	0.0000	36.8786	36.8786	0.0119	0.0000	37.1767
Total	**0.0317**	**0.3181**	**0.2506**	**4.2000e-004**	**0.0463**	**0.0159**	**0.0622**	**0.0254**	**0.0147**	**0.0401**	**0.0000**	**36.8786**	**36.8786**	**0.0119**	**0.0000**	**37.1767**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.9000e-004	6.5900e-003	3.0800e-003	2.0000e-005	4.1000e-004	2.0000e-005	4.3000e-004	1.1000e-004	2.0000e-005	1.3000e-004	0.0000	1.8200	1.8200	2.3000e-004	0.0000	1.8258
Vendor	9.0000e-005	1.8500e-003	8.7000e-004	1.0000e-005	2.7000e-004	0.0000	2.7000e-004	8.0000e-005	0.0000	9.0000e-005	0.0000	0.7070	0.7070	1.0000e-005	0.0000	0.7072
Worker	6.0000e-004	3.9000e-004	4.2000e-003	2.0000e-005	1.8400e-003	1.0000e-005	1.8500e-003	4.9000e-004	1.0000e-005	5.0000e-004	0.0000	1.4794	1.4794	3.0000e-005	0.0000	1.4800
Total	**8.8000e-004**	**8.8300e-003**	**8.1500e-003**	**5.0000e-005**	**2.5200e-003**	**3.0000e-005**	**2.5500e-003**	**6.8000e-004**	**3.0000e-005**	**7.2000e-004**	**0.0000**	**4.0064**	**4.0064**	**2.7000e-004**	**0.0000**	**4.0131**

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					0.0132	0.0000	0.0132	7.2500e-003	0.0000	7.2500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4200e-003	0.0335	0.0310	5.0000e-005		1.6600e-003	1.6600e-003		1.5200e-003	1.5200e-003	0.0000	4.7278	4.7278	1.5300e-003	0.0000	4.7660
Total	**3.4200e-003**	**0.0335**	**0.0310**	**5.0000e-005**	**0.0132**	**1.6600e-003**	**0.0149**	**7.2500e-003**	**1.5200e-003**	**8.7700e-003**	**0.0000**	**4.7278**	**4.7278**	**1.5300e-003**	**0.0000**	**4.7660**

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	2.0000e-005	7.8000e-004	4.1000e-004	0.0000	3.3000e-004	0.0000	3.3000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2293	0.2293	3.0000e-005	0.0000	0.2301
Vendor	1.0000e-005	2.3000e-004	1.0000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0903	0.0903	0.0000	0.0000	0.0903
Worker	7.0000e-005	4.0000e-005	5.0000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1827	0.1827	0.0000	0.0000	0.1828
Total	**1.0000e-004**	**1.0500e-003**	**1.0100e-003**	**0.0000**	**6.0000e-004**	**0.0000**	**6.1000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.5023**	**0.5023**	**3.0000e-005**	**0.0000**	**0.5032**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.9500e-003	0.0000	5.9500e-003	3.2600e-003	0.0000	3.2600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.4200e-003	0.0335	0.0310	5.0000e-005		1.6600e-003	1.6600e-003		1.5200e-003	1.5200e-003	0.0000	4.7278	4.7278	1.5300e-003	0.0000	4.7660
Total	**3.4200e-003**	**0.0335**	**0.0310**	**5.0000e-005**	**5.9500e-003**	**1.6600e-003**	**7.6100e-003**	**3.2600e-003**	**1.5200e-003**	**4.7800e-003**	**0.0000**	**4.7278**	**4.7278**	**1.5300e-003**	**0.0000**	**4.7660**

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	2.0000e-005	7.8000e-004	4.1000e-004	0.0000	3.3000e-004	0.0000	3.3000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2293	0.2293	3.0000e-005	0.0000	0.2301
Vendor	1.0000e-005	2.3000e-004	1.0000e-004	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0903	0.0903	0.0000	0.0000	0.0903
Worker	7.0000e-005	4.0000e-005	5.0000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1827	0.1827	0.0000	0.0000	0.1828
Total	**1.0000e-004**	**1.0500e-003**	**1.0100e-003**	**0.0000**	**6.0000e-004**	**0.0000**	**6.1000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.5023**	**0.5023**	**3.0000e-005**	**0.0000**	**0.5032**

3.4 Tank 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	0.0772	0.7869	0.8100	1.5100e-003		0.0362	0.0362		0.0333	0.0333	0.0000	132.4454	132.4454	0.0428	0.0000	133.5163
Total	**0.0772**	**0.7869**	**0.8100**	**1.5100e-003**		**0.0362**	**0.0362**		**0.0333**	**0.0333**	**0.0000**	**132.4454**	**132.4454**	**0.0428**	**0.0000**	**133.5163**

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	5.5000e-004	0.0186	9.8000e-003	5.0000e-005	1.1600e-003	5.0000e-005	1.2200e-003	3.2000e-004	5.0000e-005	3.7000e-004	0.0000	5.4995	5.4995	7.2000e-004	0.0000	5.5176
Vendor	5.3000e-004	0.0117	5.1000e-003	5.0000e-005	1.7600e-003	2.0000e-005	1.7900e-003	5.3000e-004	2.0000e-005	5.6000e-004	0.0000	4.6033	4.6033	5.0000e-005	0.0000	4.6046
Worker	3.6800e-003	2.2900e-003	0.0256	1.0000e-004	0.0120	7.0000e-005	0.0121	3.2100e-003	7.0000e-005	3.2700e-003	0.0000	9.3190	9.3190	1.6000e-004	0.0000	9.3230
Total	**4.7600e-003**	**0.0327**	**0.0405**	**2.0000e-004**	**0.0150**	**1.4000e-004**	**0.0151**	**4.0600e-003**	**1.4000e-004**	**4.2000e-003**	**0.0000**	**19.4218**	**19.4218**	**9.3000e-004**	**0.0000**	**19.4451**

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	0.0772	0.7869	0.8100	1.5100e-003		0.0362	0.0362		0.0333	0.0333	0.0000	132.4453	132.4453	0.0428	0.0000	133.5161
Total	**0.0772**	**0.7869**	**0.8100**	**1.5100e-003**		**0.0362**	**0.0362**		**0.0333**	**0.0333**	**0.0000**	**132.4453**	**132.4453**	**0.0428**	**0.0000**	**133.5161**

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	5.5000e-004	0.0186	9.8000e-003	5.0000e-005	1.1600e-003	5.0000e-005	1.2200e-003	3.2000e-004	5.0000e-005	3.7000e-004	0.0000	5.4995	5.4995	7.2000e-004	0.0000	5.5176
Vendor	5.3000e-004	0.0117	5.1000e-003	5.0000e-005	1.7600e-003	2.0000e-005	1.7900e-003	5.3000e-004	2.0000e-005	5.6000e-004	0.0000	4.6033	4.6033	5.0000e-005	0.0000	4.6046
Worker	3.6800e-003	2.2900e-003	0.0256	1.0000e-004	0.0120	7.0000e-005	0.0121	3.2100e-003	7.0000e-005	3.2700e-003	0.0000	9.3190	9.3190	1.6000e-004	0.0000	9.3230
Total	**4.7600e-003**	**0.0327**	**0.0405**	**2.0000e-004**	**0.0150**	**1.4000e-004**	**0.0151**	**4.0600e-003**	**1.4000e-004**	**4.2000e-003**	**0.0000**	**19.4218**	**19.4218**	**9.3000e-004**	**0.0000**	**19.4451**

3.4 Tank 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	1.9800e-003	0.0195	0.0221	4.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	3.6368	3.6368	1.1800e-003	0.0000	3.6662
Total	**1.9800e-003**	**0.0195**	**0.0221**	**4.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.1000e-004**	**8.1000e-004**	**0.0000**	**3.6368**	**3.6368**	**1.1800e-003**	**0.0000**	**3.6662**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.6000e-004	2.7000e-004	0.0000	8.9000e-004	0.0000	8.9000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.1451	0.1451	2.0000e-005	0.0000	0.1456
Vendor	1.0000e-005	2.8000e-004	1.3000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1253	0.1253	0.0000	0.0000	0.1254
Worker	1.0000e-004	6.0000e-005	6.5000e-004	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2462	0.2462	0.0000	0.0000	0.2463
Total	**1.2000e-004**	**7.0000e-004**	**1.0500e-003**	**0.0000**	**1.2700e-003**	**0.0000**	**1.2700e-003**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**0.0000**	**0.5166**	**0.5166**	**2.0000e-005**	**0.0000**	**0.5172**

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	1.9800e-003	0.0195	0.0221	4.0000e-005		8.8000e-004	8.8000e-004		8.1000e-004	8.1000e-004	0.0000	3.6368	3.6368	1.1800e-003	0.0000	3.6662
Total	**1.9800e-003**	**0.0195**	**0.0221**	**4.0000e-005**		**8.8000e-004**	**8.8000e-004**		**8.1000e-004**	**8.1000e-004**	**0.0000**	**3.6368**	**3.6368**	**1.1800e-003**	**0.0000**	**3.6662**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	3.6000e-004	2.7000e-004	0.0000	8.9000e-004	0.0000	8.9000e-004	2.2000e-004	0.0000	2.2000e-004	0.0000	0.1451	0.1451	2.0000e-005	0.0000	0.1456
Vendor	1.0000e-005	2.8000e-004	1.3000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1253	0.1253	0.0000	0.0000	0.1254
Worker	1.0000e-004	6.0000e-005	6.5000e-004	0.0000	3.3000e-004	0.0000	3.3000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2462	0.2462	0.0000	0.0000	0.2463
Total	**1.2000e-004**	**7.0000e-004**	**1.0500e-003**	**0.0000**	**1.2700e-003**	**0.0000**	**1.2700e-003**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**0.0000**	**0.5166**	**0.5166**	**2.0000e-005**	**0.0000**	**0.5172**

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-36.6300	0.0000	0.0000	-36.6300

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Trees	0.67 / 0.34	-36.6300	0.0000	0.0000	-36.6300
Total		**-36.6300**	**0.0000**	**0.0000**	**-36.6300**

Appendix B:

Biological Resources

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Biological Habitat Evaluation Report

Darrell Water Tank Replacement Project
Hillsborough, San Mateo County, California

Prepared for:

Infrastructure Engineering Corporation
300 Spectrum Center Dr., Suite 400
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January 2021

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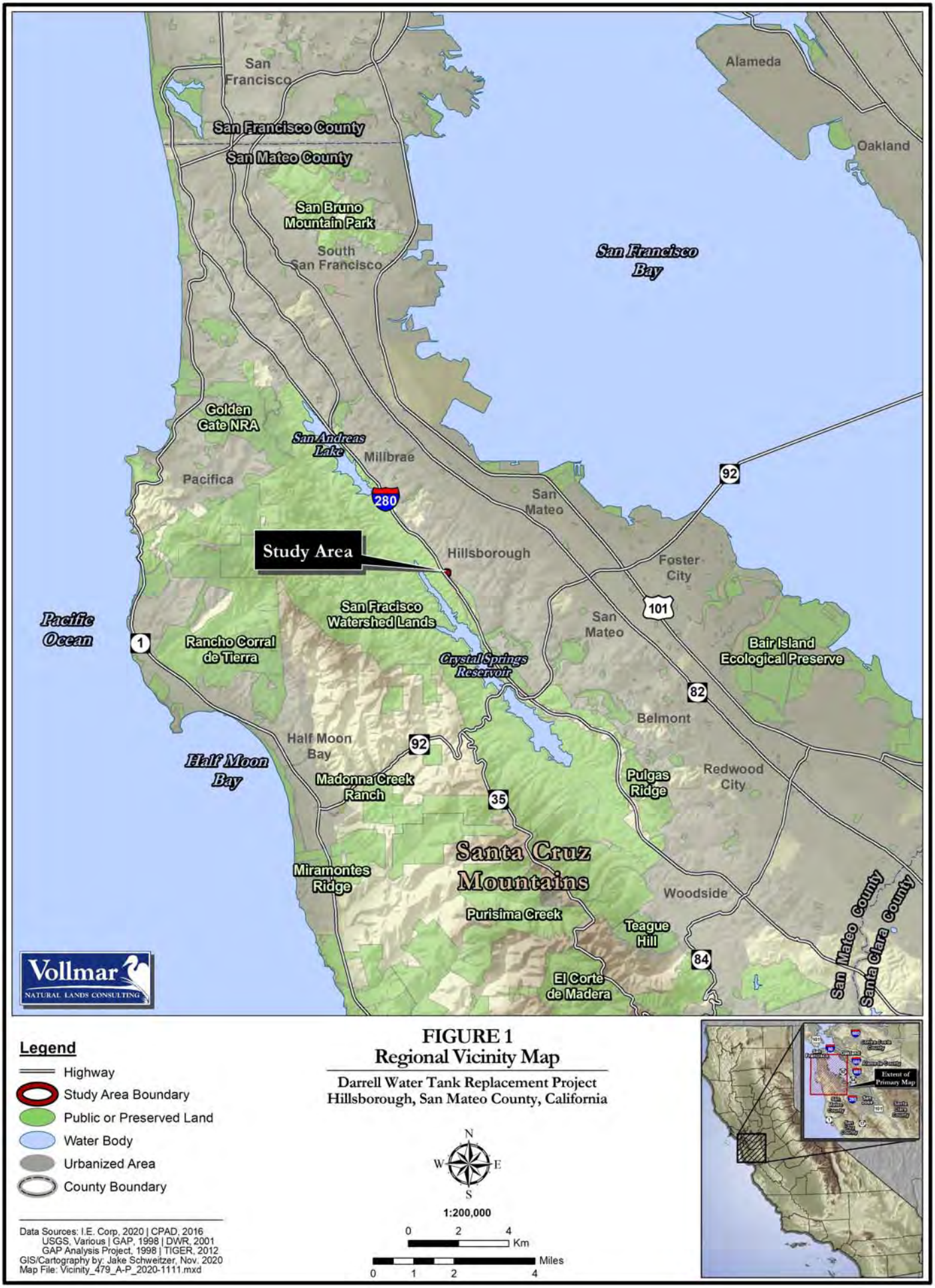
1.0 INTRODUCTION

This report presents the methods and results of a biological habitat evaluation conducted by Vollmar Natural Lands Consulting, Inc. (VNLC) for the Darrell Water Tank Replacement Project (project). The report is prepared on behalf of Infrastructure Engineering Corporation and is prepared for the Town of Hillsborough (Hillsborough), the project proponent and owner/manager of the project site property. The project site and study area is located along the western edge of Hillsborough, in central San Mateo County (see **Figures 1** and **2**). The site encompasses two 0.5-million gallon and one 1-million gallon steel water tanks that provide drinking water to Hillborough, and the project involves replacement of the two smaller tanks with 2-million gallon concrete tanks. In addition to the tank replacement and associated modifications to their platforms, the project involves the following associated activities: improvement of an existing access road from the adjacent Skyline Boulevard, construction of a retaining wall, installation of underground inlet and outlet water pipes, and remedial earthwork and post-construction landscaping.

This habitat evaluation was conducted to identify and characterize existing conditions, as well as to assess the potential for special-status species, sensitive habitats, and jurisdictional features to occur within the project disturbance areas. The study area presently encompasses three large water tanks that have been installed on imported fill soils. Vegetation surrounding the tanks consists of planted trees, many of which are exotic, along with mostly weedy grasses and forbs. However, many of the trees are large and provide potentially suitable habitat for special-status winged animals. In the absence of minimization and avoidance measures, the project could result in disturbance to the following regulated biological resources, which are known from the region and have some potential to occur within the study area:

- One federally listed animal species: California red-legged frog (*Rana draytonii*);
- Three non-listed special-status animal species: white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), and hoary bat (*Lasiurus cinereus*); and
- Active nests of bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code;

As documented later in this report, there are numerous special-status plants known from the vicinity of the study area, but there is no habitat within the study area that is likely to support any special-status or otherwise sensitive plant species. Mature trees, including native coast live oaks (*Quercus agrifolia*), represent the only sensitive botanical resource within the study area. As discussed in **Section 2.2,** trees and groves of trees are afforded protection by the Town of Hillsborough. A separate arborist report that was prepared for the project includes details pertaining to trees documented within the study area.



Legend

- Highway
- Study Area Boundary
- Public or Preserved Land
- Water Body
- Urbanized Area
- County Boundary

Data Sources: I.E. Corp, 2020 | CPAD, 2016
USGS, Various | GAP, 1998 | DWR, 2001
GAP Analysis Project, 1998 | TIGER, 2012
GIS/Cartography by: Jake Schweitzer, Nov. 2020
Map File: Vicinity_479_A-P_2020-1111.mxd

FIGURE 1
Regional Vicinity Map

Darrell Water Tank Replacement Project
Hillsborough, San Mateo County, California

N
W E
S

1:200,000

0 2 4 Km

0 1 2 4 Miles

FIGURE 2
USGS Topographic Map

Darrell Water Tank Replacement Project
Hillsborough, San Mateo County, California

Legend

- Study Area Boundary
- Topographic Quadrangle Boundary

N
W E
S

1:18,000
(1 in. = 1,500 ft. at letter-sized layout)

0 375 750 Meters

0 750 1,500 3,000 Feet

Data Sources: I.E. Corp, 2020 | USGS DRG Map GAP Analysis Project, 1998 | TIGER, 2012
GIS/Cartography by: Jake Schweitzer, Nov. 2020
Map File: DRG_480_A-P_2020-1111.mxd

2.0 EXTENT AND LOCATION OF THE STUDY AREA

The study area is 1.34 acres and is located at 549 Darrell Road, just east of Skyline Boulevard and Interstate 280, at Hillsborough's western edge. The study area encompasses a single parcel (APN 300-41-100) that encompasses the existing water tanks and surrounding area. As **Figure 2** shows, the parcel straddles the boundary of the San Mateo and Montara Mountain 7.5' United States Geological Survey (USGS) topographic quadrangles, within the San Mateo land grant (no township, range, or section designations). The chain link fencing that surrounds the parcel and study area includes a locked gate at the entrance from Darrell Road. The property may only be accessed with the permission and assistance of staff from Hillsborough.

2.0 METHODS

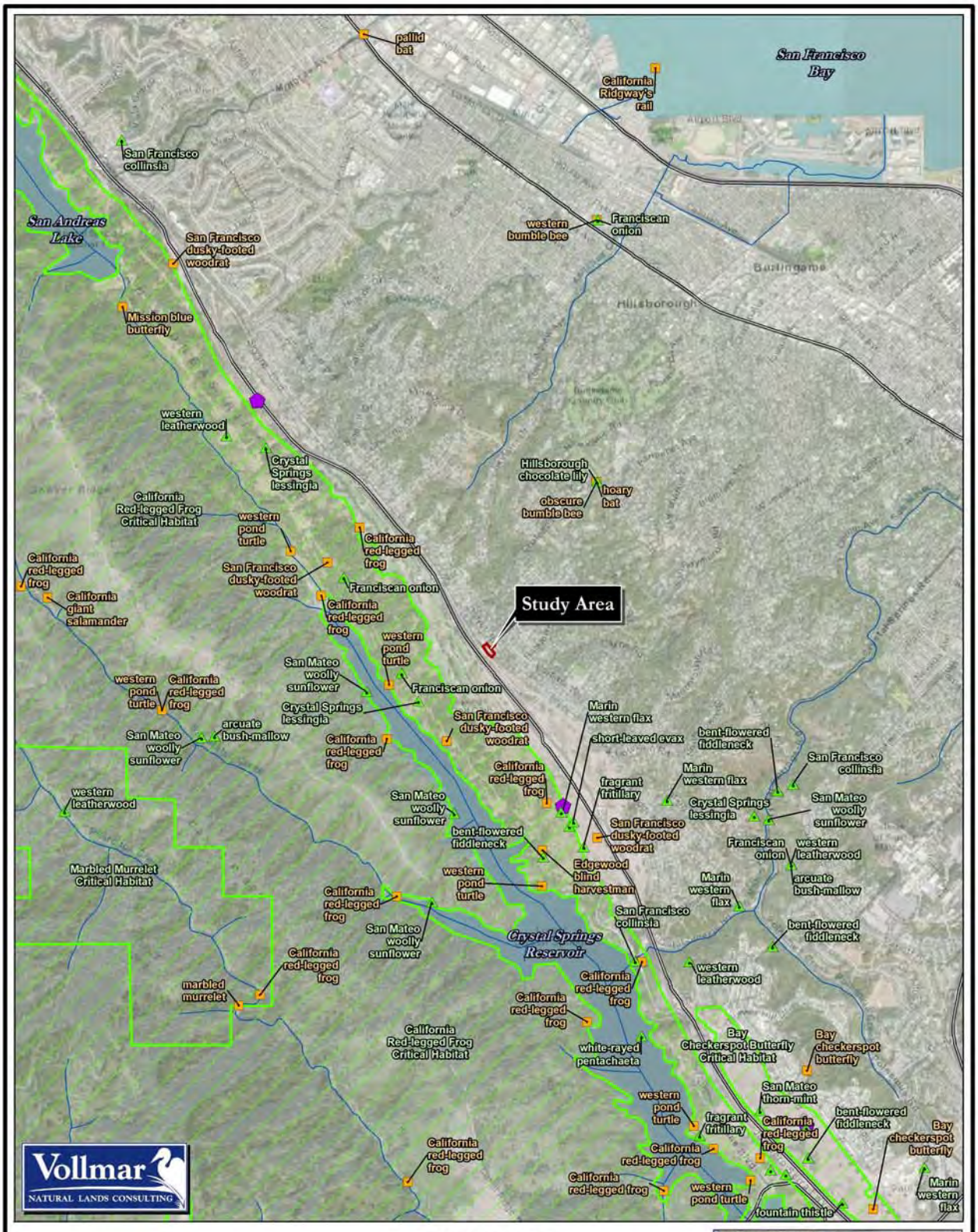
2.1 Preliminary Review

Prior to conducting field surveys, the project ecologists compiled and reviewed existing information pertaining to the study area. Specifically, the ecologists compiled and reviewed the latest version of the California Natural Diversity Database (CNDDB) (CDFW 2020), the California Native Plant Society (CNPS) Inventory of Rare Plants (CNPS 2020), and a U.S. Fish and Wildlife Service (USFWS) Information Planning and Consultation System (IPaC) list (USFWS 2020). The IPaC search is presented in **Appendix D**. A map of CNDDB occurrence locations and designated critical habitat areas was prepared in order to analyze the proximity and habitat conditions of special-status species with respect to the study area location and habitat types. This is presented as **Figure 3** below.

Site aerial imagery, geology and soil maps, project description, and general regional conditions were also reviewed prior to the site survey.

2.2 Targeted Sensitive Biological Resources

Special-status animal species targeted and analyzed in this report include those listed by the USFWS and/or California Department of Fish and Wildlife (CDFW) as threatened or endangered, as well as those proposed for listing or that are candidates for listing as threatened or endangered. The listing of "Endangered, Rare, or Threatened" is defined in Section 15380 of the *California Environmental Quality Act* (*CEQA*) *Guidelines*. Section 15380(b) states that a species of animal or plant is "endangered" when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. A species is "rare" when either "(A) although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or (B) the species is likely to become endangered within the foreseeable future throughout all or a portion of its range and may be considered 'threatened' as that term is used in the Federal Endangered Species Act" (ESA).



Legend

- CNDDB Special-status Plant
- CNDDB Special-status Animal
- CNDDB Community*
- Stream
- Highway or Primary Road
- Designated Critical Habitat

* Occurrences are serpentine bunchgrass

FIGURE 3
Regional Biological Resources

Darrell Water Tank Replacement Project
Hillsborough, San Mateo County, California

N
W E
S

1:31,680
(1 in. = 0.5 mile at tabloid layout)

0 0.5 1 2 Km
0 0.375 0.75 1.5 Miles

Data Sources: I.E. Corp, 2020 | TIGER, 2010
CDFW CNDDB, 07/2020 | NOAA/USFWS, 2018
ESRI, 2019 (air photo), VNLC, 2020
GIS/Cartography by Jake Schweitzer, Aug. 2020
Map File: CNDDB_480_B-L_2020-0927.mxd

Animal species are designated as "Species of Special Concern" or "Fully Protected" by the CDFW. Although these species have no legal status under the California Endangered Species Act (CESA), the CDFW recommends their protection as their populations are generally declining and they could be listed as threatened or endangered (under CESA) in the future. "Fully Protected" species generally may not be taken or possessed at any time. The CDFW may only authorize take for necessary scientific research and may authorize live capture and relocation of "fully protected" birds to protect livestock.

Birds are designated by the USFWS as "Birds of Conservation Concern." Although these species have no legal status under ESA, the USFWS recommends their protection as their populations are generally declining, and they could be listed as threatened or endangered (under ESA) in the future.

Special-status plants include species, sub-species, and varieties that are designated rare, threatened, or endangered as well as candidate species for listing by the USFWS. Special-status plants also include those that are considered rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as plant species identified by the CNPS as California Rare Plant Rank (CRPR) 1A, 1B, and 2 in the Inventory of Rare and Endangered Vascular Plants of California by the CNPS. Finally, special-status plants may include other species that are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included as CRPR List 3 or List 4 in the CNPS Inventory.

For the purposes of this project analysis, 'sensitive plant communities' include those designated as such by state and local governmental agencies. Sensitive plant communities are designated by the CDFW, either in the CNDDB, the list of California Sensitive Natural Communities (CDFW 2020), or as sensitive alliances classified in the Manual of California Vegetation (MCV) (Sawyer et al. 2009, CNPS MCV Online 2020). Alliances included within the MCV that are designated as global or state rank ("G" or "S") 1-3 are considered "rare or threatened" at the global and/or state level, and are therefore considered sensitive. Moreover, the Town of Hillsborough has developed and oversees tree protection and tree removal guidelines for projects taking place within the Town limits. Because the study area is within an incorporated area of San Mateo County, county-level tree protection measures do not apply to the project. Detailed information pertaining to tree impacts and associated minimization and protection measures are provided in a separate arborist report that has been developed for this project.

In addition, wetland and riparian habitats, regardless of MCV status, are considered sensitive. Wetlands, streams, and permanent and intermittent drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) under Section 404 of the Federal Clean Water Act (CWA). The CDFW also generally has jurisdiction over these resources, together with other aquatic features that provide an existing fish and wildlife resource pursuant to Sections 1602-1603 of the California Fish and Game Code. The CDFW asserts jurisdiction to the outer edge of

vegetation associated with a riparian corridor. The Regional Water Quality Control Board (RWQCB) also generally has jurisdiction over streams and wetlands. Any grading, excavation, or filling of jurisdictional drainage corridors or wetlands would require a Section 404 permit and will require mitigation.

2.3 Field Survey

Habitat Assessment Survey

A habitat assessment survey was conducted within the study area on October 7, 2020. The survey was conducted by VNLC Senior Ecologist Jake Schweitzer and VNLC Wildlife Biologist Linnea Neuhaus. During the survey, the ecologists traversed the entire study area on foot and recorded dominant plant species and common animal species, along with general ecological conditions and notable habitat features. The habitat conditions were assessed for potential to support special-status plants and animals. This included a search for habitat elements such as mammal burrow complexes, nesting potential for birds, and sheltering habitat for special-status amphibians and reptiles. Photographs detailing representative site conditions and habitats were also collected from across the study area (**Appendix A**).

The field survey also included a search for potential jurisdictional Waters of the United States and/or the State of California. The reconnaissance-level survey was not followed up with a formal wetland delineation survey because no potentially jurisdictional features occur within the study area. There are no drainages, no springs, seeps, or other hydrographic features.

3.0 EXISTING SITE CONDITIONS

3.1 Overview

The study area is located along a prominent ridge crest where Hillsborough gives way to extensive open space within the northern Santa Cruz Mountains. Elevation within the study area ranges from 716 to 742 above sea level (USGS 1997). The three existing water tanks are situated along leveled terrain at the apex of the study area, and topography dips gently on all sides outward from the tanks. Since the ridge line trends north-south, the slope is greater to the east and west, toward the San Francisco Bay eastward and toward Crystal Springs Reservoir and the San Andreas Faultline westward. At a local scale, topography throughout the area is highly altered, and soils throughout the study area and beyond consist largely of imported materials. While areas to the west feature extensive areas of natural habitats, most vegetation within and immediately surrounding the study area is planted or otherwise highly altered by the influence of altered soils and topography.

3.2 Land Use

The property encompassing the project site is owned by the Town of Hillsborough and managed by its Public Works Department. Within the site, existing infrastructure is limited to the three water tanks, along with associated structures such as utility sheds, pipelines, a driveway, and the

perimeter fencing. A telecommunications tower, disguised as a conifer tree, is located at the southern edge of the study area.

The study area is surrounded by suburban residential housing to the north, east, and south. State Highway 35 (Skyline Boulevard) and Interstate 280 are immediately west of the site. Beyond the highways is the Crystal Springs Golf Course, and beyond that is Crystal Springs Reservoir and its associated watershed lands. The hill slopes surrounding the reservoir are preserved as open space to protect water quality. Natural habitats in the area include conifer forest, oak woodlands, shrublands, and grasslands—including sensitive serpentine grasslands. A majority of the undeveloped watershed lands are designated by the USFWS as critical habitat for endangered species (see **Figure 3**).

3.3 Hydrology

The study area straddles the boundary of two local watersheds (Hydrologic Unit Cataloging [HUC] 12), namely the Colmar Creek Watershed to the east, and the San Mateo Creek Watershed to the west (USGS 2013). Both of these are part of the Frontal San Francisco Bay Estuaries Watershed, as all water in the area ultimately flows toward San Francisco Bay. The drainage nearest to the study area is Sanchez Creek, which is 0.38 mile to the north (see **Figure 3**). At a local level, water flowing east off of the study area likely ends up within Sanchez Creek, while waters flowing west likely end up either in Crystal Spring Reservoir or in San Mateo Creek, the headwaters of which wrap around the hill slope and conduct water to the south and then eastward.

As noted above, no wetlands or other Waters were identified within the study area. There are no drainages, natural or artificial, and no seeps, springs, or ponds. Any surface flow across the site is presumed to be directed underground via a network of storm drains and constructed subsurface channels toward the hydrographic features noted above.

3.4 Climate

The climate in the region is characterized as "Mediterranean," with cool, wet winters and warm, fairly dry summers as well as high inter- and intra-annual variability in precipitation. However, the study area is less than one mile east of the boundary of the Army Corps of Engineer's "Western Mountains, Valleys, and Coast Region," which encompasses the Santa Cruz Mountains just west of Crystal Springs Reservoir. This climate region receives more precipitation and generally features colder winter temperatures than the Arid West region (ACOE 2006). The crest of the Santa Cruz Mountains, located a little over three air miles west of the study area, greatly attenuates the maritime influences of the Pacific Ocean on the study area and surrounding vicinity. The reduced maritime climate is responsible for lower precipitation levels and greater differences in winter versus summer temperatures at the study area relative to the coastal region on the other side of the mountains. According to the Parameter-elevation Regression on Independent Slopes Model (PRISM) climate data model (2020), mean annual precipitation and

temperature at the study area from the timeframe of 1981 to 2010 are 29.6 inches and 57.9 degrees Fahrenheit (F), respectively. Over 98 percent of precipitation in the study area occurs during the "wet season," which extends from October through May. The wettest month of the year is February, which experiences an average of 5.9 inches of precipitation, while the driest month is July, which experiences only 0.05 inch. The coldest month is December, with a mean temperature of 50.2° (F), and the warmest is September, with a mean of 65.5° (F).

The study area experienced lower than average rainfall and warmer than average temperatures during the 2019-2020 wet season (leading up to the timeframe of site survey and assessment). Precipitation from October through May was only 16.4 inches, which is only 56.5 percent of normal (29.05 in.) (ibid). The average temperature during the same timeframe was 56.0°, which is 102 percent of normal (54.7°).

3.5 Soils

The only soil unit mapped throughout the study area is Orthents, Cut and Fill-urban Land Complex. The range of slope included as part of the classification is 5 to 75 percent (USDA-NRCS 2020). As its name and slope range suggest, this soil unit consists largely of imported soils that form a range of artificial landscapes. The soil often takes the form of constructed platforms, road berms, and other earthen infrastructure. The unit is noted as being derived from a mix of sedimentary parent materials that are relatively well drained. Information related to surface texture and pH are not provided for the unit. Within the study area, the water tanks are constructed on leveled hill tops and are surrounded by compacted soils with a partial gravel surface. Soils further away from the water tanks, but still within the study area, appeared to be a gravelly loam, often with a dense layer of pine needles, as well as tree leaves and bark.

It is worth noting that serpentine soils are mapped in the vicinity of the study area. Serpentine soils are derived from serpentinite, a rock derived from deep within the earth that features high levels of heavy metal materials, such as iron, nickel, and magnesium, and low levels of nutrients. Serpentine soils tend to support high percentages of plants that are specially adapted to its unique chemistry, and many of these plants are rare and endangered. However, there are no serpentine soils within the study area. As discussed below, rather than being indicative of unique substrates, the plant species observed within the study area were either planted or are generally reflective of unspecialized soils and of disturbed habitat conditions.

3.6 Botanical Resources

Botanical resources within the study area are primarily composed of exotic plant species, none of which are classified as special-status or form sensitive plant communities. There are a notable number of trees, forming a nearly contiguous canopy surrounding the water tanks (**Figure 4**). Many of the trees are large and mature, but all of them appear to have been planted, and most of them are species that are not native to California or to the study area. The most common tree species in the study area include Tasmanian blue gum (*Eucalyptus globulus*), Monterey pine

FIGURE 4
Local Site Map

Darrell Water Tank Replacement Project
Hillsborough, San Mateo County, California

Legend

- Soil Unit Boundary (see map labels)
- Study Area Boundary

N
W E
S

1:1,800
(1 in. = 150 ft. at tabloid layout)

0 75 150 300 Feet

0 37.5 75 150 Meters

Data Sources: VNLC, 2020 | I.E. Corp, 2020
USDA SSURGO | ESRI Globe (air photo), 2019
GIS/Cartography by Jake Schweitzer, Sept. 2020
Map File: Site_480_B-L_2020-0927.mxd

(*Pinus radiata*), blackwood acacia (*Acacia melanoxylon*), and coast live oak (*Quercus agrifolia*). Of these, only coast live oak is native to both California and to the study area. This species may have been planted, or the onsite population may be descended from a historical population. In any case, it continues to reproduce on the site. Monterey pine is native to California, but not to the study area, and is in fact considered to be invasive in San Mateo County. Both Tasmanian blue gum and blackwood acacia are considered to be invasive by the California Invasive Plant Council (Cal-IPC). The shrub/vine and herb strata below the tree canopy likewise consist of primarily exotic species, but with a few native species scattered throughout the study area. Shrubs and vines occurring throughout the site include the highly invasive French broom (*Genista monspessulana*) and English ivy (*Hedera helix*). The only native species observed within this stratum is toyon (*Heteromeles arbutifolia*). Most of the herb species observed are introduced annual species, with common species consisting of slender wild oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), dogtail grass (*Cynosurus echinatus*), rough cats-ear (*Hypochaeris radicata*), and Italian thistle (*Carduus pycnocephalus*). Perennial species observed include the invasive smilo grass (*Stipa miliacea*) as well as the native blue wild rye (*Elymus glaucus*). Portions of the site are devoid of such grasses and forbs, especially around the tanks (where vegetation is likely more intensively managed) and under the Monterey pines, where accumulated pine needles reduce the growth of other plants.

Representative photographs of vegetation cover and habitat conditions throughout the study area are included in **Appendix A**. **Table B-1, Appendix B** presents a list of all special-status plants documented in the vicinity of the study area. The table includes a column that indicates the potential for each taxon to occur within the study area, based on habitat preferences and existing condition on the site.

4.0 SPECIAL-STATUS SPECIES

This section provides background information and lists recommended avoidance and/or minimization measures to reduce the potential for the project to impact special-status species and sensitive habitats within the study area. Only special-status species with the greatest potential to occur within the study area are addressed.

In addition to avoidance measures listed, all construction personnel involved in the project shall attend environmental awareness training prior to the commencement of potential project disturbance activities. The training shall be conducted by a qualified biologist and shall involve the presentation of sensitive species and habitats documented or potentially occurring in the study area. The training shall include handouts that describe each resource with respect to listing status, habitat preferences, distinguishing physical characteristics, causes of its decline, and potential protection and avoidance measures. Information shall be documented within a paper handout to be distributed among construction personnel, and shall include photographs of the resources in order to facilitate identification by the personnel.

Figure 5 shows the distribution of special-status animal and plant species that are documented in the vicinity of the study area. These and other special-status species known from the project region are listed in **Appendix B**, along with their regulatory status, habitat requirements, and an evaluation of their potential to occur in the study area.

Based on the habitat requirements of these species, four special-status species have potential to occur in the study area. These are California red-legged frog (CRF) (*Rana draytonii*). white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), and hoary bat (*Lasiurus cinereus*), as well as multiple birds protected by the Migratory Bird Treaty Act (MBTA). It is recommended that all project work occur at a time during which impacts to nesting birds species would be negligible (i.e., September 2 to February 28). This is also outside of the bat maternity roosting season, but a bat biologist should be consulted to minimize disturbance to bats.

4.1 Listed Species

5.1.1 Designated Critical Habitat

As shown on **Figure 3**, the study area is not within any designated critical habitat for endangered species. However, extensive areas less than one-half a mile west of the study area are mapped as critical habitat for the federally threatened California red-legged frog. Also in the vicinity of the study area, there is designated critical habitat for the federally threatened marbled murrelet (*Brachyramphus marmoratus*) and Bay checkerspot butterfly (*Euphydryas editha bayensis*). There is no suitable habitat for these species within the study area. There is a remote potential for CRF to traverse the area, but the site is separated from breeding habitat and more optimal upland habitat by two major thoroughfares and associated minor barriers (e.g., curbs, steep slopes, fencing). Life history and habitat information for CRF and the other species is provided below, along with recommended avoidance and minimization measures to protect the species.

5.1.2 California Red-legged Frog

California red-legged frog (*Rana draytonii,* CRF), is a federally Threatened species. The species occurs from sea level to elevations of approximately 5,200 feet (1,500 meters). Breeding occurs in streams, deep pools, backwaters within streams and creeks, ponds, marshes, sag ponds, dune ponds, lagoons, and stock ponds. Breeding adults are often associated with deep (greater than 2 feet [0.7 meter]) still or slow-moving water and dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988), but frogs have been observed in shallow sections of streams and ponds that are devoid of vegetative cover. The species is known to rest and feed within riparian vegetation and it is believed that the moisture and cover of the riparian zone provides foraging habitat and facilitates dispersal. The species has also been documented dispersing through areas with sparse vegetative cover and dispersal patterns are considered to be dependent on habitat availability and environmental conditions (N. Scott and G. Rathbun *in lit.* 1998).

Although the site itself does not provide suitable habitat for CRF, transient individuals could disperse from aquatic habitat areas in the vicinity of the study area and move through the site.

Potential Project Impacts

In the unlikely event that CRF are present on the site at the time of project-related disturbances, activities could cause injury or mortality of individual frogs. CRF could also become trapped in erosion control material or open excavations. To mitigate impacts on individual CRF, the following avoidance and mitigation measures are recommended.

Recommended Avoidance and Mitigation Measures

Measure 1: No more than twenty-four (24) hours prior to the date of initial ground disturbance, a pre-construction survey for California red-legged frog shall be conducted by a qualified biologist at the project site.

The survey shall consist of walking the project limits and within the project site to ascertain the possible presence of California red-legged frog. The designated biologist shall investigate all potential areas that could be used by the species for feeding, sheltering, movement, and other essential behaviors. This includes an adequate examination of any mammal burrows, such as those of California ground squirrels or pocket gophers. If any California red-legged frogs are found, the designated biologist shall follow the procedures specified in Measure 7.

Measure 2: Temporary exclusion fencing shall be installed around the limits of work areas and access routes to ensure special-status amphibians, reptiles, and mammals cannot enter the work area. Installation of exclusion fencing shall occur under the supervision of a designated biologist and immediately following a clearance survey of the area. The exclusion fencing shall have a minimum aboveground height of 30 inches, and the bottom of the fence should be keyed in at least 4 inches deep and backfilled with soil to prevent wildlife from passing under the fencing. Exclusion fencing shall be installed to prevent species entry into active work areas and to mark the limits of construction disturbance at equipment staging areas, site access routes, construction equipment and personnel parking areas, debris storage areas, and any other areas that may be disturbed.

Measure 3: Initial ground-disturbing activities shall be avoided between November 1 and March 31 to avoid the time period when California red-legged frogs are most likely to be moving through the project area.

Measure 4: To the maximum extent practicable, no construction activities shall occur during rain events or within 24-hours following a rain event. Prior to construction activities resuming, a designated biologist will inspect the project area and all equipment/materials for the presence of California red-legged frogs.

Measure 5: Plastic monofilament netting (erosion control matting), loosely woven netting, or similar material in any form shall not be used at the project site because

California red-legged frogs can become entangled and trapped in them. Any such material found on-site shall be immediately removed by the construction personnel or EBMUD. Materials utilizing fixed weaves (strands cannot move), polypropylene, polymer, or other synthetic materials shall not be used.

Measure 6: Uneaten human food and other refuse attracts crows, ravens, coyotes, raccoons, and other predators of the California red-legged frog and other wildlife. A litter control program shall be instituted at the project site. All workers shall ensure their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed garbage containers. The garbage containers shall be removed from the project site at the end of each working day.

Measure 7: Each encounter with the California red-legged frog will be treated on a case-by-case basis in coordination with the USFWS, but the general procedure is as follows: (1) the animal will not be disturbed if it is not in danger; or (2) the animal will be moved to a secure location if it is in any danger. These procedures are further described below:

- When a California red-legged frog is encountered in the project area, all activities which have the potential to result in the harassment, injury, or death of the individual shall be immediately halted. The designated biologist will then assess the situation in order to select a course of action that will avoid or minimize adverse effects to the animal. To the maximum extent possible, contact with the animal will be avoided and the applicant will allow it to move out of the potentially hazardous situation to a secure location on its own volition. This procedure applies to situations where a California red-legged frog is encountered while it is moving to another location and is actively dispersing. It does not apply to animals that are uncovered or otherwise exposed or in areas where the individual is not expected to move on its own and may be in danger (e.g., within the fenced construction perimeter).

- California red-legged frogs that are in danger (e.g. animals that are uncovered or otherwise exposed or in areas within the fences construction perimeter where the individual is not expected to move on its own) shall be relocated and released by the designated biologist outside the construction area within the same habitat. Prior to the initial ground disturbance, the designated biologist will obtain approval of the relocation protocol from the USFWS and CDFW in the event that a California red-legged frog is encountered and needs to be moved away from the project site. California red-legged frog shall be released in appropriate habitat nearby on the EBMUD watershed. The designated

biologist will limit the duration of the handling and captivity of the California red-legged frog to the minimum amount of time necessary to complete the task. The applicant will immediately notify the USFWS and CDFW once the California red-legged frog is relocated and the site is secure.

5.1.3 Listed Plants

Table B-2, Appendix B lists listed plant taxa known from the vicinity of the study area, as compiled from a CNPS 9-quadrangle search. Many of these are mapped on **Figure 3**. There is no habitat with potential to support any of the listed plant species within the study area. The soils consist largely of artificial fill soils and habitats are generally disturbed and dominated by exotic plants, including many invasive weed species.

4.2 Non-listed Special-Status Animal species

Three special-status species that are not federally or state listed are documented from the vicinity of the study area, and have some potential to be impacted by project related activities. These are white-tailed kite (*Elanus leucurus*), pallid bat (*Antrozous pallidus*), and hoary bat (*Lasiurus cinereus*). While none of these species are State or federally listed as endangered or threatened, their designation as special-status species by CDFW warrants consideration, and avoidance and minimization measures are recommended.

5.2.1 White-tailed Kite

White-tailed kite is classified as CDFW Fully Protected. In California, white-tailed kites rely on populations of California voles (*Microtus californicus*), with habitat quality largely dependent on abundance and availability of California voles (Niemela 2007). Alfalfa, hay, and irrigated pasture agricultural areas are preferred foraging grounds, with lightly grazed or un-grazed fields generally supporting larger prey populations. Wetlands or marshes, where California voles tend to be more abundant, are also important habitats (Dudek 2012). The study area provides suitable foraging and nesting habitat for white-tailed kite. The following avoidance measure would mitigate potential project impacts to white-tailed kite.

Recommended Avoidance Measure

Measure 8: If construction activities would commence anytime during the nesting/breeding season of white-tailed kite and other native bird species potentially nesting in the study area (typically February through August in the project region), a pre-construction survey for nesting birds should be conducted by a qualified biologist within two weeks of the commencement of construction activities.

If active nests are found in areas that could be directly affected or are within 500 feet of construction and would be subject to prolonged construction-related noise, a no-disturbance buffer zone should be created around active nests during

the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zone and types of construction activities restricted within it should be determined through coordination with the CDFW, taking into account factors such as the following:

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- Distance and amount of vegetation or other screening between the construction site and the nest; and
- Sensitivity of individual nesting species and behaviors of the nesting birds.

5.2.2 Pallid Bat and Hoary Bat

Pallid bat is a California Species of Special Concern, and is listed as "high" priority by the Western Bat Working Group (WBWG). Hoary bat is listed by the WBWG as "medium" priority. Pallid bats occupy a wide variety of habitats including grasslands, shrublands, woodlands, and forests, and use dry, rocky areas for roosting (Harris 1988b). Hoary bats are found in most places in California, preferring habitats with access to dense foliage of trees for roosting and open areas for feeding (Harris 1988a). These bat species could roost in trees or structures within or adjacent to the study area that have suitable cavities, crevices, and exfoliating bark and/or bark fissures.

Recommended Avoidance Measures

Measure 9: If construction commences between March 1 and July 31, during the bat maternity period, an agency-approved biologist will conduct a preconstruction survey for roosting bats within 2 weeks prior to construction to ensure that no roosting bats will be disturbed during construction.

If roosting surveys indicate potential occupation by a special-status bat species, and/or identify a large day roosting population or maternity roost by any bat species within 200 feet of the construction work area, a qualified biologist will conduct focused day- and/or night-emergence surveys, as appropriate.

If active maternity roosts or day roosts are found within 200 feet of the project site, or in areas subject to disturbance from construction activities, avoidance buffers shall be constructed. The buffer size will be determined by EBMUD in consultation with CDFW.

If preconstruction surveys indicate that no roosting is present, or potential roosting habitat is unoccupied during the construction period, no further action is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by roosting bats or that are located outside the avoidance buffer for active roosting sites may be removed. Roosting initiated during construction is presumed to be unaffected, and no buffer would be necessary.

4.3 Migratory and Nesting Birds

The Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503) prohibit the take of migratory birds as well as disturbance to the active nests of most native birds. The trees and scrub in the study area could support nests of multiple migratory bird species, including raptors and birds with state and federal listing status. Tree or vegetation removal could result in direct loss of birds protected by the MBTA. Additionally, construction-related noise could result in the abandonment of an active nest in trees adjacent to the study area, including potential nests of special-status bird species.

Recommended Avoidance Measure

See Measure 8, Nesting Bird Survey.

4.4 Non-listed Special-Status Plant Species

Table B-2, Appendix B lists CRPR-designated plant taxa known from the vicinity of the study area, as compiled from a CNPS 9-quadrangle search. Many of these are mapped on **Figure 3**. There is no habitat with potential to support any of the included CRPR plant species within the study area. The soils consist largely of artificial fill soils and habitats are generally disturbed and dominated by exotics, including many invasive weed species.

There are a total of 76 trees mapped within the study area (Levison 2021). The surveyed trees include only those with a diameter of breast height (DBH) of at least four inches. While not considered sensitive at the taxonomic level, trees with a DBH of 12 inches or greater are protected by the Town of Hillsborough. Of the 76 mapped trees, 60 have a DBH of at least 12 inches. These are listed in **Appendix D**, which is the data table from the project Arborist Report (Levison 2021).

Recommended Avoidance Measure

Measure 10. To the extent practical, trees with a DBH of 12 inches or greater should be avoided. All such trees not slated for removal should be demarcated with brightly-colored or similar fencing as outlined in the Arborist Report for the project (Levison 2021). The Arborist Report also provides protection and mitigation measures for the project, and should be referenced for all project planning in relation to disturbance activities.

4.5 Sensitive Plant Communities

There are no sensitive plant communities within the study area. Vegetation consists of planted, mostly exotic trees and an understory of exotic or commonly occurring native shrubs and herbs, including numerous species classified as invasive by the Cal-IPC. There no potentially jurisdictional Waters of the United States of State of California.

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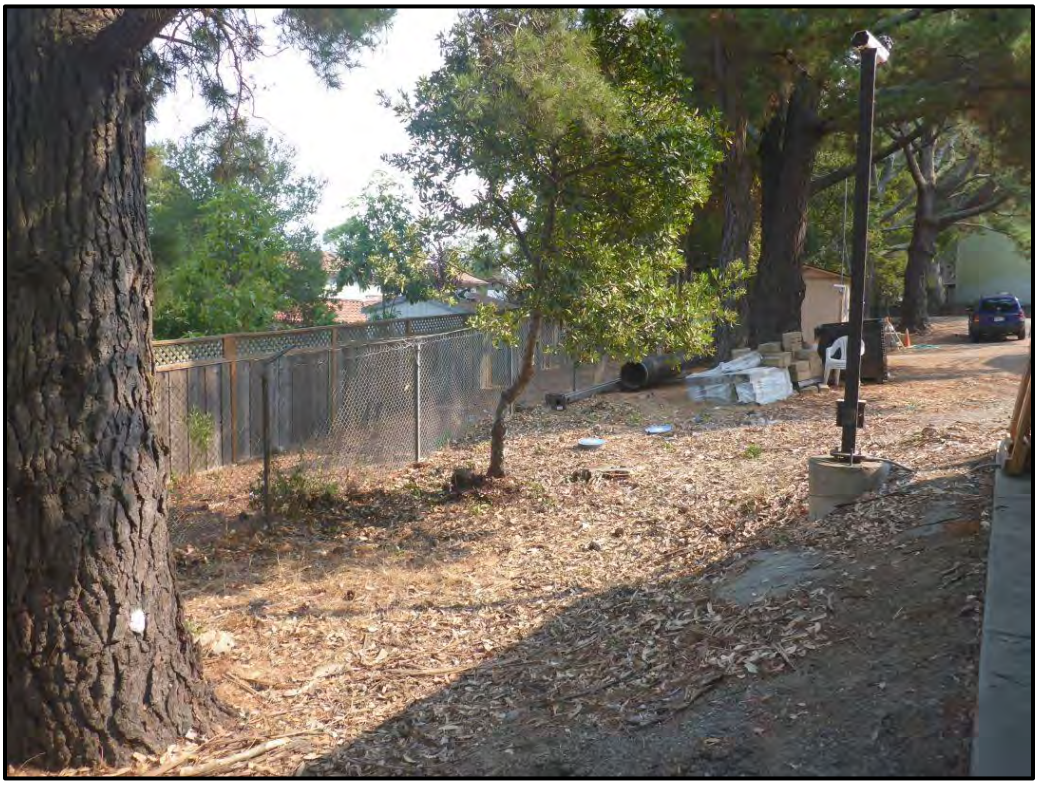
APPENDIX A:
REPRESENTATIVE PHOTOGRAPHS OF THE STUDY AREA

(Recorded October 7, 2020)

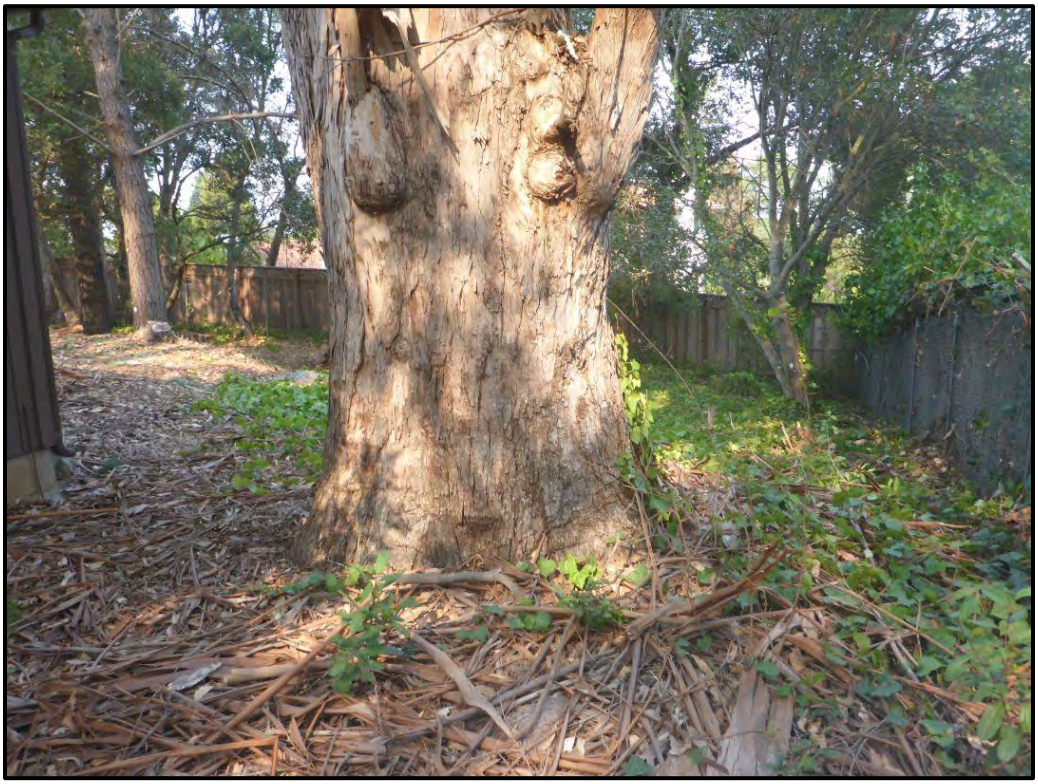
Representative Photographs of the Study Area

Stand of Tasmanian blue gum, northern portion of the study area
Facing West



Monterey pine trees and toyon shrub, eastern portion of the study area
Facing Southeast

Representative Photographs of the Study Area



Tasmanian blue gum with English ivy and dense bark and leaf debris
Southeastern corner of the Study Area. Facing northeast

View of water tanks, chain link fencing, and weedy understory
Vegetation from outside the study area. Facing north

Representative Photographs of the Study Area

View of representative infrastructure and compacted soils with gravel and pine needles at surface. Center of study area, facing north

Crevice in tree with potential to support tree-roosting bat species Northern portion of the study area

APPENDIX B:
SPECIAL-STATUS SPECIES TABLES

Table B-1. Special-status Animals Documented in the Vicinity of the Study area

Note: Shaded rows indicate species with potential to occur within the study area

Common Name Scientific Name	Rarity Status[1]	Preferred Habitat	Potential for Occurrence within the Study area
Birds			
great blue heron (rookery) *Ardea herodias*	CDF: S	Nests in large stands of trees near water	**Not expected.** No rookeries documented in the area.
short-eared owl *Asio flammeus*	SSC	Large, open areas with low vegetation, including prairie and coastal grasslands, heathlands, meadows, shrubsteppe, savanna, tundra, marshes, dunes, and agricultural areas.	**Not expected.** No suitable habitat is present within the study area (grasslands are limited)
marbled murrelet *Brachyramphus marmoratus*	FT, SE, CDF:S	Nests in mature, coastal coniferous forests, often in redwoods or Douglas fir trees, and feed in nearby coastal waters	**Not expected.** No suitable habitat is present within the study area.
western snowy plover *Charadrius alexandrinus nivosus*	FT, SSC, USFWS:BCC	Coastal beaches, sand spits, dune-backed beaches, sparsely vegetated dunes, beaches at creek and river mouths, and salt pans at lagoons and estuaries.	**Not expected.** No suitable habitat is present within the study area.
northern harrier *Circus cyaneus*	SSC	Nests on ground in swales and low-lying grasslands.	**Not expected**. Marginal nesting habitat given the lack of large open foraging habitat.
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	FT, SE, BLM:S. USFS:S, USFWS:BCC	Nests in riparian habitat.	**Not expected.** No suitable habitat is present within the study area.
yellow rail *Coturnicops noveboracensis*	SSC, USFS:S, USFWS BCC	Densely vegetated coastal tidal marshes, seasonally flooded wetlands, and wet meadows.	**Not expected.** No suitable habitat is present within the study area.
white-tailed kite *Elanus leucurus*	FP	Typically nests in trees surrounded by open foraging habitat.	**Potential.** Suitable habitat is present within the study area (though foraging habitat is limited).
Alameda song sparrow *Melospiza melodia pusillula*	SSC, USFWS:BCC	Tidal salt marsh.	**Not expected.** No suitable habitat is present within the study area.
double-crested cormorant *Phalacrocorax auritus*	WL	Large aquatic bodies big enough to support fish diet. May roost and form breeding colonies on smaller lagoons or ponds, and then fly up to 40 miles to a feeding area. Need perching areas for resting each day.	**Not expected.** No suitable habitat is present within the study area.
short-tailed albatross *Phoebastria albatrus*	FE, SSC	The short-tailed albatross lives on the open ocean waters and islands.	**Not expected.** No suitable habitat is present within the study area.

California Ridgway's rail *Rallus obsoletus obsoletus*	FE, SE, FP-	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**Not expected.** No suitable habitat is present within the study area.
California least tern *Sternula antillarum browni*	FE, SE, FP	Open beaches.	**Not expected.** No suitable habitat is present within the study area.
Amphibians			
California tiger salamander *Ambystoma californiense*	FT, ST, WL	Grasslands and low foothills, with vernal pools for breeding.	**Not expected.** No suitable habitat is present within the study area.
California giant salamander *Dicamptodon ensatus*	SSC	Found in damp coastal forests (Douglas fir, redwood, red fir), often in montane or valley-foothill riparian habitats. Adults may be found between rocks in streambeds or in tunnels underground.	**Not expected.** No suitable habitat is present within the study area.
Foothill yellow-legged frog *Rana boylii*	SC	Foothill woodlands and chaparral near streams and ponds, riparian woodlands, wet meadows, also inhabits mixed conifer forest streams, slow streams and rivers with sunny, sandy and rocky or gravelly banks at 6,000 ft. and below in elevation.	**Not expected.** No suitable habitat is present within the study area.
California red-legged frog *Rana draytonii*	FT, SSC	Quiet pools of freshwater streams, and occasionally ponds.	**Low Potential.** No suitable habitat is present within the study area. However, there is a low possibility of transient individual frogs moving through the site, due to the proximity to known occurrences in Crystal Springs Reservoir (0.5-mile from study area) and designated critical habitat (0.3-mile from study area).
Fish			
Tidewater goby *Eucyclogobius newberryi*	FE, SC	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels. Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters, and South coast flowing waters.	**Not expected.** No suitable habitat is present within the study area.

Delta smelt *Hypomesus transpacificus*	FT	Streams, rivers, estuaries.	**Not expected.** No suitable habitat is present within the study area.
central California coast steelhead *Oncorhynchus mykiss irideus*	FT	Anadromous, migrates through San Francisco Bay spawns in coastal rivers and streams.	**Not expected.** No suitable habitat is present within the study area.
Insects			
western bumble bee *Bombus occidentalis*	SC, USFS:S	Found in open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows.	**Not expected.** No suitable habitat is present within the study area.
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE	Rocky outcrops and cliffs in coastal scrub, host plant is broadleaf stonecrop.	**Not expected.** No suitable habitat is present within the study area.
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT	Native grasslands on shallow, serpentine-derived soil, larvae on *Plantago erecta* and *Castilleja densiflora.*	**Not expected.** No suitable habitat is present within the study area.
Mission blue butterfly *Icaria icarioides missionensis*	FE	Inhabits coastal prairie/ grasslands of the San Francisco peninsula. Three larval host plants: *Lupinus albifrons, L. variicolor*, and *L. formosus*, of which *L. albifrons* is favored.	**Not expected.** No suitable habitat is present within the study area. None of the species' host plants are present.
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	FE	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Larval foodplant thought to be *Viola adunca*.	**Potential.** Suitable habitat is present within the study area.
Mammals			
pallid bat *Antrozous pallidus*	SSC, BLM:S, USFS:S	Forages in a variety of habitats. Roosts in rocky outcrops, buildings, and hollow trees.	**Potential.** Suitable habitat is present within the study area.
Townsend's big-eared bat *Corynorhinus townsendii*	SSC, USFS:S, BLM:S	Prefers mesic habitats, maternity roosts in caves, tunnels, mines and buildings.	**Not expected.** No suitable habitat is present within the study area.
Santa Cruz kangaroo rat *Dipodomys venustus venustus*	No listing	Found in open chaparral habitat in the low foothills of the Santa Cruz Mountains, burrows often found in open, abandoned agricultural land.	**Not expected.** No suitable habitat is present within the study area.
southern sea otter *Enhydra lutris nereis*	FE, SSC, FP	Inhabits coastal waters with rocky or soft sediment ocean bottom. Live in offshore forests of giant kelp and spend most of their active time foraging below the canopy	**Not expected.** No suitable habitat is present within the study area.
hoary bat *Lasiurus cinereus*	WBWG Medium Priority	Open habitats or mosaics of open habitats with interspersed trees. Roosts in medium to large trees with dense foliage.	**Potential.** Suitable habitat is present within the study area.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	SSC	Habitat includes riparian areas, oak woodlands, and scrub	**Not expected.** Marginal suitable habitat is present within the study area. Not observed within the study area.

American badger *Taxidea taxus*	SSC	Most abundant in drier, open stages of shrub, forest, and herbaceous habitats with friable soils where they can dig burrows.	**Not expected.** No suitable habitat is present within the study area.
salt marsh harvest mouse *Reithrodontomys raviventris*	FE	Saline emergent wetlands dominated by pickleweed	**Not expected.** No suitable habitat is present within the study area.
Reptiles			
western pond turtle *Actinemys pallida*	SSC	Perennial ponds, deep slow moving streams, marshes and lakes at elevations 6,000 ft. and below. Logs, rocks, cattail mats, and exposed banks are required for basking. Eggs are laid in loose soil on land in woodlands, forests, and grasslands, usually within 400 ft. of aquatic habitat.	**Not expected.** No suitable habitat is present within the study area.
green sea turtle *Chelonia mydas*	FT	Often found in open ocean, return to beaches to breed.	**Not expected.** No suitable habitat is present within the study area.
San Francisco Garter Snake *Thamnophis sirtalis tetrataenia*	FE, SE, FP	Found in holes or crevices such as burrows, fissures in rocky accumulations, or under logs, often near bodies of water. Feeds on land or near pools or other water bodies.	**Not expected.** No suitable habitat is present with the study area, and there are no documented occurrences in vicinity of study area.

1. Rarity Status Codes and Acronyms:

FT –Federal Threatened; FE – Federal Endangered; ST – State Threatened; SE - State Endangered; SC- State Candidate; SSC – CDFW Species Special Concern; SA- CDFW Special Animal List; CDF S – California Department of Forestry and Fire Protection Sensitive; FP – CDFW Fully Protected; WL – CDFW Watch List; BLM: S -Bureau of Land Management: Sensitive; USFS: S - United States Forestry Service; USFWS: BCC - United States Fish and Wildlife Service: Birds of Conservation Concern ; NMFS: SC - National Marine Fisheries Service: Species of Concern; IUCN – International Union for Conservation of Nature; WBWG – Western Bat Working Group

TABLE B-2. Special-status Plant Taxa Documented in the Vicinity of the Darrell Water Tank Replacement Project.

Scientific Name, Common Name, Family	Lifeform	Rarity Status[1]	Preferred Habitat, Elevation Range, and Blooming Period[2]	Potential for Occurrences within the Project Site[3]
Acanthomintha (*obovata*) *duttonii* San Mateo thorn-mint (Lamiaceae)	annual herb	1B.1,CE,FE	Chaparral, Valley and foothill grassland; serpentinite 160-985 feet; Apr-Jun	**Not expected.** No suitable habitat is present within the study area.
Allium peninsulare var. *franciscanum* Franciscan onion (Alliaceae)	perennial bulbiferous herb	1B.2,-,-	Cismontane woodland, Valley and foothill grassland; clay, volcanic, often serpentinite 170-1000 feet; (Apr)May-Jun	**Not expected.** No suitable habitat is present within the study area.
Amsinckia lunaris bent-flowered fiddleneck (Boraginaceae)	annual herb	1B.2,-,-	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland; 5-1640 feet; Mar-Jun	**Not expected.** No suitable habitat is present within the study area.
Androsace elongata ssp. *acuta* California androsace (Primulaceae)	annual herb	4.2,-,-	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland; 490-4280 feet; Mar-Jun	**Not expected.** No suitable habitat is present within the study area.
Arctostaphylos andersonii Anderson's manzanita (Ericaceae)	perennial evergreen shrub	1B.2,-,-	Broadleafed upland forest, Chaparral, North Coast coniferous forest; openings, edges 195-2495 feet; Nov-May	**Not expected.** No suitable habitat is present within the study area.
Arctostaphylos montaraensis Montara manzanita (Ericaceae)	perennial evergreen shrub	1B.2,-,-	Chaparral (maritime), Coastal scrub; 260-1640 feet; Jan-Mar	**Not expected.** No suitable habitat is present within the study area.
Arctostaphylos regismontana Kings Mountain manzanita (Ericaceae)	perennial evergreen shrub	1B.2,-,-	Broadleafed upland forest, Chaparral, North Coast coniferous forest; granitic or sandstone 1000-2395 feet; Dec-Apr	**Not expected.** No suitable habitat is present within the study area.
Astragalus pycnostachyus var. *pycnostachyus* coastal marsh milk-vetch (Fabaceae)	perennial herb	1B.2,-,-	Coastal dunes (mesic), Coastal scrub, Marshes and swamps (coastal salt, streamsides); 0-100 feet; (Apr)Jun-Oct	**Not expected.** No suitable habitat is present within the study area.
Calandrinia breweri Brewer's calandrinia (Montiaceae)	annual herb	4.2,-,-	Chaparral, Coastal scrub; sandy or loamy, disturbed sites and burns 30-4005 feet; (Jan)Mar-Jun	**Not expected.** No suitable habitat is present within the study area.
Calochortus umbellatus Oakland star-tulip (Liliaceae)	perennial bulbiferous herb	4.2,-,-	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland; often serpentinite 325-2295 feet; Mar-May	**Not expected.** No suitable habitat is present within the study area.
Castilleja ambigua var. *ambigua* johnny-nip (Orobanchaceae)	annual herb (hemiparasitic)	4.2,-,-	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pools margins; 0-1425 feet; Mar-Aug	**Not expected.** No suitable habitat is present within the study area.
Centromadia parryi ssp. *congdonii* Congdon's tarplant (Asteraceae)	annual herb	1B.1,-,-	Valley and foothill grassland (alkaline); 0-755 feet; May-Oct(Nov)	**Not expected.** No suitable habitat is present within the study area.

Scientific Name, Common Name, Family	Lifeform	Rarity Status[1]	Preferred Habitat, Elevation Range, and Blooming Period[2]	Potential for Occurrences within the Project Site[3]
Chloropyron maritimum ssp. *palustre* Point Reyes bird's-beak (Orobanchaceae)	annual herb (hemiparasitic)	1B.2,-,-	Marshes and swamps (coastal salt); 0-35 feet; Jun-Oct	**Not expected.** No suitable habitat is present within the study area.
Chorizanthe cuspidata var. *cuspidata* San Francisco Bay spineflower (Polygonaceae)	annual herb	1B.2,-,-	Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub; sandy 5-705 feet; Apr-Jul(Aug)	**Not expected.** No suitable habitat is present within the study area.
Cirsium fontinale var. *fontinale* Crystal Springs fountain thistle (Asteraceae)	perennial herb	1B.1,CE,FE	Chaparral (openings), Cismontane woodland, Meadows and seeps, Valley and foothill grassland; Serpentinite seeps 145-575 feet; (Apr)May-Oct	**Not expected.** No suitable habitat is present within the study area.
Collinsia multicolor San Francisco collinsia (Plantaginaceae)	annual herb	1B.2,-,-	Closed-cone coniferous forest, Coastal scrub; sometimes serpentinite 95-820 feet; (Feb)Mar-May	**Not expected.** No suitable habitat is present within the study area.
Cypripedium fasciculatum clustered lady's-slipper (Orchidaceae)	perennial rhizomatous herb	4.2,-,-	Lower montane coniferous forest, North Coast coniferous forest; usually serpentinite seeps and streambanks 325-7990 feet; Mar-Aug	**Not expected.** No suitable habitat is present within the study area.
Dirca occidentalis western leatherwood (Thymelaeaceae)	perennial deciduous shrub	1B.2,-,-	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Riparian forest, Riparian woodland; mesic 80-1395 feet; Jan-Mar(Apr)	**Not expected.** No suitable habitat is present within the study area.
Elymus californicus California bottle-brush grass (Poaceae)	perennial herb	4.3,-,-	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest, Riparian woodland; 45-1540 feet; May-Aug(Nov)	**Not expected.** No suitable habitat is present within the study area.
Eriophyllum latilobum San Mateo woolly sunflower (Asteraceae)	perennial herb	1B.1,CE,FE	Cismontane woodland (often serpentinite, on roadcuts), Coastal scrub, Lower montane coniferous forest; 145-1085 feet; May-Jun	**Not expected.** No suitable habitat is present within the study area.
Eryngium jepsonii Jepson's coyote thistle (Apiaceae)	perennial herb	1B.2,-,-	Valley and foothill grassland, Vernal pools; clay 5-985 feet; Apr-Aug	**Not expected.** No suitable habitat is present within the study area.
Erysimum franciscanum San Francisco wallflower (Brassicaceae)	perennial herb	4.2,-,-	Chaparral, Coastal dunes, Coastal scrub, Valley and foothill grassland; often serpentinite or granitic, sometimes roadsides 0-1805 feet; Mar-Jun	**Not expected.** No suitable habitat is present within the study area.
Fritillaria biflora var. *ineziana* Hillsborough chocolate lily (Liliaceae)	perennial bulbiferous herb	1B.1,-,-	Cismontane woodland, Valley and foothill grassland; serpentinite 490-490 feet; Mar-Apr	**Not expected.** No suitable habitat is present within the study area.
Fritillaria liliacea fragrant fritillary (Liliaceae)	perennial bulbiferous herb	1B.2,-,-	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland; Often serpentinite 5-1345 feet; Feb-Apr	**Not expected.** No suitable habitat is present within the study area.
Hesperevax sparsiflora var. *brevifolia* short-leaved evax (Asteraceae)	annual herb	1B.2,-,-	Coastal bluff scrub (sandy), Coastal dunes, Coastal prairie; 0-705 feet; Mar-Jun	**Not expected.** No suitable habitat is present within the study area.

Scientific Name, Common Name, Family	Lifeform	Rarity Status[1]	Preferred Habitat, Elevation Range, and Blooming Period[2]	Potential for Occurrences within the Project Site[3]
Hesperolinon congestum Marin western flax (Linaceae)	annual herb	1B.1,CT,FT	Chaparral, Valley and foothill grassland; serpentinite 15-1215 feet; Apr-Jul	**Not expected.** No suitable habitat is present within the study area.
Leptosiphon ambiguus serpentine leptosiphon (Polemoniaceae)	annual herb	4.2,-,-	Cismontane woodland, Coastal scrub, Valley and foothill grassland; usually serpentinite 390-3705 feet; Mar-Jun	**Not expected.** No suitable habitat is present within the study area.
Lessingia arachnoidea Crystal Springs lessingia (Asteraceae)	annual herb	1B.2,-,-	Cismontane woodland, Coastal scrub, Valley and foothill grassland; serpentinite, often roadsides 195-655 feet; Jul-Oct	**Not expected.** No suitable habitat is present within the study area.
Lessingia hololeuca woolly-headed lessingia (Asteraceae)	annual herb	3,-,-	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland; clay, serpentinite 45-1000 feet; Jun-Oct	**Not expected.** No suitable habitat is present within the study area.
Lilium maritimum coast lily (Liliaceae)	perennial bulbiferous herb	1B.1,-,-	Broadleafed upland forest, Closed-cone coniferous forest, Coastal prairie, Coastal scrub, Marshes and swamps (freshwater), North Coast coniferous forest; sometimes roadside 15-1560 feet; May-Aug	**Not expected.** No suitable habitat is present within the study area.
Lupinus arboreus var. *eximius* San Mateo tree lupine (Fabaceae)	perennial evergreen shrub	3.2,-,-	Chaparral, Coastal scrub; 295-1805 feet; Apr-Jul	**Not expected.** No suitable habitat is present within the study area.
Malacothamnus arcuatus arcuate bush-mallow (Malvaceae)	perennial evergreen shrub	1B.2,-,-	Chaparral, Cismontane woodland; 45-1165 feet; Apr-Sep	**Not expected.** No suitable habitat is present within the study area.
Malacothamnus davidsonii Davidson's bush-mallow (Malvaceae)	perennial deciduous shrub	1B.2,-,-	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland; 605-3740 feet; Jun-Jan	**Not expected.** No suitable habitat is present within the study area.
Monolopia gracilens woodland woolythreads (Asteraceae)	annual herb	1B.2,-,-	Broadleafed upland forest (openings), Chaparral (openings), Cismontane woodland, North Coast coniferous forest (openings), Valley and foothill grassland; Serpentine 325-3935 feet; (Feb)Mar-Jul	**Not expected.** No suitable habitat is present within the study area.
Pedicularis dudleyi Dudley's lousewort (Orobanchaceae)	perennial herb	1B.2,CR,-	Chaparral (maritime), Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland; 195-2955 feet; Apr-Jun	**Not expected.** No suitable habitat is present within the study area.
Pentachaeta bellidiflora white-rayed pentachaeta (Asteraceae)	annual herb	1B.1,CE,FE	Cismontane woodland, Valley and foothill grassland (often serpentinite); 110-2035 feet; Mar-May	**Not expected.** No suitable habitat is present within the study area.
Plagiobothrys chorisianus var. *chorisianus* Choris' popcornflower (Boraginaceae)	annual herb	1B.2,-,-	Chaparral, Coastal prairie, Coastal scrub; mesic 5-525 feet; Mar-Jun	**Not expected.** No suitable habitat is present within the study area.

Scientific Name, Common Name, Family	Lifeform	Rarity Status[1]	Preferred Habitat, Elevation Range, and Blooming Period[2]	Potential for Occurrences within the Project Site[3]
Polemonium carneum Oregon polemonium (Polemoniaceae)	perennial herb	2B.2,-,-	Coastal prairie, Coastal scrub, Lower montane coniferous forest; 0-6005 feet; Apr-Sep	**Not expected.** No suitable habitat is present within the study area.
Potentilla hickmanii Hickman's potentilla (Rosaceae)	perennial herb	1B.1,CE,FE	Coastal bluff scrub, Closed-cone coniferous forest, Meadows and seeps, Marshes and swamps, (freshwater), 33-489; Apr-Aug	**Not expected.** No suitable habitat is present within the study area.
Ranunculus lobbii Lobb's aquatic buttercup (Ranunculaceae)	annual herb (aquatic)	4.2,-,-	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools; mesic 45-1540 feet; Feb-May	**Not expected.** No suitable habitat is present within the study area.
Senecio aphanactis chaparral ragwort (Asteraceae)	annual herb	2B.2,-,-	Chaparral, Cismontane woodland, Coastal scrub; sometimes alkaline 45-2625 feet; Jan-Apr(May)	**Not expected.** No suitable habitat is present within the study area.
Silene verecunda ssp. *verecunda* San Francisco campion (Caryophyllaceae)	perennial herb	1B.2,-,-	Coastal bluff scrub, Chaparral, Coastal prairie, Coastal scrub, Valley and foothill grassland; sandy 95-2115 feet; (Feb)Mar-Jun(Aug)	**Not expected.** No suitable habitat is present within the study area.
Stuckenia filiformis ssp. *alpina* slender-leaved pondweed (Potamogetonaceae)	perennial rhizomatous herb (aquatic)	2B.2,-,-	Marshes and swamps (assorted shallow freshwater); 980-7055 feet; May-Jul	**Not expected.** No suitable habitat is present within the study area.
Trifolium amoenum two-fork clover (Fabaceae)	annual herb	1B.1,-,FE	Coastal bluff scrub, Valley and foothill grassland (sometimes serpentinite); 15-1360 feet; Apr-Jun	**Not expected.** No suitable habitat is present within the study area.
Trifolium hydrophilum saline clover (Fabaceae)	annual herb	1B.2,-,-	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools; 0-985 feet; Apr-Jun	**Not expected.** No suitable habitat is present within the study area.
Triphysaria floribunda San Francisco owl's-clover (Orobanchaceae)	annual herb	1B.2,-,-	Coastal prairie, Coastal scrub, Valley and foothill grassland; usually serpentinite 30-525 feet; Apr-Jun	**Not expected.** No suitable habitat is present within the study area.
Usnea longissima Methuselah's beard lichen (Parmeliaceae)	fruticose lichen (epiphytic)	4.2,-,-	Broadleafed upland forest, North Coast coniferous forest; On tree branches; usually on old growth hardwoods and conifers 160-4790 feet; N/A	**Not expected.** No suitable habitat is present within the study area.

1. **Rarity Status Codes**:

C = California
F = Federal
E = Federally or State listed as Endangered
T = Federally or State listed as Threatened
R = State listed as Rare

CRPR Codes

1A = CRPR List 1A: Plants presumed extinct in California.
1B.1 = CRPR List 1B.1: Plants rare, threatened or endangered in California and elsewhere; plant seriously threatened in California.

1B.2 = CRPR List 1B.2: Plants rare, threatened or endangered in California and elsewhere; plant fairly threatened in California.
1B.3 = CRPR List 1B.3: Plants rare, threatened or endangered in California and elsewhere; plant not very threatened in California.
2.1 = CRPR List 2.1: Plants rare, threatened or endangered in California, more common elsewhere; plant seriously threatened in California.
2.2 = CRPR List 2.2: Plants rare, threatened or endangered in California, more common elsewhere; plant fairly threatened in California.
2.3 = CRPR List 2.3: Plants rare, threatened or endangered in California, more common elsewhere; plant not very threatened in California.
3 = CRPR List 3: Plants in California which need more information-a review list.
3.1 = CRPR List 3.1: Plants in California which need more information-a review list; plant seriously threatened in California.
3.2 = CRPR List 3.2: Plants about which we need more information – a review list; plant fairly threatened in California.
4 = CRPR List 4: Plants of limited distribution – A watch list

2. CNPS Conventions

Bloom Periods in parentheses indicate that the species *occasionally* blooms during that period.

Habitat Modifiers
"(descriptor)" pertains only to the habitat type immediately preceding
"; descriptor" pertains to *all* habitats

3. Elevation of the project site ranges from approximately 716 – 742 feet above sea level

APPENDIX C:
USFWS IPAC SEARCH RESULTS

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

San Mateo County, California

Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information.
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Salt Marsh Harvest Mouse Reithrodontomys raviventris — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/613

Southern Sea Otter Enhydra lutris nereis — Threatened
No critical habitat has been designated for this species.
Marine mammal
https://ecos.fws.gov/ecp/species/8560

Birds

NAME	STATUS
California Clapper Rail Rallus longirostris obsoletus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4240	Endangered
California Least Tern Sterna antillarum browni No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Marbled Murrelet Brachyramphus marmoratus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/4467	Threatened
Short-tailed Albatross Phoebastria (=Diomedea) albatrus No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/433	Endangered
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/8035	Threatened

NOT FOR CONSULTATION

Reptiles

NAME	STATUS
Green Sea Turtle Chelonia mydas No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6199	Threatened
San Francisco Garter Snake Thamnophis sirtalis tetrataenia No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5956	Endangered

Amphibians

NAME	STATUS
California Red-legged Frog Rana draytonii There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Delta Smelt Hypomesus transpacificus There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/321	Threatened
Tidewater Goby Eucyclogobius newberryi There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Bay Checkerspot Butterfly Euphydryas editha bayensis There is **final** critical habitat for this species. Your location is outside the critical habitat. https://ecos.fws.gov/ecp/species/2320	Threatened
Mission Blue Butterfly Icaricia icarioides missionensis There is **proposed** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/6928	Endangered
Myrtle's Silverspot Butterfly Speyeria zerene myrtleae No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6929	Endangered
San Bruno Elfin Butterfly Callophrys mossii bayensis There is **proposed** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3394	Endangered

Flowering Plants

NAME	STATUS

NOT FOR CONSULTATION

Fountain Thistle Cirsium fontinale var. fontinale — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7939

Hickman's Potentilla Potentilla hickmanii — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/6343

Marin Dwarf-flax Hesperolinon congestum — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/5363

San Mateo Thornmint Acanthomintha obovata ssp. duttonii — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2038

San Mateo Woolly Sunflower Eriophyllum latilobum — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7791

White-rayed Pentachaeta Pentachaeta bellidiflora — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/7782

NOT FOR CONSULTATION

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NOT FOR CONSULTATION

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15

Bald Eagle Haliaeetus leucocephalus — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1626

Clark's Grebe Aechmophorus clarkii — Breeds Jan 1 to Dec 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Marbled Godwit Limosa fedoa — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Rufous Hummingbird selasphorus rufus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

NOT FOR CONSULTATION

Song Sparrow Melospiza melodia This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Feb 20 to Sep 5
Spotted Towhee Pipilo maculatus clementae This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/4243	Breeds Apr 15 to Jul 20
Tricolored Blackbird Agelaius tricolor This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3910	Breeds Mar 15 to Aug 10
Whimbrel Numenius phaeopus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9483	Breeds elsewhere
Willet Tringa semipalmata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere
Wrentit Chamaea fasciata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 10

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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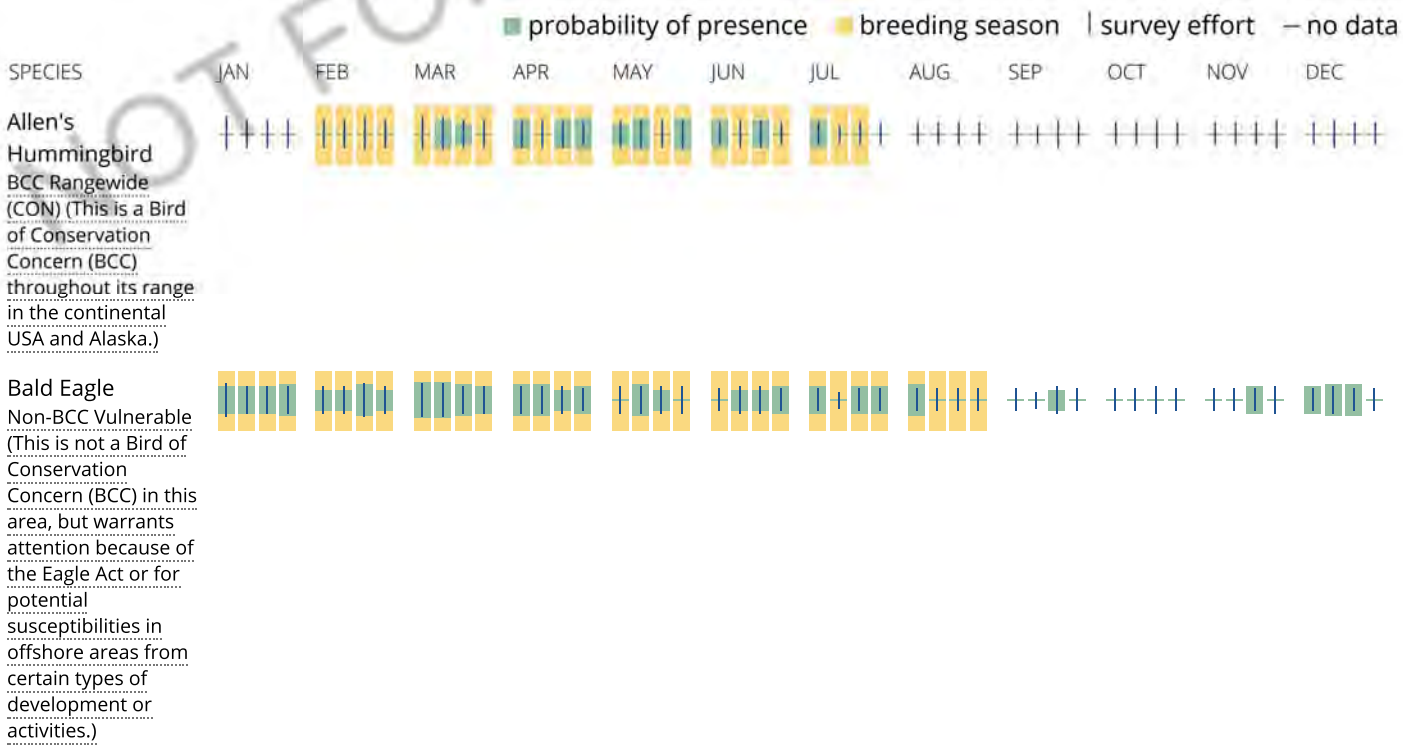
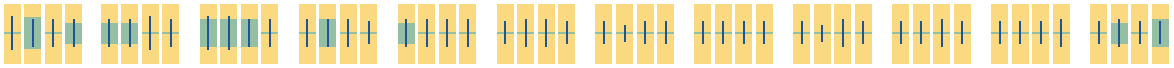
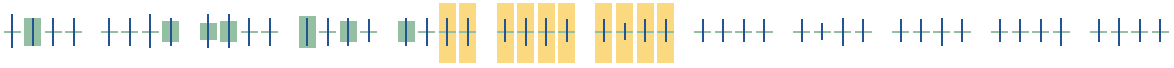


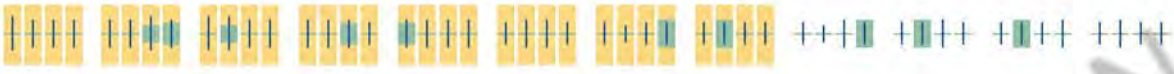
Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



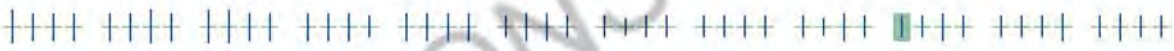
Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Rufous Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

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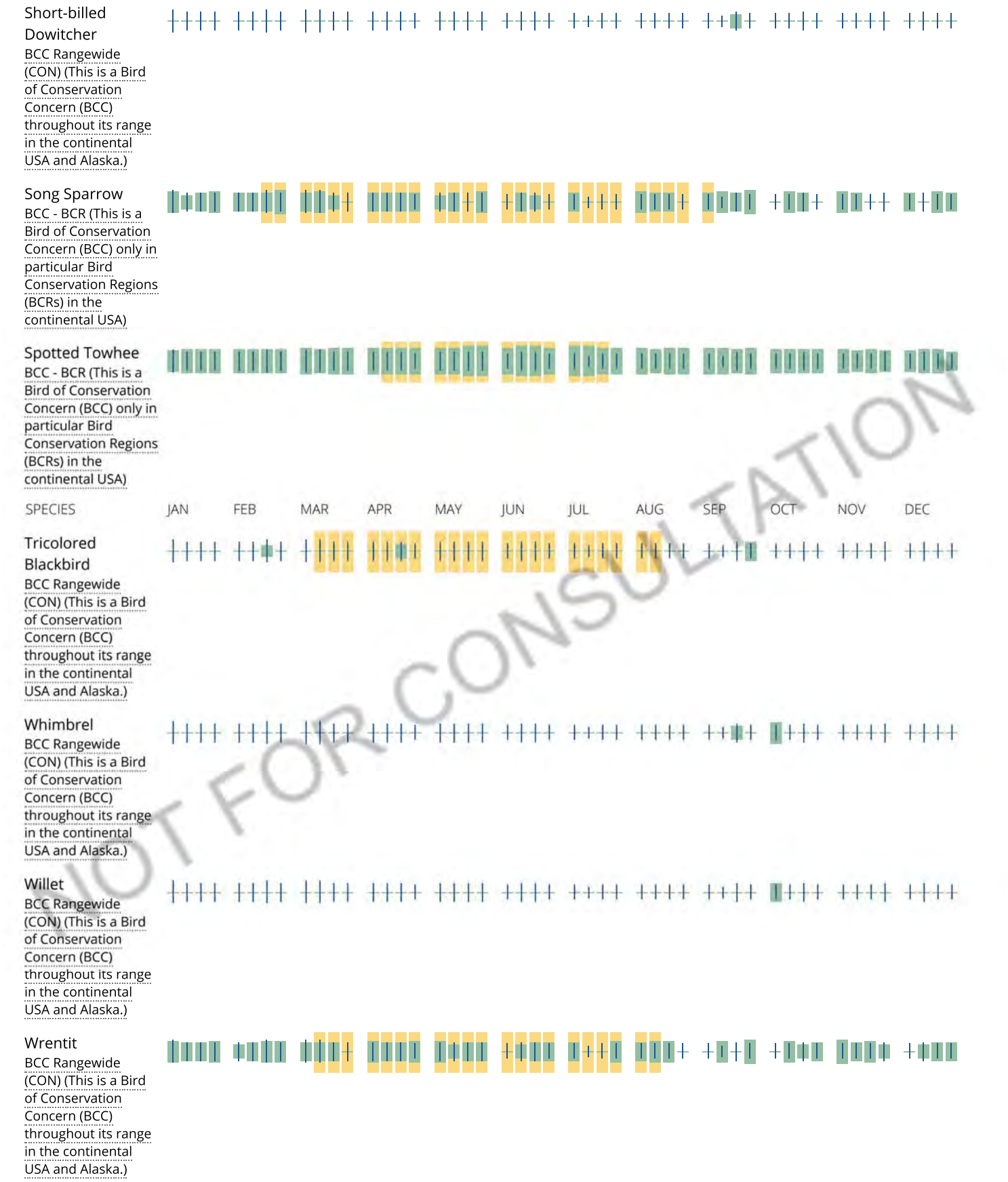

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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and

avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures and/or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird

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impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Marine mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

Southern Sea Otter *Enhydra lutris nereis*
https://ecos.fws.gov/ecp/species/8560

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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APPENDIX D:
PROJECT ARBORIST REPORT TREE DATA
(FROM WALTER LEVISON)

TREE DATA
550 Darrell Water Tanks
Hillsborough, California
Revised 2/10/21

Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 54" A.G. (ATD May Represent 1 or 6 Trunk Stems)	To Be Removed Per Plan	Protect in Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft.)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Splitout Evidence (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, lion/lateling, skinning, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twin Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) Measured as Radius Offset In FEET from Trunk Edge for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
1	25.2	0.0	0.0	25.2	X	X	X	Monterey pine	*Pinus radiata*	40/30	50/45	48% Fair												12.6	24 inch scar noted between 6 inches and 30 inches above grade on driveway side of trunk. Note that shear pressure from trunk expansion is causing lateral displacement of the existing curbwork.
2	7.0	0.0	0.0	7.0	X	X		coast live oak	*Quercus agrifolia*	20/15	75/50	59% Fair		South										3.5	Trunk has a "bow" arc to the south over the existing road, down to 14 feet elevation above grade.
3	8.9	0.0	0.0	8.9	X	X		coast live oak	*Quercus agrifolia*	22/20	75/60	65% Good	Mod	West	West	Yes. At 10 to 14 feet.								4.45	Stem splitout scar between 10 and 14 feet.
4	14.2	0.0	0.0	14.2	X	X	X	coast live oak	*Quercus agrifolia*	25/20	55/60	57% Fair	Poor to Mod	North	North									7.1	
5	9.9	0.0	0.0	9.9	X	X		blackwood acacia	*Acacia melanoxylon*	28/16	85/55	65% Good	Good	North							Yes. At 15 feet.			4.95	This tree species is often considered to be a junk tree, given its propensity for structural failure. This reputation is probably due to the fact that the tree develops narrow angles of stem attachment that then leads to premature structural failure. However, the species is considered a true survivor in the Bay Area, and is literally one of the best species known to date in terms of its ability to withstand salt air, pollution, clay based soil, prolonged droughty soil conditions, and other "urban" situations.
6	12.1	0.0	0.0	12.1	X	X	X	blackwood acacia	*Acacia melanoxylon*	32/18	50/50	50% Fair	Poor to Mod											6.1	This tree species is often considered to be a junk tree, given its propensity for structural failure. This reputation is probably due to the fact that the tree develops narrow angles of stem attachment that then leads to premature structural failure. However, the species is considered a true survivor in the Bay Area, and is literally one of the best species known to date in terms of its ability to withstand salt air, poilution, clay based soil, prolonged droughty soil conditions, and other "urban" situations.
7	16.6	0.0	0.0	16.6	X	X	X	coast live oak	*Quercus agrifolia*	28/20	75/75	75% Good	Mod											8.3	
8	37.3	0.0	0.0	37.3	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	70/60	30/25	28% Poor	Poor	West					GR of large dia.			X		18.7	Canopy overhangs the driveways at this site. Very large diameter girdling root noted on southeast side of root crown. Red turpentine bark beetle feeding activity noted. Suggest consider removal of tree within 1 to 5 years. Possible infection by pine pitch canker fungus: a pathogen for which there is no cure or treatment, other than regular heavy irrigation of the root zone.
9	35.5	0.0	0.0	35.5	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	65/55	25/25	25% Poor	Poor to Mod	South and West								X		17.8	Red turpentine bark beetle feeding activity noted, evidenced by sap flux in bark furrows. Suggest consider removal of tree within 1 to 2 years. Possible infection by pine pitch canker fungus: a pathogen for which there is no cure or treatment, other than regular heavy irrigation of the root zone.
10	13.3	0.0	0.0	13.3	X		X	coast live oak	*Quercus agrifolia*	45/18	50/30	33% Poor	Mod	West										6.7	ISSUE: Structure of tree may have been severely compromised due to chain link fence embedded in it, through the entire cross section of lower trunk. Barrie Coate consulting arborist used to lecture on this issue in the 90's and 2000's, given that most people were not aware of the fact that embedded fencing can literally "girdle" the trunk, causing actual structural stability loss.
11	13.1	0.0	0.0	13.1	X		X	coast live oak	*Quercus agrifolia*	45/25	75/65	69% Good	Mod	South east	South east									6.6	
12	10.8	0.0	0.0	10.8	X			coast live oak	*Quercus agrifolia*	35/20	55/60	58% Fair	Poor to Mod	Sweeps from west, then upright.										5.4	
13	15.8	0.0	0.0	15.8	X		X	coast live oak	*Quercus agrifolia*	40/20	55/55	55% Fair	Poor to Mod	South east										7.9	

TREE DATA
550 Darrell Water Tanks
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14	15.1	0.0	0.0	15.1	X		X	coast live oak	*Quercus agrifolia*	40/25	75/75	75% Good	Mod										7.6	
15	15.7	0.0	0.0	15.7	X		X	coast live oak	*Quercus agrifolia*	40/30	35/40	38% Poor	Very Poor to Poor										7.9	Note dead twig buildup in canopy is significant.
16	16.7	0.0	0.0	16.7	X		X	coast live oak	*Quercus agrifolia*	40/25	45/45	45% Fair	Poor to Mod	South				BRC					8.4	Buried root crown under years of rubble and waste buildup on floor of forest. Suggest perform a Root Crown Excavation to carefully dig out the buttress root flares by hand and reestablish original soil grade elevation.
17	20.0	0.0	0.0	20.0	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	60/25	40/30	35% Poor	Mod (in uppermost 20% of canopy elevation only)							BI at 45 feet elevation is an elevated risk of splitout situation.			10.0	Given the bark inclusion type fork situation at 45 feet, this tree is an elevated risk status specimen in terms of stem failure and impact with site targets, and is recommended to be removed within the next few years.
18	7.7	0.0	0.0	7.7	X			coast live oak	*Quercus agrifolia*	16/16	30/25	28% Poor	Poor					BRC in rubble.					3.9	Buried root crown under years of rubble and waste buildup on floor of forest. Suggest perform a Root Crown Excavation to carefully dig out the buttress root flares by hand and reestablish original soil grade elevation. Also note the scar on lower 2 feet of trunk.
19	20.0	0.0	0.0	20.0	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	60/28	25/25	25% Poor	Poor to Mod	North west.	North west.						X		10.0	Tree exhibits symptoms of infection by pine pitch canker fungus (PPCF), for which there is no cure or treatment other than heavy regular irrigation. WLCA suggests removal of this tree now due to poor condition and PPCF infection.
20	12.5	0.0	0.0	12.5		X	X	coast live oak	*Quercus agrifolia*	28/22	75/70	72% Good	Mod										6.3	
21	12.7	7.3	0.0	20.0		X	X	coast live oak	*Quercus agrifolia*	25/28	60/70	65% Good	Poor to Mod										9.0	
22	72.0	0.0	0.0	Est. 72		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/55	50/40	44% Fair	Mod				Topped in past.		See notes at right.				36.0	Tree was previously top pruned (poor practice) at 35 feet above grade, resulting in a profusion of epicormic shoot growth from near those cut points. The shoots then enlarged and grew woundwood around their bases, buttressing the attachment points, which at first are relatively "weak" in terms of breakage strength at the bases of epicormics arising from top pruning cut wounds. As of now, the stems appear to be stable, though structural stability is reduced to an unknown degree, given that the entire canopy of the tree now consists essentially of epicormic shoots with decay compartmentalized inside the cross sections of the shoot attachment points where historical pruning cut wounds were made. Over time, woundwood formation at epicormic shoot bases by a vigorous tree can increase attachment point strength very significantly to the point where the shoots are considered "stable".
23	45.5	0.0	0.0	45.5		X	X	Tasmanian blue gum	*Eucalyptus globulus*	95/30	40/30	35% Poor	Poor to Mod				Topped in past.		See tree #22 notes.				22.8	(Same notes as per tree #22).
24	43.6	0.0	0.0	43.6		X	X	Tasmanian blue gum	*Eucalyptus globulus*	105/30	50/30	38% Poor	Poor to Mod				Topped in past.		See tree #22 notes.				21.8	
25	9.8	0.0	0.0	9.8	Author recommends removal due to very poor condition.	(X)		Monterey pine	*Pinus radiata*	25/4	10/10	10% Very Poor	Very Poor					BRC	X		X		4.9	Root crown buried under rubble. North side of trunk is vandalized. Recommend removal of tree due to very poor condition.
26	35.0	0.0	0.0	Est. 35 (Not the diameter of the bulbous swelling)		X	X	Tasmanian blue gum	*Eucalyptus globulus*	65/20	30/20	26% Poor					Topped in past.		See notes for tree #22				18.0	Tree previously topped at 20 feet most likely. Note bulbous swelling of mainstem (trunk) between 0 and 5 feet elevation above grade, which is not likely associated with internal tissue decay. Swellings such as this one are common on older, larger diameter eucalyptus specimens. Diameter of 35 inches was "estimated", and is not representative of the bulbous swelling's actual diameter at 4.5 feet elevation.

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Hillsborough, California
Revised 2/10/21

Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 54" - A.S. (ATD May Represent Sum of 3 Trunk Stems)	To Be Removed Per Plan	Protect In Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft.)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Splitout Evidence (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, lionttailing, shearing, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twig Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) Radius (Measured as Offset in FEET from Trunk Edge, for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
27	35.5	0.0	0.0	35.5	X		X	Tasmanian blue gum	*Eucalyptus globulus*	70/45	50/30	37% Poor	Poor to Mod				Topped in past.		See notes for tree #22					17.8	(Same notes as per tree #22). Prevously topped at 25 feet elevation.
28	26.3	0.0	0.0	26.3	X		X	Monterey pine	*Pinus radiata*	65/40	40/40	40% Poor	Poor to Mod								X			13.2	Sap in bark furrows indicates likely infestation/feeding activity by red turpentine bark beetles (a serious pest that affects this tree species).
29	12.0	10.0	9.0	39.0	X Author suggests removal for safety purposes as well.		X	Tasmanian blue gum	*Eucalyptus globulus*	25/9	30/20	25% Poor	Poor				Topped recently by PG&E transmission line clearance contractors.							10.0	Topped recently by PG&E transmission line clearance contractors. Tree has four mainstems each arising from grade.
30	20 per topo	0.0	0.0	20 per topographic survey sheet.	X		X	Monterey pine	*Pinus radiata*	45/30	35/35	35% Poor	Poor						South side of canopy declining and dying.		?			10.0	Recent tree removal from the south side of this tree appears to have caused the this south side of tree #30 to decline/die in terms of live twig density. The dieback of twigs and needles could also be associated with pine pitch canker infection. Trunk diameter was not verified by WLCA.
31	10.0	6.0	6.0	28.0	X			coast live oak	*Quercus agrifolia*	18/16	60/40	46% Fair	Mod					BRC						10.0	Canopy growth is stunted in shade of limbs of tree #30. Root crown not visible and not assessed.
32	28.0	13.6	0.0	41.6	Author suggests removal of tree for safety purposes.	(X)	X	blackwood acacia	*Acacia melanoxylon*	28/30	30/0	5% Very Poor	Poor to Mod						X	Yes. Active split occurring at the fork between 0 and 2 feet above grade. High Risk Tree.				15.0	Given this tree's active split at the mainstem fork, this is considered a high risk specimen in terms of risk of mainstem failure and impact with various site targets. WLCA recommends immediately removal of this tree for safety purposes.
33	Est. 35	0.0	0.0	Est. 35		X	X	Tasmanian blue gum	*Eucalyptus globulus*	85/30	40/30	34% Poor	Poor to Mod				Topped in the past.		See notes for tree #22					17.5	See notes for tree #22 for full explanation epicormic shoot growth, and risk issues associated with them. Tree was topped at 25 feet, resulting in epicormic shoot growth to 85 feet above grade.
34	Est. 27	0.0	0.0	Est. 27	Author suggests removal of tree for safety purposes.	(X)	X	Tasmanian blue gum	*Eucalyptus globulus*	80/25	20/10	15% Very Poor	Very Poor	West		Epicormic shoot splitouts at 20 to 30 feet above grade.	Topped in the past.		See notes for tree #22					13.5	See notes for tree #22 for full explanation epicormic shoot growth, and risk issues associated with them. Tree was topped at 25 to 30 feet, resulting in epicormic shoot growth to 80 feet above grade. The interesting this about this specimen is that some of the epicormic shoots actually split out at 20 to 30 feet, which demonstrates that the shoots are in fact structurally compromised in tems of stability, even with massive woundwood growth around the attachment points where they arise from the topping pruning cut areas (although it is difficult to confirm when exactly the failed epicormic shoot split out. It may have been just a few years after the topping pruning, prior to when the shoot's attachment point (base) became nicely buttressed with woundwood layering). WLCA suggests removal of the tree for safety purposes.
35	13.6	0.0	0.0	13.6		X	X	Canary Island pine	*Pinus canariensis*	40/20	60/50	53% Fair	Mod	South										6.8	
36	5.7	0.0	0.0	5.7		X		coast live oak	*Quercus agrifolia*	15/12	70/70	70% Good												2.9	Tree growing in shade of surrounding larger trees #35 and #37.
37	Est. 45 to 50	0.0	0.0	Est. 45 to 50		X	X	Tasmanian blue gum	*Eucalyptus globulus*	85/45	55/40	45% Fair	Mod				Topped in past.		See notes for tree #22.					25.0	See notes for tree #22 for full explanation of epicormic shoot growth and structural stability. This tree was topped at 30 feet in the past, resulting in epicormic shoot growth from those cut points. The tree also appears to have been topped at 40 to 45 feet elevation in the past.
38	34.0	0.0	0.0	34.0		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/35	55/40	47% Fair	Mod				Topped in past.		See notes for tree #22.					17.0	See notes for tree #22 for full explanation of epicormic shoot growth and stability. This tree was topped at 35 feet in the past, resulting in epicormic shoot growth to 80 feet.

TREE DATA
550 Darrell Water Tanks
Hillsborough, California
Revised 2/10/21

Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 3.4' A.G. (ATD May Represent 5, 6 or 7 Valid Stems)	To Be Removed Per Plan	Protect in Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft.)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Split/out Evidence (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, dwindling, shearing, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twig, Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) (40 Diameter Feet, Less Offset in FEET from Trunk Edge, for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
39	9.4	0.0	0.0	9.4		X		blackwood acacia	*Acacia melanoxylon*	25/18	55/55	55% Fair	Mod										4.7	
40	12.7	0.0	0.0	12.7	Author suggests removal of tree.	(X)	X	Monterey pine	*Pinus radiata*	55/13	30/20	22% Poor	Poor to Mod	West	West				Yes. At 0 to 12 inches, and also at 4 feet to 9 feet above grade.				6.4	The damaged mainstem areas noted (lowermost foot, and between 4 feet and 9 feet) may be due to Western Gall Rust Fungus infection, which sometimes causes cankering, sap flux, and other maladies that eventually cause the tree to decline and die prematurely, or fail structurally.
41	22.2	0.0	0.0	22.2		X	X	Monterey pine	*Pinus radiata*	55/30	45/40	43% Fair	Mod	West								X	11.1	Bark beetle feeding evidence as sap exudation from bark furrows (likely western turpentine bark beetle).
42	12.2	7.9	0.0	20.1		X	X	Canary Island pine	*Pinus canariensis*	50/18	50/40	45% Fair	Poor to Mod	West								X	9.0	The smaller 7.9 inch diameter mainstem appears to have no live twig density, which suggests infection by pine pitch canker (PPC) fungus (not verified).
43	9.7	0.0	0.0	9.7		X		Monterey pine	*Pinus radiata*	35/16	40/50	45% Fair	Poor to Mod	North									4.9	
44	12.1	0.0	0.0	12.1	Author suggests removal due to risk of failure and impact with PG&E substation facility.	(X)	X	Monterey pine	*Pinus radiata*	35/18	40/40	40% Poor	Mod	North west.	North west.							X	6.1	Large scar on lower trunk 2 to 4 feet suggests infection by Western Gall Rust Fungus. Excessive sap flux in bark furrows suggests red turpentine bark beetle infestation. Tree leans toward PG&E substation, with a canopy lopsided in that same direction. WLCA suggests removal of tree for substation safety (to eliminate the risk of failure and impact with the substation components).
45	46.0	0.0	0.0	46.0		X	X	Tasmanian blue gum	*Eucalyptus globulus*	90/30	35/20	26% Poor	Poor			Peelout scar 18 to 23 feet from loss of an epicormic shoot.	Topped at past.		See notes for tree #22. See also notes at right for tree #45.				23.0	See notes for tree #22 for full explanation of epicormic shoots and stability. Peelout scar from loss of an epicormic noted, which suggests that even after good woundwood development at the bases of epicormic shoots growing out of topping pruning cuts, the shoots never really develop "normal" level of stability and are not the same as an original stem in terms of structural stability. Note extensive decay below topping cut wounds between 20 and 30 feet elevation (i.e. below the bases of the epicormic shoots arising from those historical topping cuts).
46	48.7	0.0	0.0	48.7		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/30	50/27	35% Poor	Poor to Mod	South			Topped in past.		Decay at root crown, possibly "bottlebutt" condition.				24.4	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 30 feet and 40 feet heights, with epicormic shoot growth to 80 feet elevation above grade.
47	32.9	0.0	0.0	32.9		X	X	Tasmanian blue gum	*Eucalyptus globulus*	85/25	50/30	40% Poor	Poor to Mod				Topped in past.		See notes for tree #22.				16.5	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 30 feet and 40 feet heights, with epicormic shoot growth to 85 feet elevation above grade.
48	16.4	0.0	0.0	16.4		X	X	Monterey pine	*Pinus radiata*	55/20	35/35	35% Poor	Poor to Mod									X	8.2	Likely red turpentine bark beetle feeding, as evidenced by sap flux in the bark furrows along lower trunk elevations. Growth of tree stunted in shade of various tall blue gum specimens.
49	36.3	0.0	0.0	36.3		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/28	50/30	36% Poor	Poor to Mod				Topped in past.		See notes for tree #22.				18.2	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 35 feet and 60 feet heights, with epicormic shoot growth to 100 feet elevation above grade.
50	38.2	0.0	0.0	38.2		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/30	50/30	40% Poor	Mod	South			Topped in past.		See notes for tree #22. Mechanical scar noted 1 to 4 feet above grade.				19.1	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 30 feet, with epicormic shoot growth to 100 feet elevation above grade. Mechanical scar between 1 and 4 feet on east side of mainstem. It is not clear as to how this tree was scarred in this area.
51	Est. 40	0.0	0.0	Est. 40		X	X	Tasmanian blue gum	*Eucalyptus globulus*	95/30	55/33	40% Poor	Poor to Mod				Topped in past.		See notes for tree #22.				20.0	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 27 feet, with epicormic shoot growth to 95 feet elevation above grade.

TREE DATA
550 Darrell Water Tanks
Hillsborough, California
Revised 2/10/21

Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 54" - A.S. (ATD May Represent 6 or 1 Trunk Stems)	To Be Removed Per Plan	Protect in Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Splitout Evidence (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, lionthing, shearing, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twig, Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) (Ex: Encroachment Allowed Offset in FEET from Trunk Edge, for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
52	24.7	0.0	0.0	24.7		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/30	55/35	47% Fair	Poor to Mod	North			Topped in past.		See notes for tree #22.					12.4	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 35 feet, with epicormic shoot growth to 80 feet elevation above grade.
53	29.9	0.0	0.0	29.9		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/30	40/35	38% Poor	Poor				Topped in past.		See notes for tree #22.					15.0	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 35 feet and 60 feet elevation above grade, with epicormic shoot growth to 100 feet elevation above grade.
54	29.2	0.0	0.0	29.2		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/30	50/20	27% Poor	Mod	North			Topped in past.		See notes for tree #22.					14.6	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 25 feet elevation above grade, with epicormic shoot growth to 80 feet elevation above grade. There is an epicormic shoot splitout at east side of tree where a tear occurred down to 16 feet above grade. This tear/splitout area is now visibly decayed.
55	Est. 35	Est. 15	0.0	Est. 50	(Pruning issues)	X	X	Tasmanian blue gum	*Eucalyptus globulus*	90/70	60/50	55% Fair	Mod							Barbed wire in mainstem cross section may be a stability issue.				22.0	Barbed wire is starting to girdle the 15 inch diameter stem at 6 feet. Canopy extends northwestward over the PG&E substation airspace, which may be a significant problem in 1 to 3 years from date of this survey. The canopy will likely have to be pruned back to clear the station airspace. Note also that this tree is quite extended in dimensions, and will probably have to be pruned back using "limb length reduction pruning" technique to remove the outermost sections of over-extended and/or endweight-heavy limbs, to reduce loading on the limbs' attachment points.
56	7.0	0.0	0.0	7.0		X		coast live oak	*Quercus agrifolia*	20/25	50/20	30% Poor	Poor to Mod	East						Barbed wire in mainstem cross section may be a stability issue.				3.5	Bark wire and chain link fence materials are becoming embedded in mainstem cross section, effectively girdling the tree and causing a serious stability issue (and reducing the tree's structural rating). Thus, this tree has an elevated risk of mainstem failure due to the embedment issue. Growing in shade of tree #55.
57	30.5	0.0	0.0	30.5		X	X	Tasmanian blue gum	*Eucalyptus globulus*	70/40	55/50	53% Fair	Mod	North and East										15.3	Tree canopy lopsided north and east due to crowding from tree #51. Interestingly, this specimen appears to be one of the only blue gums on site that was not top pruned, and seems to retain its original branch architecture assemblages.
58	9.7	6.5	0.0	16.2		X		coast live oak	*Quercus agrifolia*	20/30	65/60	63% Good	Mod	East										8.0	Lopsided east due to crowding from eucalyptus #57.
59	11.0	7.8	0.0	18.8		X		coast live oak	*Quercus agrifolia*	25/30	75/75	75% Good	Mod											8.0	
60	33.7	0.0	0.0	33.7	Monitor tree if not removed.	(X)	X	Monterey pine	*Pinus radiata*	65/45	45/45	45% Fair	Poor to Mod	East	East			See notes.	See notes.					16.9	The compression side of this leaning tree exhibits buckling bark and wood tissue in the mainstem base area, which is somewhat normal for a leaner of this size. It is not clear if the tree is actually increasing in lean, or is structurally "stable" (outside the scope of this arborist reporting assignment). However, I did note a slight upward sweep of the mainstem, which suggests that the lean angle is stable and that the tree has tried to correct its upward growth to vertical over time. If the tree is not removed, then it would be prudent to affix a bubble level to the trunk securely to monitor its lean angle and determine if over time the tree is "increasing in lean angle" off from vertical.
61	5.5	0.0	0.0	5.5		X		California toyon	*Heteromeles arbutifolia*	15/13	35/35	35% Poor	Poor to Mod				Yes. A 2nd mainstem of 9 inches diameter was removed at grade for unknown reason(s).			Yes. Sunken cankers along trunk with dead bark and xylem wood tissue suggest pathogenic infection.			X		2.8	A 9 inch diameter mainstem was for some unknown reason removed at grade on the east side of base, leaving only a single remnant mainstem of smaller diameter. The tree currently exhibits decayed bark and xylem wood as sunken cankering along the mainstem, possibly caused by a pathogen such as *Botryosphaeria* fungus species (not verified). This infection has reduced the tree's overall condition rating considerably.
62	24.8	0.0	0.0	24.8	Author suggests removal of tree due to likely pine pitch canker fungus infection.		X	Monterey pine	*Pinus radiata*	65/30	30/25	27% Poor	Poor to Mod							Yes. Twig and needle dieback noted, likely due to pine pitch canker fungus.			X		12.4	Subnormal scaffold branch extension, due to unknown cause(s). Twig and needle dieback seen in canopy may be due to pine pitch canker fungus infection (PPC): a pathogen for which there is no cure or treatment other than heavy weekly irrigation year round. WLCA suggests removal of this tree.

TREE DATA
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63	49.7	0.0	0.0	49.7	Author suggests removal of the tree to remove the existing elevated risk of tree failure and impact with the water tank structures.		X	Monterey pine	*Pinus radiata*	75/90	60/25	37% Poor	Mod					GR on east side of root crown.		BI between 4 and 12 feet is a major structural defect endangering the existing site water tank structures.	X		24.9	Sap flux copious in bark furrows: a likely indication of red turpentine bark beetle infestation. Bark inclusion type fork at 4 to 12 feet is a major structural defect that can only be mitigated through installation of cables and bracing rods, or by removal of the tree. Girdling root noted at east side of root crown. WLCA suggests removal of this tree for safety purposes. WLCA Additional Note: This is one of the largest Monterey pine specimens the author has ever assessed in his 22 year career, in terms of mainstem diameter, canopy height, and canopy spread diameter.
64	12.9	0.0	0.0	12.9		X	X	coast live oak	*Quercus agrifolia*	25/28	35/40	37% Poor	Poor					Likely GR at east side flat area.	Yes. Extensive foliar dieback noted.		X		6.5	Trunk expansion is causing shear pressure against the chain link fencing, resulting in lateral displacement of the fence. East side of root crown is flat, indicating likely presence of a girdling root. Extensive foliar dieback, likely caused by fungal pathogen(s) such as *Cryptocline / Discula.*
65	Est. 11	Est. 10	0.0	Est. 21		X		blackwood acacia	*Acacia melanoxylon*	35/28	30/30	30% Poor	Poor						Bark sluffing off the east mainstem.				10.0	Bark sluffing off the east mainstem may indicate presence of hidden cankers under the bark, caused by unknown pathogen(s).
66	Est. 7	0.0	0.0	Est. 7	Suggest cut the ivy vines at base of oak mainstem to kill the ivy and save this tree from being literally smothered by the plant.	X		coast live oak	*Quercus agrifolia*	25/16	25/25	25% Poor	Poor	North	North						X		4.0	Ivy is covering the lowermost 18 feet of trunk up to 18 feet above grade, and could literally kill the tree by blocking photosynthesis capability if it continues growth vertically. WLCA suggests killing the vines by cutting them at grade around the trunk, which will kill the entire plant and cause it to sluff off eventually over time.
67	Est. 24	0.0	0.0	Est. 24	??	??	X	coast live oak	*Quercus agrifolia*	45/35	75/75	75% Good	Mod	North east									12.0	This oak specimen has good upright branching architecture. Overall a very nice specimen to retain if possible.
68	Est. 24	0.0	0.0	Est. 24	??	??	X	coast live oak	*Quercus agrifolia*	45/45	75/65	70% Good	Mod	East	East								12.0	A nice native oak specimen in good overall condition, which would be an important specimen to retain if possible.
69	Est. 13	0.0	0.0	Est. 13	??	??	X	coast live oak	*Quercus agrifolia*	50/25	60/60	60% Fair	Mod	East	East								7.0	Many of these property boundary oaks along the east perimeter are lopsided eastward and/or leaning eastward, mainly due to phototropism. I.e tree growth tends toward the dominant light source. Because of shading from trees and water tanks to the west, the main sunlight source in the case of these east side trees is from the east. Note that the canopy of this tree is narrow, and extends only from the uppermost 30% of the tree mainstem height.
70	Est. 21	0.0	0.0	Est. 21	X (Would need to monitor "bottle butt condition" if tree not removed).	??	X	coast live oak	*Quercus agrifolia*	45/35	50/40	44% Fair	Mod	East					X		X		10.5	Root crown area appears to be severely infested by sycamore bark moth larvae which feed in the phloem (inner bark) areas of a coast live oak's lower trunk. Interestingly, this oak specimen exhibits a "bottlebutt" condition that is a swelling of the lower trunk to abnormal proportions, typically indicating presence of invisible internal decay of the wood tissue, which forces the tree to add layers of additonal wood to adapt its structure in the weakened area accordingly. What is not known is whether the bottlebutt seen on this tree is due to decay caused by feeding by the sycamore bark moth larvae (which are usually considered innocuous and not dangerous to a tree), or some other more serious pest or disease pathogen.
71	Est. 24	0.0	0.0	Est. 24	??	??	X	coast live oak	*Quercus agrifolia*	40/30	75/55	63% Good	Mod	West					Fence embedded in westmost stem is a structural stability issue.	BI fork of three mainstems between 3 and 5 feet above grade.			12.0	Bark inclusion type narrow forks noted between 3 and 5 feet above grade where three mainstems arise from the lower trunk bole. The westmost mainstem has property line chain link fence material embedded in the wood cross section. This condition is considered a structural stability issue of major significance, and is synonymous with "girdling" of a mainstem.
72	Est. 22	0.0	0.0	Est. 22	X (Tree already in only 25% overall condition, and will need to be removed, regardless of site plan extent of work.)		X	coast live oak	*Quercus agrifolia*	35/25	25/25	25% Poor	Very Poor	Mod									11.0	The author typically recommends that trees in 25% overall condition rating or less are removed from the landscape due to limited safe and useful life expectancy.

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Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 54" A.G. (ATD May Represent 5 or 6 Total Stems)	To Be Removed Per Plan	Protect in Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft.)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Splitout Evidence (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, lionttailing, shearing, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twig, Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) (6 X Diameter) as a Lateral Offset in FEET from Trunk Edge, for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
73	Est. 23	0.0	0.0	Est. 23		X Need to cut ivy vines at base of trunk in order to save tree from being smothered by ivy growth.	X	coast live oak	*Quercus agrifolia*	40/40	75/70	73% Good	Good	Mod	North	North							11.5	Ivy is covering the lowermost 20 feet of trunk up to 20 feet above grade, and could literally kill the tree by blocking photosynthesis capability if it continues growth vertically. WLCA suggests killing the vines by cutting them at grade around the trunk.
74	Est. 22	0.0	0.0	Est. 22	Suggest cut the ivy vines at base of oak mainstem to kill the ivy and save this tree from being literally smothered by the plant.	X Need to cut ivy vines at base of trunk in order to save tree from being smothered by ivy growth.	X	coast live oak	*Quercus agrifolia*	50/50	80/70	75% Good	Mod to Good										11.0	This is a very important specimen of coast live oak, given its large mainstem diameter and very significant canopy dimensions of 50 feet height and 50 feet total spread diameter. As with a number of other native oak specimens in the narrow fenced off strip area shown on the WLCA tree map markup as yellow highlight, ivy has grown up over the trunk, and threatens to engulf the canopy and reduce or stop photosynthetic function to a very significant degree (the ivy could even kill the tree outright if it were to block all photosynthetic function). WLCA recommends cutting the ivy vines at grade elevation around the base of the oak mainstem, to kill the entire plant massing. The ivy will then simply fall off the tree over time as it dies. This is the simplest method of removing ivy vines that are engulfing trees.
75	22.0	0.0	0.0	Est. 22		X	X	Tasmanian blue gum	*Eucalyptus globulus*	90/20	60/60	60% Fair	Mod										11.0	This tree is essentially located on a neighboring property, though a small portion (roughly 2 horizontal inches of the trunk cross section) encroaches into the water tank lot area. Therefore, the tree can be considered to be jointly-owned by both the Town of Hillsborough and the neighboring property owner.
76	Est. 15	0.0	0.0	Est. 15		X	X	coast live oak	*Quercus agrifolia*	25/25	80/75	78% Good	Good										7.5	Tree located between #59 and #60. Tree noted on the 10/21/2020 civil survey (topo survey) as 12" tree.

NOTES:

1. Heights were measured with a Nikon Forestry Pro hypsometer. Canopies were paced off to determine spread diameter. Trunk diameters were measured with a forester's D-tape which converts actual circumference to an averaged diameter in inches and tenths of inches, at 4.5 feet above grade (trunk diameters of some multi-stem species were simply estimated).

2. Only trees measuring 4.0 inches diameter or greater, when measured at 4.5 feet above grade, and located within the existing lot lines of the water tank property, were including in this study. Trees that were surrounded with poison oak were in some cases not accessible. Trunk diameters for those trees were estimated visually.

3. Trees were tagged by WLCA using racetrack-shaped tags affixed to each tree mainstem between 4 and 6 feet above grade. The tag run for this project was "1" through "76". Trees in the inaccessible strip noted on the WLCA tree map markup as yellow highlighting were not tagged (mainstem diameters for those trees were estimated visually).

4. Critical Root Zone for multi-stem trees was approximated using an estimated lower trunk diameter at 1 to 2 feet elevation above grade (i.e. below the fork where the multiple mainstems or "trunks" originate).

Appendix C:

Cultural Resources

Phase I Cultural Resources Inventory

of the Darrell Tank Site in the Town of Hillsborough, California

Prepared for Infrastructure Engineering Corporation

ALBION

March 2021 DRAFT

Phase I Cultural Resources Inventory of the Darrell Tank Site in the Town of Hillsborough, California

March 2021
J2020-046.01
Photo Credit: J. Ellison 2021

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Executive Summary

In June 2020, Albion Environmental, Inc. (Albion) was contracted to conduct a cultural resource and paleontological assessment to assist Infrastructure Engineering Corporation (IEC) in its development of an Initial Study/Mitigated Negative Declaration (IS/MND) as pursuant to the requirements of the California Environmental Quality Act (CEQA) for the Darrell Tank Site (Project Area) located at 549 Darrell Road (APN 030-041-100), Hillsborough, California. The city of Hillsborough is proposing to replace two existing ground-level steel water tanks (Darrell Tanks #1 and #2) with a new 120-foot diameter ground-level circular pre-stressed concrete water tank.

Albion's cultural resource investigation included a background records search at the California Historical Resources Information System's Northwest Information Center at Sonoma State University (NWIC), native American outreach, a field investigation entailing pedestrian survey, and a report of findings. The paleontological assessment was subcontracted to Cogstone Resource Management, Inc. (Cogstone), who conducted a records review from the University of California Museum of Paleontology (UCMP), a surface survey of the Project Area, and a report of findings and recommendations.

PALEONTOLOGICAL RESOURCES

Cogstone's record search revealed no fossil localities within the Project Area; however, localities are known from the Merced Formation near the Project Area. Notably, the Merced Formation has produced extinct Pleistocene megafauna, including ground sloth and Columbian mammoth, as well as baleen whale, numerous marine invertebrate fossils, and conifer fossils. Paleontological sensitivity for the Project Area ranges between very low to moderate (Potential Fossil Yield Classification [PFYC] 1 and PFYC 3). Based on Project impacts, Cogstone does not recommended any mitigation measures for paleontological resources. However, if unanticipated discoveries of paleontological resources occur during construction, all work within 25 feet of the discovery should be halted until the find has been evaluated by a qualified paleontologist.

CULTURAL RESOURCES

A review of records at the NWIC indicated that no cultural resources were recorded in the Project Area and one cultural resource has been previously recorded within a $^{1}/_{4}$-mile radius of the Project Area (P-41-000538). Visual inspection of the Project Area surface revealed no evidence of intact precolonial or historic-era archaeological deposits. According to our review of historical images, the Project Area has remained largely undeveloped until the construction of the water tanks in the 1950s. As these tanks are over fifty years of age and they have the potential to be impacted by the Project, they require further consideration under CEQA. It is Albion's judgement that a qualified architectural historian should evaluate Darrell Water Tanks #1 and #2 for inclusion on the California Register of Historical Resources (CRHR) under guidelines outlined in the CEQA. This study should be conducted prior to tank demolition.

Native American Outreach was conducted as part of a good faith effort to identify any potential Tribal Cultural Resources and gather information from the stakeholders . This work heps Albion in making an informed recommendation whether the proposed Project has the potential to impact Tribal Cultural Resources and to provide additional information to the City about potential concerns the local Tribal community may have about the proposed Project. To this end, Albion conducted a Sacred Lands File search through the NAHC. The search resulted in the identification of an important resource in the vicinity of the Project. The NAHC provided Albion a list of potential Project stakeholders who might be able to provide specific information about the resource. Albion contacted each of these stakeholders via certified mail, and then followed-up in the form of email and phone calls.

As the outreach effort did not reveal additional information about the resource identified in the Sacred Lands File search, Albion was unable to confirm if this important tribal resource is located within or outside the Project Area. Consequently, we were not able to determine whether or not the Project will impact a Tribal Cultural Resource. Based on our study, Albion recommends the lead CEQA agency conduct formal AB 52 consultation in an effort to determine if the Project will impact Tribal Cultural Resources. Albion's outreach through the NAHC is only one step in the process of identifying Tribal Cultural Resources. By itself, it does not satisfy compliance with the requirements of Assembly Bill 52 (AB 52). As such, Albion recommends the lead CEQA agency follow the five step process outlined by the NAHC to meet their obligation under CEQA to make a good faith effort to conduct Tribal consultation under State guidelines (see http://nahc.ca.gov/wp-content/ uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf).

Since many important cultural resources, such as Tribal Cultural Resources, do not necessarily leave an archaeological footprint or have physically identifiable manifestations, it is vital to seek out information regarding the possible presence of these important resources and their locations through consultation with local tribal members. Under the authority of Assembly Bill 52, the City of Hillsborough (City) may have received information from interested Native American tribes or representatives concerning Tribal Cultural Resources at the Project site. The City is responsible for collecting and incorporating tribal information into the environmental review process. At this time, Albion does not know if the City has received any such information.

If previously unidentified cultural materials are unearthed during construction, it is CEQA policy that work be halted in that area until a qualified archaeologist can evaluate the nature and significance of the find. An additional archaeological study will be needed if Project limits are extended beyond the present study.

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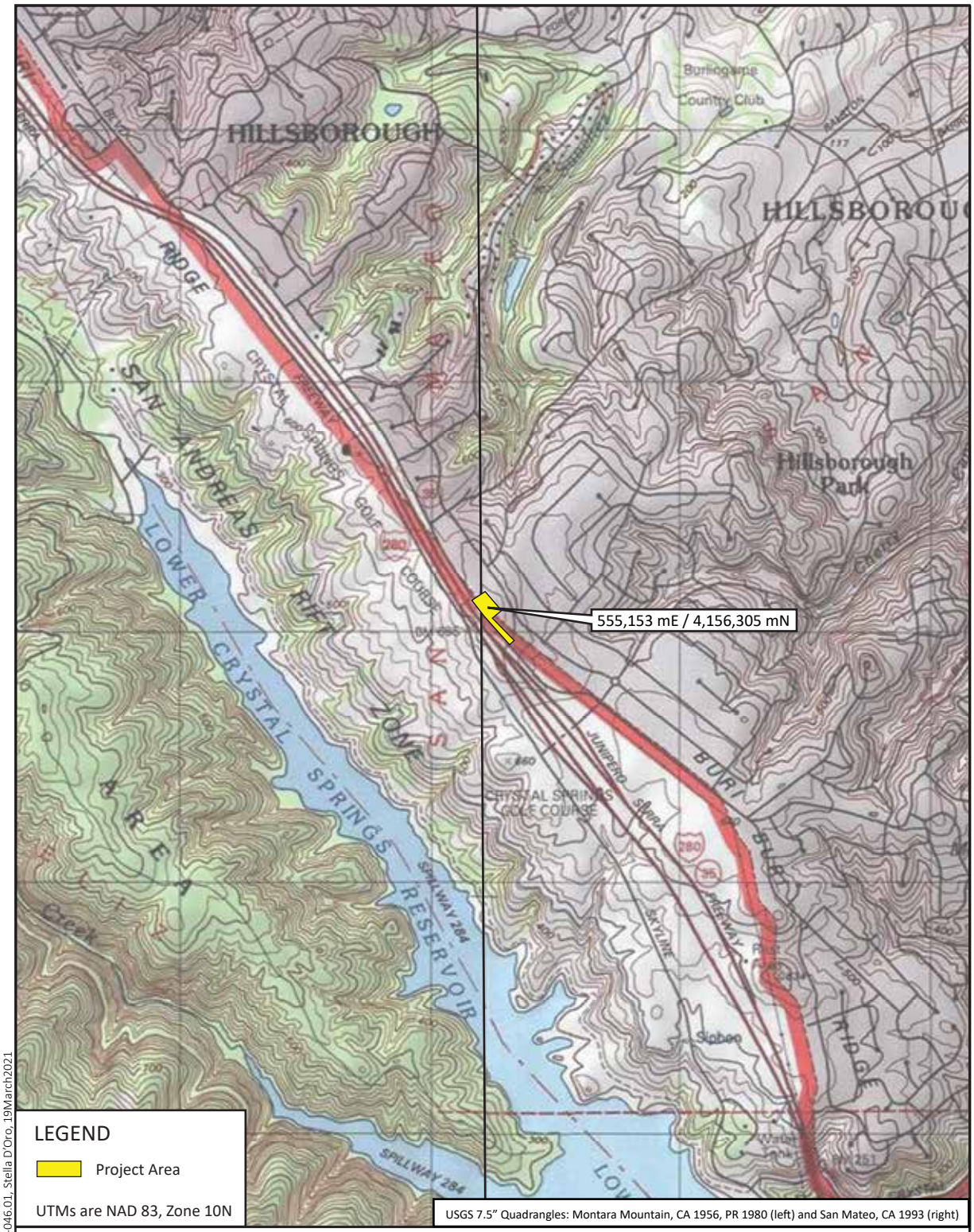
Introduction

1

In June 2020, Lori E. Trottier, Environmental Project Manager for Infrastructure Engineering Corporation (IEC), contracted with Albion Environmental, Inc. (Albion) to conduct a cultural resource and paleontological assessment of the Darrell Tank Site (Project Area) located at 549 Darrell Road (APN 030-041-100), Hillsborough, California. The town of Hillsborough is proposing to replace two existing ground-level steel water tanks (Darrell Tanks #1 and #2) with a new 120-foot diameter ground-level circular pre-stressed concrete water tank.

Albion was contracted to conduct a cultural resource and paleontological assessment to assist IEC in its development of an Initial Study/Mitigated Negative Declaration (IS/MND) as pursuant to the requirements of the California Environmental Quality Act (CEQA). The cultural resource assessment was conducted by Albion and comprised four tasks: (1) archival research and a review of records from the California Historical Resources Information System's Northwest Information Center at Sonoma State University (NWIC ; (2) Native American outreach; (3) a surface survey of the Project Area; and (4) a report of findings and recommendations. The paleontological assessment was completed by Cogstone Resource Management, Inc. (Cogstone), who conducted a records review from the University of California Museum of Paleontology (UCMP), a surface survey of the Project Area, and a report of findings and recommendations. A summary of Cogstone's findings is reported in Chapter 6 with the full report in Appendix A.

Albion designed the investigation to address treatment of cultural resources under current guidelines outlined in CEQA. All work was conducted in accordance with guidelines and regulations set forth in CEQA. The records search was requested by Albion Senior Archaeologist Stella D'Oro in September 2020 (NWIC File No.: 20-0872). The subsequent pedestrian survey was conducted on December 3, 2020, by Albion archaeologist John Ellison, who has earned a BA in Applied Anthropology and has worked in California archaeology for over 10 years. Mr. Ellison conducted the fieldwork under the supervision of Dr. Blackmore, who holds a PhD in Anthropology and has been working in California archaeology for 10 years.



File name: Figure_1.ai; J2020-046.01, Stella D'Oro, 19March2021

Figure 1. Location map, Darrell Tanks.

Project Location and Description

2

The Project Area consists of an approximately 50,000-square-foot parcel located at 550 Darrell Road (APN 030-041-1100), Hillsborough, California, that is located approximately 65.6 feet (20 m) east of Highway 35/Skyline Boulevard and approximately 223 feet (68 m) west of Darrell Road (Figure 1). The Project Area is approximately 737 feet above sea level. Currently, three large water storage tanks and two ancillary buildings are located within the Project Area. The nearest water sources are Sanchez Creek, located approximately 1,745 feet (531 m) north, and the Lower Crystal Springs Reservoir, located approximately 2,848 feet (868 m) west of the Project Area.

The Project proposes the demolition and removal of two existing steel water tanks (Darrel Tanks # 1 and #2) and the construction of one new pre-stressed concrete tank. Darrell Tanks #1 and #2 were built in 1952 with the third (Darrell Tank #3) built six years later in 1958. These will be replaced by a new 2-million-gallon circular pre-stressed concrete water tank. Project construction will include tree removal/replacements, grading within the southern half of the Project Area, over excavation and subgrade preparation for structural tank floor slab and foundation, piping, valves, utilities relocations, and replacement of paved and gravel surfaces. Tank height ranges from 24 feet above ground surface to 29 feet above ground surface. Depth of impact ranges between 10 to 15 feet below grade.

Sources Consulted

3

RECORDS SEARCH

Jessika Akmenkalns, PhD, Researcher for the NWIC, provided the results of a records search for resources within a $^{1}/_{4}$-mile radius of the Project Area and for studies within a 300-foot radius of the Project Area on November 13, 2020 (Appendix B). In addition to official maps and records, the following sources of information were consulted as part of the records search:

- National Register of Historic Places (NRHP)
- California Register of Historical Resources (CRHR)
- Office of Historic Preservation Historic Properties Directory
- Office of Historic Preservation Archaeological Determinations of Eligibility
- Built Environment Resources Directory, Office of Historic Preservation
- Special Research Collections at the UCSB Library (aerial images and historic maps)

NATIONAL REGISTER OF HISTORIC PLACES

One property is listed in the NRHP within a $^{1}/_{4}$-mile radius of the Project Area.

- 565 Remillard Drive (The Carolands) was built between 1914 and 1916. It is individually listed by the Keeper (Ref. # 75000478).

CALIFORNIA REGISTER OF HISTORICAL RESOURCES

One property is listed in the CRHR within a $^{1}/_{4}$-mile radius of the Project Area.

- 565 Remillard Drive (The Carolands) was built between 1914 and 1916. It listed in the California Register. It is also a California Historical Landmark (#770)

BUILT ENVIRONMENT RESOURCES DIRECTORY

The Built Environment Resources Directory (BERD) indicates that one property is located within a $^{1}/_{4}$-mile radius of the Project Area:

- 553 Darrell Road: This property was determined ineligible for listing in the NRHP by consensus through the Section 106 process. It has not been evaluated for the CRHR or other local listings.

PREVIOUSLY CONDUCTED CULTURAL RESOURCE STUDIES IN THE PROJECT AREA

According to the NWIC, five cultural resource studies have been conducted within the Project Area, and one cultural resource study has been previously conducted outside of the Project Area but within a 300-foot radius of the Project Area. Previous studies are described in Tables 1–2 below.

Table 1. Cultural Resource Studies Conducted Within the Project Area.

Report No.	Authors	Citation Year	Citation Title	Proximity to Project Area
S-21879	Baird et al.	1990	Town of Hillsborough Historic Building Survey	Within Project Area
S-27930	K. Brown, A. Marlow, J. Allan, W. Self	2003	Cultural Resource Assessment of Alternative Routes for PG&E's Jefferson-Martin Transmission Line, San Mateo County, California	Within Project Area
S-36757	Clark, M.	2010	NHPA Section 106 Compliance for the Town of Hillsborough SCADA Upgrade Project, Type A Installations, San Mateo County, California	Within Project Area
S-46397	Spillane, T.	2014	Archaeological Overview and Assessment: Indigenous Sites of the GGNRA	Within Project Area
S-49917	Brunzell, D.	2017	Cultural Resources Assessment of the Hillsborough PUC Project, San Mateo County, California	Within Project Area

Table 2. Cultural Resource Studies Conducted Within a 300-Foot Radius of the Project Area.

Report No.	Authors	Citation Year	Citation Title	Proximity to Project Area
S-36851	Billat, L.	2010	New Tower Submission Packet, FCC Form 620, Hillsborough Water Tank, SF-53190A	Within 300 ft

PREVIOUSLY RECORDED CULTURAL RESOURCES WITHIN $^1/_4$-MILE OF THE PROJECT AREA

The records search identified one cultural resource (P-41-000538) located within a $^1/_4$-mile radius of the subject parcel, and no previously known resources are located within the Project Area. Previously identified cultural resources are described in Table 3 below.

Table 3. Cultural Resources Within a $^{1}/_{4}$-Mile Radius of the Project Area

Resource No.	Recorded By	Year	Resource Description	Proximity to Project Area
P-4100-000538	Wickert	1990	A Beaux Art mansion of European architecture and design, The Carolands, built in 1914. NRHP (#75000478). California Historic Landmark No. 886.	Within 300 ft

HISTORICAL IMAGERY

Albion also conducted an online search of historic maps and aerials and found information pertinent to the Project Area from the following:

- 1857 Diseño map
- 1865 GLO plat map
- 1892 USGS topographic map
- 1927 plat map
- 1943 aerial photograph

NATIVE AMERICAN OUTREACH

Sarah Fonseca of the Native American Heritage Commission (NAHC) provided the results of a Sacred Lands File search and a list of tribal stakeholders on November 3, 2020. According to the NAHC, the Sacred Lands File search was positive and they requested all NAHC listed stakeholder be contacted regarding any information on the positive result. Ms. Fonseca also provided a Native American stakeholder list for groups or individuals who may have knowledge of cultural resources in the area (Appendix C).

Letters containing a brief Project description and maps of the proposed Project Area were sent to via USPS certified mail to the following individuals/groups: Irenne Zwierlein of the Amah Mutsun Tribal Band of San Juan Bautista; Ann Marie Sayers of the Indian Canyon Mutsun Band of Costanoan; Kanyon Sayers-Roods of the Indian Canyon Mutsun Band of Costanoan; Monica Arellano of the Muwekma Ohlone Indian Tribe of the SF Bay Area; Charlene Nijmeh of the Muwekma Ohlone Indian Tribe of the SF Bay Area; Tony Cerda of the Costanoan Rumsen Carmel Tribe; and Andrew Galvan of the Ohlone Indian Tribe.

Between November 18, 2020, and January 14, 2021, Albion called and/or sent emails to all of the individuals or groups identified by the NAHC. To date, Albion was not able to confirm if the resource listed in the NAHC Sacred Lands File is within or outside the current Project Area. However, Albion's outreach effort documented concerns that a trained archaeologist and qualified Native American monitor be present for all ground disturbing activities, suggesting a concern that cultural resources may exist within and immediately adjacent to the Project Area to the local tribal community (Appendix C). As of February 24, 2021, no additional responses have been received. These efforts

document a good faith outreach effort by Albion; however, the town of Hillsborough as the state lead agency is required to conduct Assembly Bill 52 formal consultation with pertinent Native stakeholders.

Background

4

NATURAL ENVIRONMENT

The parcel range is relatively flat and is located approximately 737 feet above sea level. The nearest water sources are Sanchez Creek, located approximately 1,745 feet (531 m) north, and the Lower Crystal Springs Reservoir, located approximately 2,848 feet (868 m) west of the Project Area. Soils in the area are characterized as Orthents, cut and fill–Urban land complex (United States Department of Agriculture 2020). Orthents, cut and fill–Urban land complex consists of well drained soils formed by alluvium. The soil profile is characterized by an H1 Horizon from surface to approximately 152 centimeters below surface. The geology of the area is defined by Mesozoic Plutonic rock, composed largely of serpentine.

CULTURAL ENVIRONMENT

Prehistory of the southern San Francisco Bay area is complex due to the dramatic increase in human populations from middle to late Holocene times (Milliken et al. 2007). Cultural chronology is quite variable spatially but is generally framed within a tripartite sequence that is commonly used in central California—Early, Middle, and Late (Hylkema 2002; Milliken et al. 2007). These temporal periods are preceded by early to middle Holocene occupation, often characterized as the Millingstone era (Hylkema 2002; Milliken et al. 2007).

The Millingstone Period (9000–5500 years Before Present (BP) (Ingram et al. 1996)) is characterized by small groups who travelled widely and practiced broad spectrum foraging of easily acquired plant and animal resources. Artifacts common to this time period are handstones and millingstones. Flaked stone implements, such as projectile points, are much less common than grinding and battering tools (Fitzgerald 2000). Common foods are thought to have included a variety of small seeds, shellfish, and small mammals.

The Early Period ranges from approximately 5500–2500 BP and encompasses an era where people are thought to still have practiced wide ranging residential mobility but placed a greater emphasis on hunting larger game. Large pinnipeds, such as northern fur seal, are common to coastal archaeological sites during this time. Several styles of large projectile points correspond to this general time frame, which also marks the initial use of mortar and pestle technology.

The Middle Period dates from 2500–1000 BP and appears to represent a time when people were somewhat more residentially stable and practiced more logistical (short term) mobility (Milliken et al. 2007:106). By this time, people apparently went on extended resource acquisition forays for the purpose of bringing subsistence or trade items back to residential base camps. Large, terrestrial mammals were hunted more often during this time and grinding implements become more common (Milliken et al. 2007:107).

The Late Period begins at 1000 BP and extends to ca. 1550 BP (Hylkema 2002:33), or perhaps more recently. The Late Period is characterized by increased sociopolitical complexity and settlement centralization. Large village sites in the northern Santa Clara Valley are often found in the valley center along perennial streams (Bergthold 1982; Milliken et al. 2007). There is a continued prevalence of mortar and pestle technology, thought to signify a greater reliance on acorn than in earlier times. Other labor-intensive foods were also used with greater frequency during this latest time period (Hylkema 2002). For example, sea otter and harbor seal were exploited more heavily. These animals are thought to be more labor-intensive to capture compared to other pinnipeds and large mammals, which were more commonly hunted in earlier time. Bow and arrow technology is also believed to have been adopted by aboriginal hunters during this latest precolonial interval (Milliken et al. 2007:117).

ETHNOGRAPHIC BACKGROUND

The Project Area was inhabited by Ohlone, or Costanoan populations (Levy 1978; Milliken et al. 2007). When first encountered by Spanish explorers, aboriginal inhabitants of the Bay Area and vicinity were referred to as *Costaños* (Levy 1978). The people came to be known as Costanoans (cf. Levy 1978), although now, the descendants of those earlier inhabitants prefer to be referred to as Ohlone (Bean 1994). Both terms refer to the language group spoken by the people, rather than any sort of political group. The Ohlone inhabited the San Francisco Peninsula, the East Bay to the Delta, and south past Santa Clara Valley to the coast of Monterey Bay.

At Spanish contact, aboriginal groups residing in the southern Bay Area were organized under a tribelet system where villages, thought to number around 50, were autonomous political units (Levy 1978). The Ohlone exploited all of the regional habitats including bay marshes, valley grasslands, mountainous uplands and open coastal environs. Resources exploited included elk, pronghorn, deer, sea mammals, salmon, trout, shellfish, ducks, geese, acorns, seeds, grasses, and roots (Baumhoff 1963).

POSTCONTACT HISTORIC CONTEXT

SPANISH PERIOD

Beginning in 1769, the Spanish Crown established twenty-one missions (religious institutions), four presidios (military forts), and three pueblos (civil towns) in Alta California. The presidios (San Diego, Santa Barbara, Monterey, and San Francisco) provided support for the religious goals of the missionaries, and also presented a military force to Russian settlers, other foreigners, and local indigenous peoples. The pueblos (San Jose, Los Angeles, and Branciforte) were solely devoted to agricultural pursuits; their purpose was to raise crops to provide for the presidio population, relieving Mexico from having to supply food to the population in this new region, and provide a buffer against the often delayed San Blas shipments (Garr 1976:94; Winther 1935:4). With this goal, early explorers in Alta California found sites for establishing such towns, and soldiers and civilians of mixed backgrounds were selected to settle these places, and the earliest historic towns were developed in California.

The reason for colonization in California was to protect the Spanish-owned, northern Mexico silver mines and other New World investments from Russians encroaching from the north (Archibald

1978:xi; Webb 1952:3). Establishing missions, presidios, and pueblos was considered an inexpensive way of protecting northern Mexico, while simultaneously attempting to spread Spanish culture and Christian faith. Interactions between Franciscan priests, diverse soldiers of the Crown, and local and non-local indigenous peoples took place under this economic and political regime for nearly sixty years, and under Spanish and later Mexican governments.

Movement of indigenous peoples to the Spanish Missions was one response to the many ways the Spanish and Mexican governments, and their supporters, disrupted local communities. Franciscan priests reproduced the common Spanish colonial practice of moving Native peoples into mission centers, strategically disassociating them from their homelands and the mythical landscapes, graves of their ancestors, and the named rocks and landmarks contained therein (Lightfoot 2005:65; Margolin 1989:33). The historical record tells us this practice created mission populations composed of peoples from variable ethnolinguistic groups and very distant polities.

MEXICAN PERIOD

After the Mexican War of Independence ended in 1822, the secularization of Mission lands began. This involved the confiscation of Mission lands and properties by Mexican civil authorities, and the transfer of these to Mexican citizens. Many Mexican Californians strongly supported the transfer of "landed wealth" from the church to the citizens (Senkewicz 2002:24). The Mexican government carved out and granted large ranches to Mexican citizens, who used the land to graze cattle. These ranchos and herds allowed the Californios to engage in trade with ships visiting the coast, exchanging hides and tallow for manufactured goods. Rancho San Mateo was granted to Cayetano Arenas by Governor Pío Pico in 1846 and encompasses 6,439 acres in present-day San Mateo County.

The few neophytes who chose to remain in their ancestral territory did not have legal ownership of their homelands, although some did petition the Mexican government for land grants. Some mission neophytes were successful in their petition. For example, Lope (Lopez) Yñigo, an Ohlone Indian from the region the priests called "San Bernardino," was granted 800 acres, the Posolmi Rancho (CL1501), located in present-day Sunnyvale (Milliken 2009). Some indigenous peoples were given jobs as manual laborers or domestic servants on these Mexican Ranchos, which often were later purchased by American settlers and became American cattle ranches. Others California indigenous peoples lived near one of the pueblos, where work was easier to find as foreign settlers began to pour into the region. Others still migrated to the interior hoping to join kin already there or establish new sociopolitical connections.

After the secularization of the Missions (1834), the many Mexican *Californio* and recent Mexican immigrant residents who were not granted rancho land often clustered near the former missions, reusing former mission adobe structures and constructing new adobes as well. Squatting in abandoned mission buildings was widely practiced, especially in northern California (Hughes 1975). These squatters may have taken up occupations as farmers, merchants, craftsmen, or *campistas* (individuals who used their property to grow crops and raise livestock) (Gonzalez 2009).

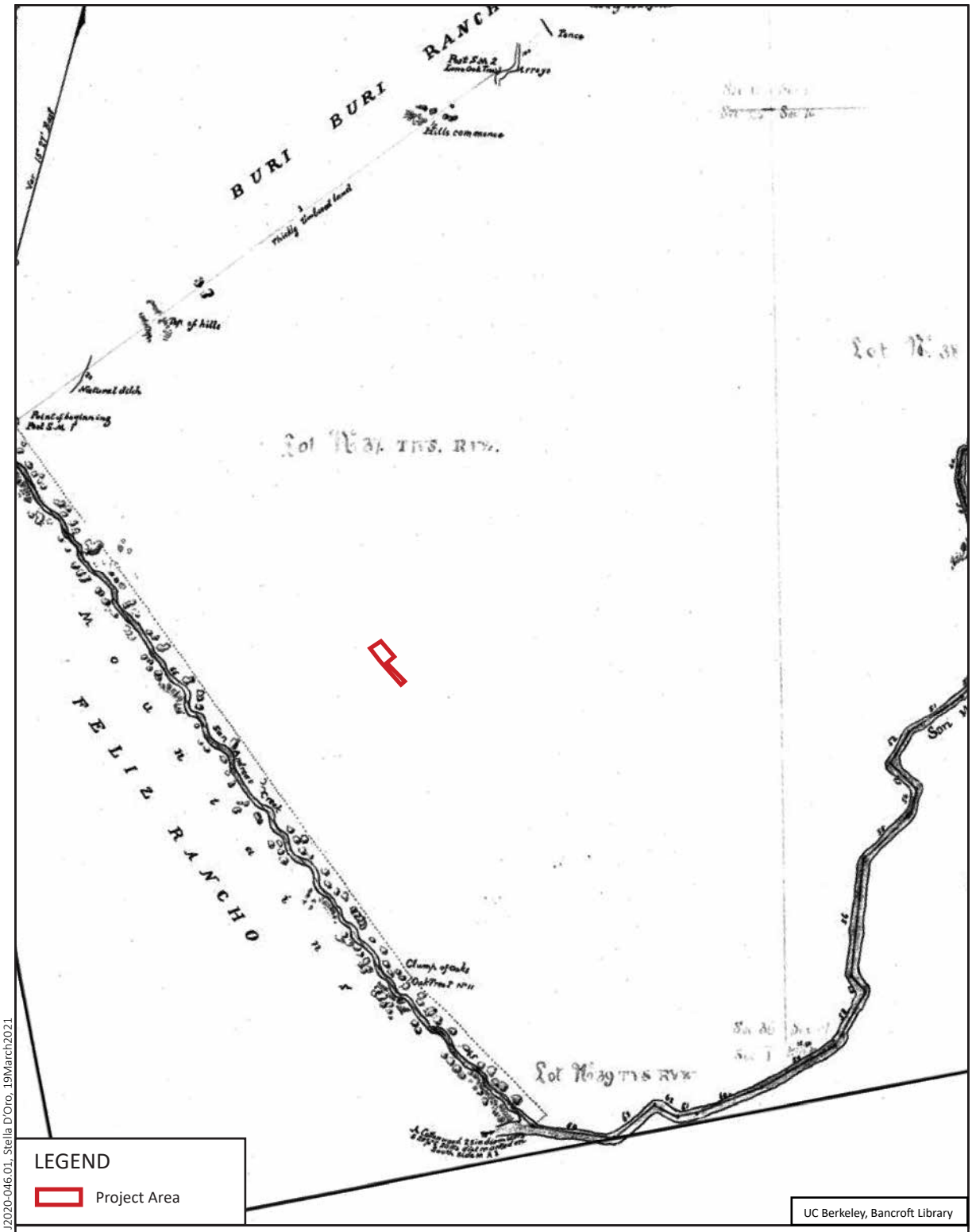
AMERICAN PERIOD

The Treaty of Guadalupe Hidalgo of February 1848, ending the Mexican-American War, marks the beginning of the Early American Period in California. When Americans began moving into California, *Californios* "experienced a decline in economic status, political power, and social influence" (Hughes 1975). Following trends seen elsewhere in North America, an American system of land law, which imposed artificial but ordered grids over a landscape, was later established. This contradicted with Mexican California systems, which designated boundaries of land grants in more imprecise fashions (Church 2002; Clark 2005; Senkewicz 2002). Consequently, legal contests led to most *Californios* loosing most of their land to Americans (Senkewicz 2002).

San Mateo County is located in the San Francisco Bay Area, incorporating most of the San Francisco Peninsula, much of it mountainous except for a portion of the Santa Clara Valley to the east (Alexander and Hamm 1916; Alley 1883). The county was established in 1856, when the State decided to split San Francisco County in two with the southern portion becoming San Mateo. The county was officially organized the following year, with Redwood City as county seat, and in 1868 it annexed a portion of Santa Cruz County that includes Pescadero. Some of the earliest American Period settlers in the county were involved in the lumber industry, especially in the vicinity of Redwood City, with included the construction of mills that provided construction material to San Francisco. Other early settlers included merchants, ranchers, and shipbuilders, among others, including individuals and families from other parts of the United States, Europe, and Asia. In communities like Redwood City and San Mateo early buildings included churches, schools, stores, hotels, and government offices. Early transportation routes included a series of stage lines across the county, followed in the mid- to late-19th century by railroads.

HISTORY OF THE PROJECT AREA

The 1857 Diseño map indicates that the Project Area is within Rancho San Mateo and shows the boundary between Rancho San Mateo and Feliz Rancho beginning southwest of the Project Area, immediately northeast of San Andreas Creek (present-day Lower Crystal Springs Reservoir) (Figure 2). An 1865 GLO plat map similarly shows the Rancho San Mateo, then Lot No. 37, as being bound by San Andreas Creek (Figure 3). Besides the Creek, no other landscape features are depicted near the Project Area in the 1857 Diseño or the 1865 GLO plat map. An 1892 USGS topographic map shows the Project Area on one of the highest points of the ridgetop running along San Andreas Creek; the map also depicts the Crystal Springs Reservoir along the course of San Andreas Creek, the Lower (northern) portion being created in 1888 with the construction of the Crystal Springs Dam (Figure 4). A 1927 plat map shows the Project Area existing along the boundary of the parcel owned by Harriett Pullman Carolan but depicts no landscape features (Figure 5). A 1943 aerial photograph indicates the Project Area had no structures but was covered with trees and vegetation, with the surrounding area not heavily developed; dirt paths and a building are visible to the northeast, and a dirt road is visible running along the southwestern boundary of the Project Area, beyond which is the old alignment of State Route 35 (Figure 6). The landscape has been significantly altered since then, with the construction of Interstate Highway 280 immediately to the southwest of the Project Area and dense residential development in the surrounding area. The Darrell Tanks themselves were built in the 1950s, with Tanks #1 and #2 constructed in 1952 and Tank #3 built in 1958 (Figure 7).

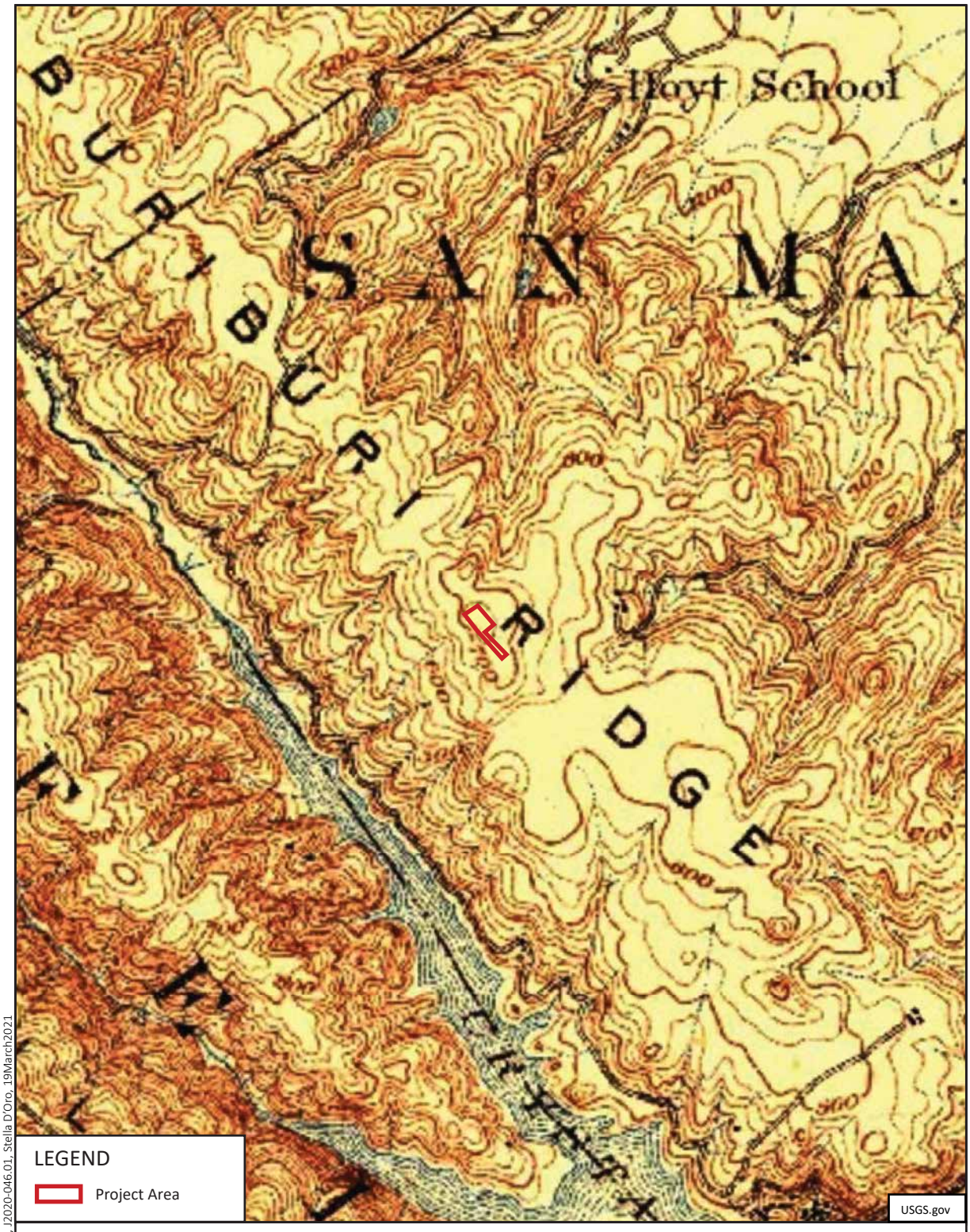


File name: Figure_2_1857.ai; J2020-046.01; Stella D'Oro, 19March2021

Figure 2. Detail of the Diseño del torreno [sic] de S. Mateo with the Project Area.

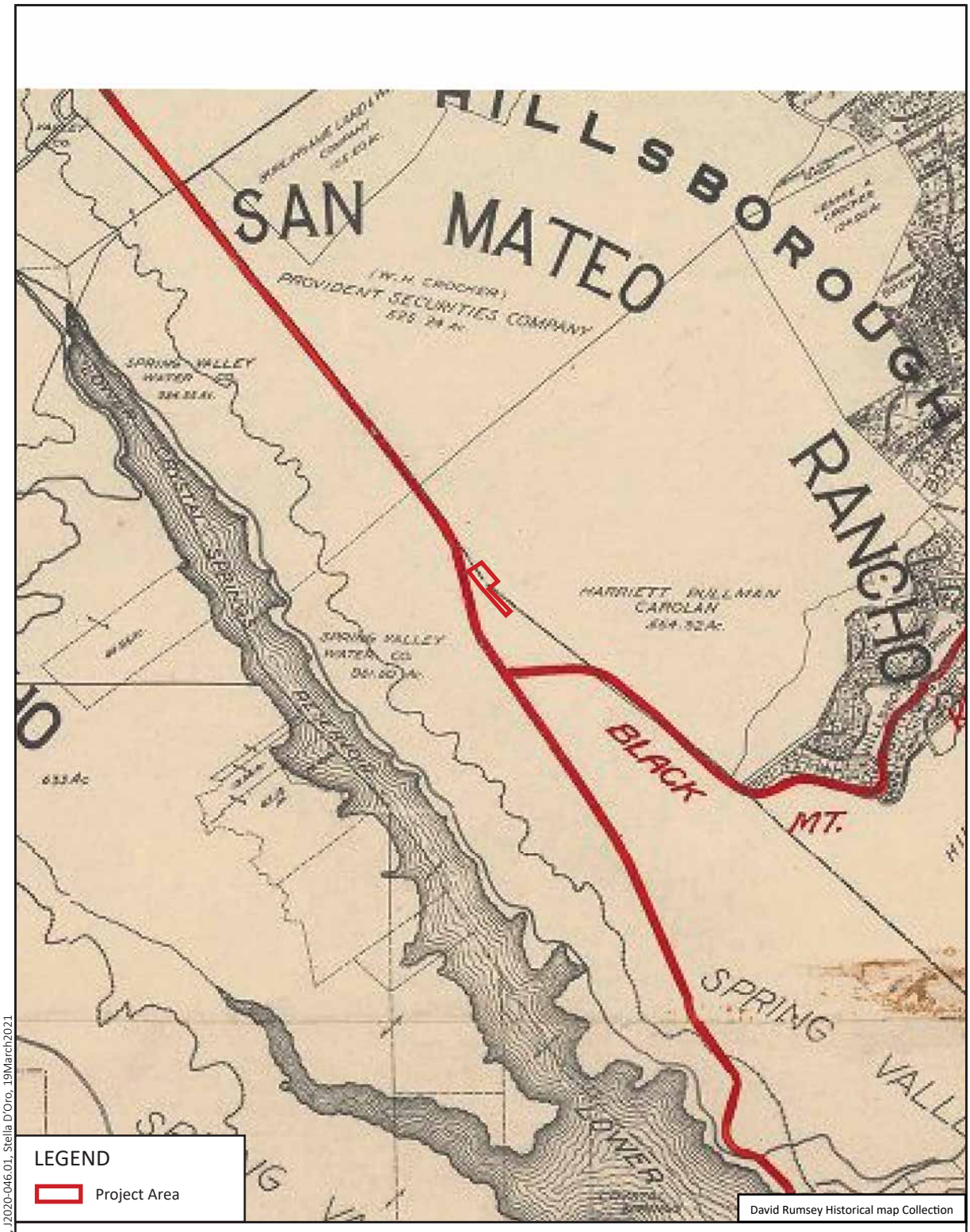
File name: Figure_3_1865.ai; J2020-046.01; Stella D'Oro, 19March2021

Figure 3. Detail of a GLO plat map with the Project Area.



File name: Figure_4_1892.ai; J2020-046.01; Stella D'Oro, 19March2021

Figure 4. Detail of an 1892 USGS topographic map with the Project Area.



File name: Figure_5_1927.ai; J2020-046.01; Stella D'Oro, 19March2021

Figure 5. Detail of a 1927 plat map with the Project Area.

File name: Figure_6_1943.ai; J2020-046.01; Stella D'Oro, 19March2021

Figure 6. Detail of a 1943 aerial photograph with the Project Area.

File name: Figure_7_SurveyArea.ai, J2020-046.01, Stella D'Oro, 19March2021

Figure 7. Project Area and surveyed area.

Archaeological Field Methods and Results

5

On December 3, 2020, Albion archaeologist John Ellison conducted a pedestrian survey over the entire Project Area (Figure 8). Surface survey was conducted using 10-meter wide (or less) transects across the entire Project Area while closely inspecting the surface for cultural materials. Visibility of ground surface throughout the Project Area was fair to poor, as buildings, water tanks, hardscaping, and organic matter covered much of the lot and obscured soil visibility (Figure 8).

Survey efforts identified modern refuse but did not locate any precolonial or historic-era resources. In the northeast portion of the Project Area, an octagon-shaped foundation comprising wood-formed cement footings was identified, likely associated with the water tanks themselves (Figure 8). The water tanks are considered historic structures under CEQA as they are 69 (Tanks #1 and # 2) and 63 years old (Tank #3) (see California Code of Regulation- CCR 4852).
.

Photograph 1. Overview of yard, facing west.

Photograph 2. Tank foundation feature, facing south.

Photograph 3. Tank foundation, facing west.

Photograph 4. Overview of tank foundation, facing north.

Photograph 5. Tanks to be replaced, facing southwest.

Photograph 6. Close-up of tank foundation, facing west.

File name: Figure_8_Photos.ai, J2020-046.01, Stella D'Oro, 24February2021

Figure 8. Photographs from the field.

Conclusions and Recommendations 6

PALEONTOLOGICAL RESOURCE ASSESMENT

This section is an excerpt taken from Vreeland and Scott (2021, iv; see also Appendix A).

The Project Area surface is mapped as the Merced Formation and serpentinite. Although not mapped, the Project Area contains modern artificial fill that was noted during the pedestrian survey. The record search revealed no fossil localities from within the Project Area; however, localities are known from the Merced Formation near to the Project Area. Notably, the Merced Formation has produced extinct Pleistocene megafauna, including ground sloth and Columbian mammoth, as well as baleen whale, numerous marine invertebrate fossils, and conifer fossils.

The modern artificial fill deposits are assigned very low potential for fossils (Potential Fossil Yield Classification [PFYC] 1). The late Pliocene to early Pleistocene Merced Formation is assigned a moderate paleontological sensitivity (PFYC 3). The Jurassic to Cretaceous serpentinite is assigned a very low paleontological sensitivity for fossils due to the lack of fossils in these rocks (PFYC 1).

Based on the current over-excavation plan and the Project Area geology, the Project will be excavating approximately 16 feet into the Jurassic serpentinite. Grading impacts to the late Pliocene to early Pleistocene Merced Formation will be low to very low. Due to the low potential for impacts to the Merced Formation, no mitigation measures are currently recommended. No mitigation is required for any excavation into the serpentinite and artificial fill.

If unanticipated discoveries of paleontological resources occur during construction, all work within 25 feet of the discovery should be halted until the find has been evaluated by a qualified paleontologist.

CULTURAL RESOURCE ASSESSMENT

Albion's Phase I cultural resource inventory included archival research, a review of records from the NWIC, an intensive surface survey of the Project Area, Native American stakeholder outreach, and a report of findings and recommendations. A review of records at the NWIC indicated that one cultural resource has been previously recorded within a $^{1}/_{4}$-mile radius of the Project Area (P-41-000538). This resource consists of A Beaux Art mansion of European architecture and design also known as the Carolands and is listed in both the NRHP (Ref. # 75000478) and the CRHR.

Visual inspection of the Project Area surface revealed no evidence of intact precolonial or historic-era archaeological deposits. Geological maps indicate there is a low potential for buried deposits (see Appendix A). According to our review of historical images, the Project Area has remained largely undeveloped until the construction of the water tanks in the 1950s. As these tanks are over fifty years of age, Darrell Tanks #1 and # 2 have the potential to be considered an historic-era resources under CEQA (Appendix D-DPR form). A 1990 study of historic structures in Hillsborough did not consider the tanks as they had not met the CEQA age threshold at the time the study was

conducted (CCR 4852). As a result, it is Albion's judgment that a qualified architectural historian should evaluate Darrell Water Tanks #1 and #2 for inclusion on the California Register of Historical Resources (CRHR) under guidelines outlined in the CEQA. This study should be conducted prior to tank demolition.

Native American Outreach was conducted as part of a good faith effort to identify any potential Tribal Cultural Resources and gather information from the stakeholders . This work helps Albion in making an informed recommendation whether the proposed Project has the potential to impact Tribal Cultural Resources and to provide additional information to the City about potential concerns the local Tribal community may have about the proposed Project. To this end, Albion conducted a Sacred Lands File search through the NAHC. The search resulted in the identification of an important resource in the vicinity of the Project. The NAHC provided Albion a list of potential Project stakeholders who might be able to provide specific information about the resource. Albion contacted each of these stakeholders via certified mail, and then followed-up in the form of email and phone calls.

As the outreach effort did not reveal additional information about the resource identified in the Sacred Lands File search, Albion was unable to confirm if this important tribal resource is located within or outside the Project Area. Consequently, we are not able to determine whether or not the Project will impact a Tribal Cultural Resource. Albion's outreach through the NAHC is one step in the process of identifying Tribal Cultural Resources, however it does not satisfy compliance with the requirements of Assembly Bill 52 (AB 52). AB 52 stipulates a direct consulting relationship between Tribes who wish to consult on a project and the lead agency. The responsibility for compliance with AB 52 lies with the Tribes and agencies and should not be assigned to a third party (e.g. consulting firm). In Albion's experience, Tribes may not always share information about sacred resources with a consultant, but may be more willing to share information in the course of AB 52 consultation. Based on our study, Albion recommends the lead CEQA agency conduct formal AB 52 consultation in an effort to determine if the Project will impact Tribal Cultural Resources. Albion recommends the lead CEQA agency follow the five step process outlined by the NAHC to meet their obligation under CEQA to make a good faith effort to conduct Tribal consultation under State guidelines (see http:// nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf).

Since many important cultural resources, such as Tribal Cultural Resources, do not necessarily leave an archaeological footprint or have physically identifiable manifestations, it is vital to seek out information regarding the possible presence of these important resources and their locations through consultation with local tribal members. Under the authority of Assembly Bill 52, the City of Hillsborough (City) may have received information from interested Native American tribes or representatives concerning Tribal Cultural Resources at the Project site. The City is responsible for collecting and incorporating tribal information into the environmental review process. At this time, Albion does not know if the City has received any such information.

If previously unidentified cultural materials are unearthed during construction, it is CEQA policy that work be halted in that area until a qualified archaeologist can evaluate the nature and significance of the find. An additional archaeological study will be needed if Project limits are extended beyond the present study.

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Appendix A

Paleontological Resources Assessment

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

PALEONTOLOGICAL RESOURCES ASSESSMENT REPORT FOR THE DARRELL WATER TANKS REPLACEMENT PROJECT, TOWN OF HILLSBOROUGH PUBLIC WORKS DEPARTMENT, SAN MATEO COUNTY, CALIFORNIA

Prepared for:
Town of Hillsborough Public Works Department
1600 Floribunda Avenue, Hillsborough, California 94010

Subcontracted to:
Albion Environmental
1414 Soquel Avenue, Suite 205, Santa Cruz, CA 95062

Authors:
Kelly Vreeland, M.S. and Kim Scott, M.S.

Principal Investigator:
Kim Scott, M.S.

February 2021

Cogstone Project Number: 4969
Type of Study: Paleontological resources assessment
Localities within the Project area: none
USGS 7.5' Topographic Quadrangles: Montara Mountain and San Mateo
Area: ~1.39 acres
Key Words: Negative Survey, Paleontological Resources Assessment, modern artificial fill (very low fossil potential), late Pliocene to early Pleistocene Merced Formation (moderate fossil potential), Cretaceous to Jurassic serpentinite (very low fossil potential)

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LIST OF ABBREVIATIONS AND ACRONYMS

†	the taxon is extinct, although there may be living relatives in same genus or family
?	With a scientific name: indicates that species identification is “uncertain” with a greater uncertainty than cf.; OR questionably identified (similar to "cf.")
B.A.	Bachelor of Arts
BLM	Bureau of Land Management
B.S.	Bachelor of Science
CEQA	California Environmental Quality Act
cf.	indicates that the identification is provisional; short for the Latin *confer/conferatur*, both meaning "compare"; OR similar to but not definitely the same as
Cogstone	Cogstone Resource Management, Inc.
e.g.	for example
et al.	and others
etc.	et cetera
GIS	Geographic Information System
Ma	million years ago
M.S.	Master of Science
No.	number
PBDB	Paleobiological Database
PFYC	Potential Fossil Yield Classification
Project	Darrell Water Tanks Replacement Project
sp.	species cannot be confirmed
Town	Town of Hillsborough
UCMP	University of California, Museum of Paleontology
USGS	United States Geological Survey

SUMMARY OF FINDINGS

The purpose of this study is to determine the potential impacts to paleontological resources resulting from proposed construction of the Darrell Water Tanks Replacement Project (Project) in the Town of Hillsborough, San Mateo County, California. The Town of Hillsborough Public Works Department is the lead agency for this Project under the California Environmental Quality Act. The proposed Project involves the replacement of Darrell tanks Numbers 1 and 2 with a larger two million gallon pre-stressed concrete tank. The construction of the new larger tank would enable the two smaller tanks to be decommissioned and taken out of service in addition to providing larger water storage capacity with improved seismic performance.

The Project surface is mapped as the Merced Formation and serpentinite. Although not mapped, the Project area contains modern artificial fill that was noted during the pedestrian survey. The record search revealed no fossil localities from within the Project, however localities are known from the Merced Formation near to the Project. Notably, the Merced Formation has produced extinct Pleistocene megafauna, including ground sloth and Columbian mammoth, as well as baleen whale, numerous marine invertebrate fossils, and conifer fossils.

The modern artificial fill deposits are assigned very low potential for fossils (Potential Fossil Yield Classification [PFYC] 1). The late Pliocene to early Pleistocene Merced Formation is assigned a moderate paleontological sensitivity (PFYC 3). The Jurassic to Cretaceous serpentinite is assigned a very low paleontological sensitivity for fossils due to the lack of fossils in these rocks (PFYC 1).

Based on the current over-excavation plan and the Project geology, the Project will be excavating approximately 16 feet into the Jurassic serpentinite. Grading impacts to the late Pliocene to early Pleistocene Merced Formation will be low to very low. Due to the low potential for impacts to the Merced Formation, no mitigation measures are currently recommended. No mitigation is required for any excavation into the serpentinite and artificial fill.

If unanticipated discoveries of paleontological resources occur during construction, all work within 25 feet of the discovery should be halted until the find has been evaluated by a qualified paleontologist.

INTRODUCTION

PURPOSE OF STUDY

The purpose of this study is to determine the potential impacts to paleontological resources resulting from proposed construction of the Darrell Water Tank Project (Project; Figures 1, 2, and 3) in the Town of Hillsborough (Town), San Mateo County, California. The Town of Hillsborough Public Works Department is the lead agency for this Project under the California Environmental Quality Act (CEQA). The work in this report has been prepared under the guidelines set forth by CEQA.

PROJECT LOCATION

The Project encompasses approximately 1.39 acres and is mapped within Section 26 of Township 4 South, Range 5 West, in the Montara Mountain and San Mateo United States Geological Survey (USGS) 7.5' quadrangles within the Mount Diablo Base and Meridian (Figure 2). It is located adjacent to 545 Darrell Road, and is bound by Darrell Road to the northeast, Skyline Boulevard to the southwest, and residential homes on the other sides (Figure 3).

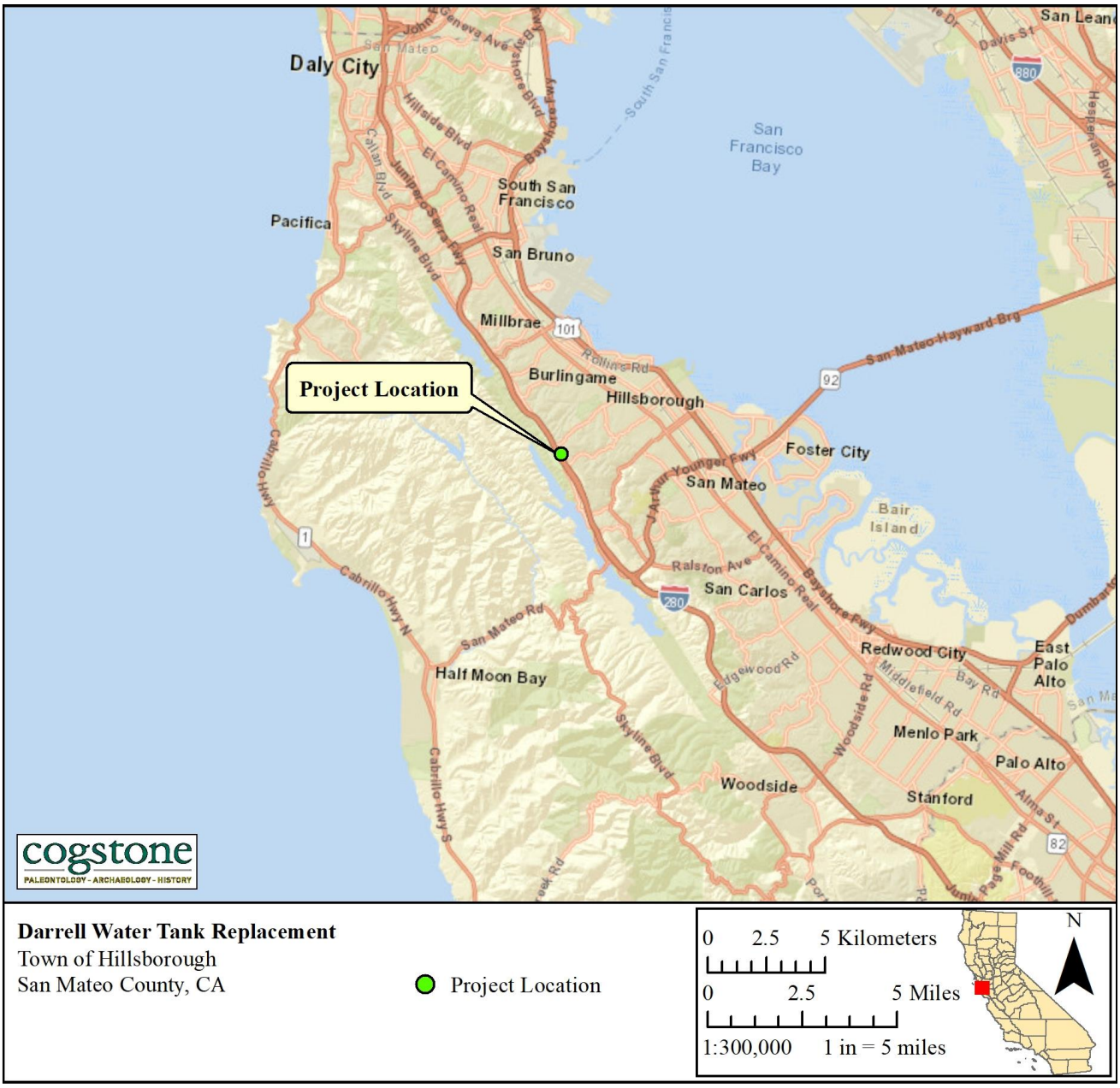

Figure 1. Project vicinity

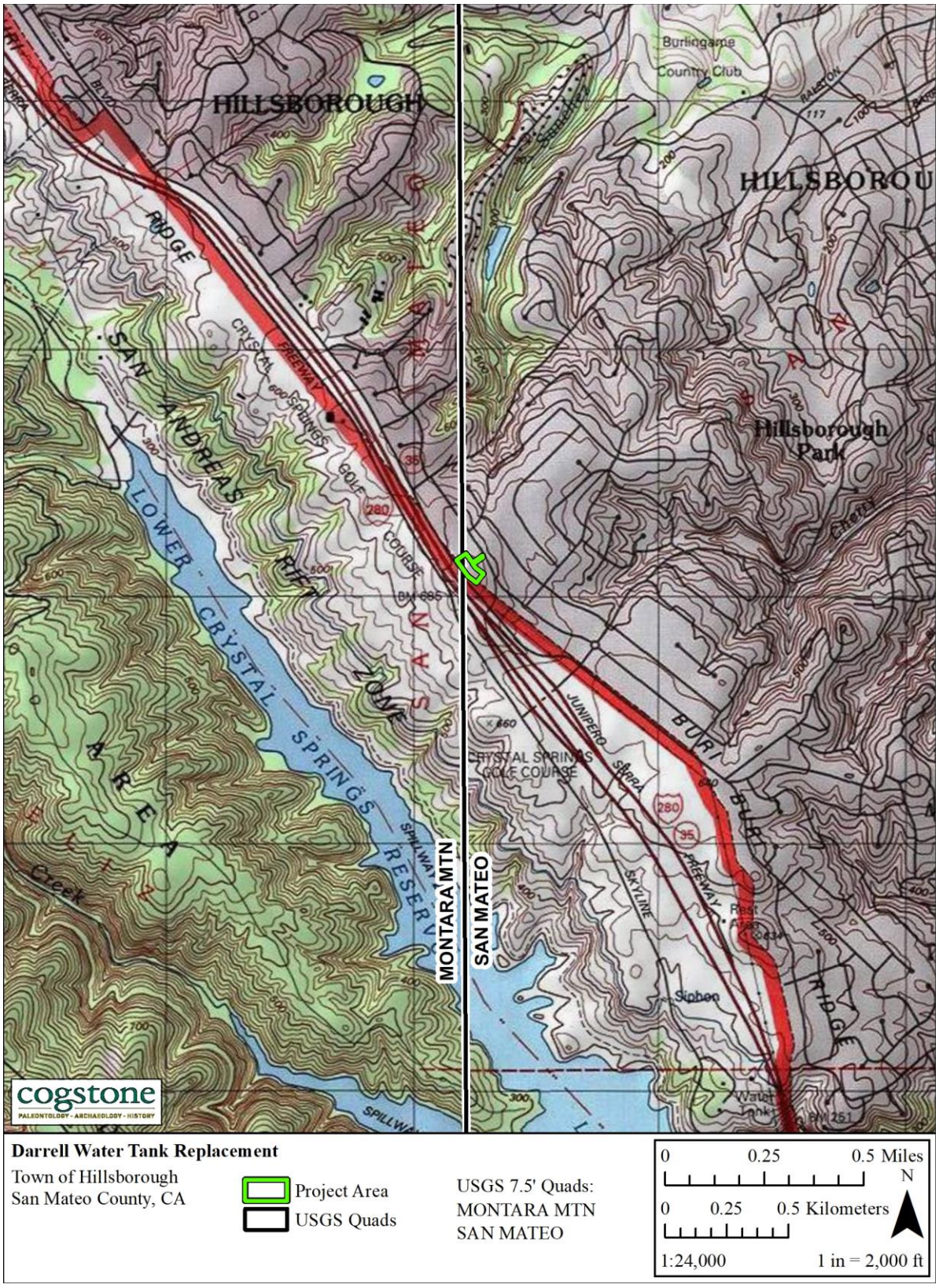

Figure 2**. Project topographic map**

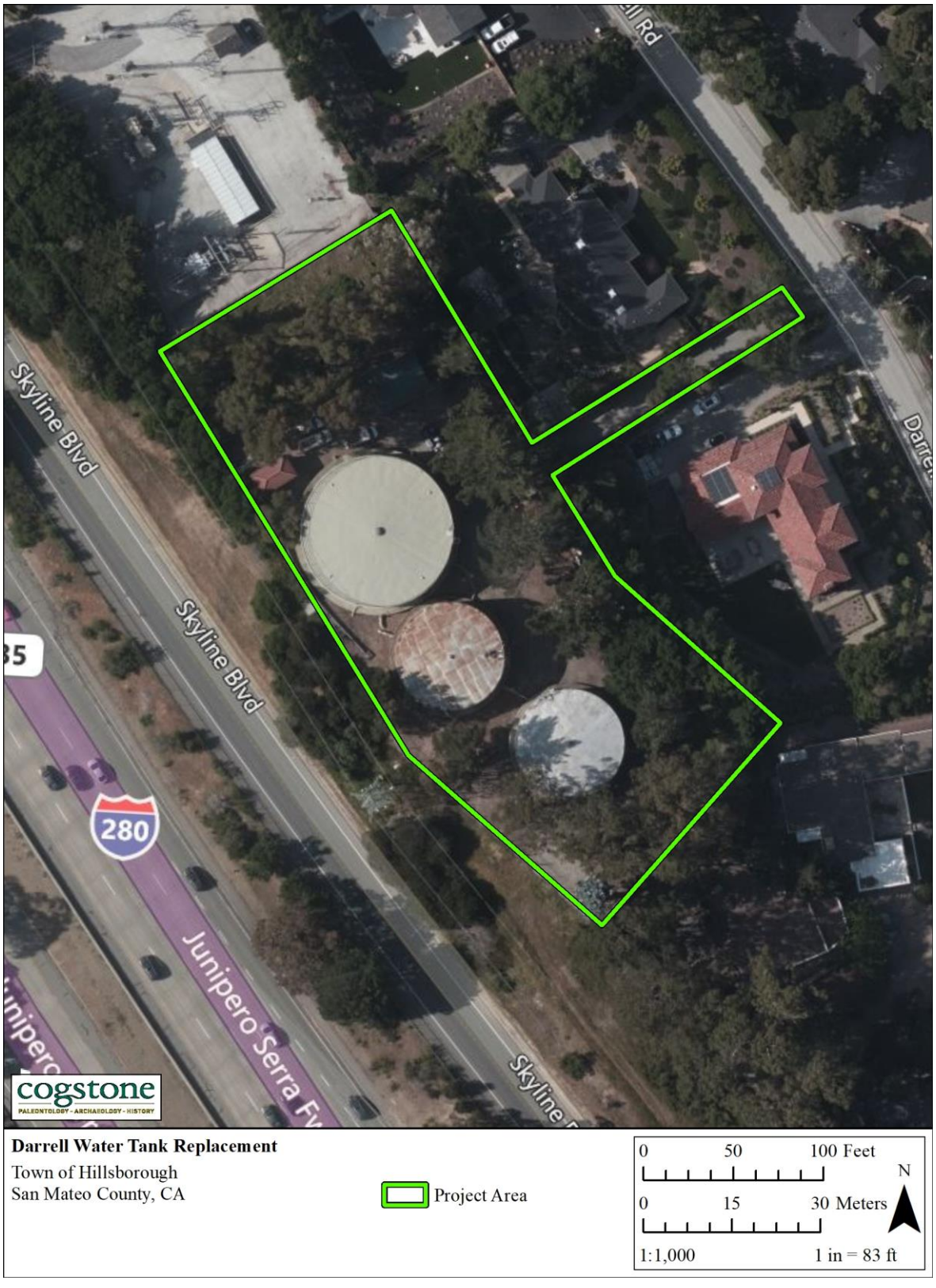

Figure 3. Project aerial map

PROJECT DESCRIPTION

The Town of Hillsborough (Town) operates a complex water distribution system to supply potable water for domestic use, landscape irrigation, and fire suppression. The normal source of water is the San Francisco Public Utilities Commission's Sunset Pipeline Number (No.) 1 and Crystal Springs Pipeline No. 2. The Town stores this water in 17 active storage tanks and one reservoir located at ten sites throughout the Town with a total storage of over 8 million gallons.

The Darrell water tanks are one component of the Town's water system that provides approximately 12.5% of the Town's water storage facilities. There are three existing steel tanks at the Darrell site, comprised of Tanks No. 1 and No. 2 of 500 million gallon capacity each (60 feet diameter and 24 feet height), and Tank No. 3 of one million gallon capacity (85 feet diameter and 24 feet height), built in 1950 and 1958, respectively.

The 2003 inspection the Town performed for the existing water tanks found both Darrell tanks No. 1 and No. 2 have seriously degraded coatings, and both the coatings and the underlying steel were also found to be degraded in Tank No. 2 in a 2009 inspection. Based on the inspection condition results, the Town put Darrell tanks No. 1 and No. 2 on the top of highest priority water storage replacement project.

The Darrell Tank Replacement Project will involve demolition of the two existing steel tanks No. 1 and No. 2, and construction of a single American Water Works Association D110 Type- I prestressed concert tank, and ancillary piping, electrical and control systems necessary to integrate the new tank into the existing water network system. The proposed water storage tank shall be designed to hold two million gallons of potable water. It should match the height of the existing tank No. 3 (24 feet) so that both tanks can be used in conjunction with one another or independently.

The Project should also evaluate any necessary site upgrades such as grading, drainage improvements, new fencing, video surveillance system, backup power system, new electrical panel in the Supervisory Control and Data Acquisition building, and other necessary upgrades and improvements.

The anticipated maximum depth of excavation is 16 feet.

PROJECT PERSONNEL

Cogstone Resource Management, Inc. (Cogstone), conducted the paleontological resources studies; a brief resume for the principal investigator is appended (Appendix A). Additional qualifications of key Cogstone personnel are available at http://www.cogstone.com/key-staff/.

- Kim Scott served as the principal paleontologist for the Project and reviewed this report for quality control. Kim has an M.S. in biology, with an emphasis in paleontology, from California State University, San Bernardino, and a B.S. in geology, with an emphasis in paleontology, from the University of California, Los Angeles, as well as more than 25 years of experience in California paleontology and geology.
- Kelly Vreeland wrote this report. Kelly has an M.S. and B.S. in geology, with an emphasis in paleontology, from California State University, Fullerton, as well as 10 years of experience in California paleontology and geology.
- Maria Hawley conducted the intensive pedestrian survey. Maria holds a B.A. in anthropology from Sacramento State College, and two years of field experience in California archaeology, and is cross-trained in paleontology.
- Logan Freeberg prepared the geographic information system (GIS) maps used throughout this report. Logan has a B.A. in anthropology from the University of California, Santa Barbara and a certificate in GIS from California State University, Fullerton, as well as 15 years of experience in California archaeology.
- Debbie Webster provided technical editing.

REGULATORY ENVIRONMENT

STATE LAWS AND REGULATIONS

CALIFORNIA ENVIRONMENTAL QUALITY ACT

CEQA includes paleontological, archaeological, and historic resources as integral features of the environment. CEQA states that: It is the policy of the state that public agencies should not approve Projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such Projects, and that the procedures required are intended to assist public agencies in systematically identifying both the significant effects of proposed Project and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects.

CEQA declares that it is state policy to: "take all action necessary to provide the people of this state with...historic environmental qualities." It further states that public or private Projects financed or approved by the state are subject to environmental review by the state. All such Projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed Project. In the event that a Project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered.

If paleontological resources are identified as being within the proposed Project study area, the sponsoring agency must take those resources into consideration when evaluating Project effects. The level of consideration may vary with the importance of the resource.

PUBLIC RESOURCES CODE

Section 5097.5: No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands (lands under state, county, city, district or public authority jurisdiction, or the jurisdiction of a public corporation), except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

CALIFORNIA ADMINISTRATIVE CODE, TITLE 14, SECTION 4307

This section states that "No person shall remove, injure, deface, or destroy any object of paleontological, archeological, or historical interest or value."

LOCAL LAWS AND REGULATIONS

TOWN OF HILLSBOROUGH

The Town of Hillsborough has the following goal and action to protect scientifically significant paleontological resources (Town of Hillsborough 2005):

> **Goal OSC-5** Support the preservation of important cultural resources found within the community.
>
> **Action OSC-5.3:** The Town will require construction projects to stop if archaeological or paleontological resources are uncovered during grading or other on-site excavation activities. Once the resources are assessed for importance, appropriate mitigation compliant with State law will be determined.

DEFINITION AND EVALUATION OF SCIENTIFIC SIGNIFICANCE FOR FOSSILS

Only qualified, trained paleontologists with specific expertise in the type of fossils being evaluated can determine the scientific significance of paleontological resources. Fossils are considered to be scientifically significant if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;
2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;
3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;
4. The fossils demonstrate unusual or spectacular circumstances in the history of life;
5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations (Scott and Springer 2003; Scott et al. 2004).

Scientific significance is assessed subsequent to the recovery and identification of fossils, usually by the scientific institution receiving the fossils. Typically, all identifiable vertebrate fossils are to be curated in perpetuity at an accredited repository after excavations have finished. Nonvertebrate fossils (plants, shells, trace fossils, etc.) may be collected as a representative sample when numerous fossils of the same species are present. Although initial identifications can be made in the field, final determination on fossil identifications and significance must be made by the repository.

In the case of unidentifiable fossils, unless they can be used for radiometric dating these typically do not meet the significance criteria listed above. In the case of isolated finds or single bones, while they may not initially appear to meet the scientific significance criteria listed above by themselves, they cannot immediately be discounted as not scientifically significant. This is because the evaluation of evolutionary relationships, development of biological communities, interaction between paleobotanical and paleozoological biotas, or unusual or spectacular circumstances in the history of life (criteria 1, 3, and 4 above) require a large quantity of data to assess. The accumulation of information on localities of similar age with identifiable fossils recovered in a geographic area is necessary to build these data sets.

BACKGROUND

GEOLOGICAL SETTING

This Project lies within the Coast Ranges Geomorphic Province. The Coast Ranges are typified by northwest-southeast trending mountains and valleys roughly parallel to the San Andreas Fault Zone. Mountains of the Coast Ranges are typically late Mesozoic to Cenozoic age (less than 200 million years old) and consist of metamorphic and sedimentary rocks.

STRATIGRAPHY

The Project surface is mapped as late Pliocene to early Pleistocene Merced Formation deposited 3.6 to 1.8 million years ago (Ma), and Jurassic to Cretaceous serpentinite ranging in age from 201.3 to 66 Ma (Pampeyan 1994, Brabb et al. 1998; Figure 4). Although not mapped, the Project area contains modern artificial fill that was noted during the pedestrian survey.

ARTIFICIAL FILL, MODERN

Artificial fill is typically less than a few feet thick, however it can be substantially thicker in the areas of overpasses, freeways, and other large earthworks. Any fossils that may be encountered therein are not scientifically significant.

MERCED FORMATION, LATE PLIOCENE TO EARLY PLEISTOCENE

The Merced Formation consists of fine grained, yellowish, marine sandstone, siltstone, and clayey sandstone. These rocks are blueish-gray in color, and are yellowish-to-grayish orange when weathered. Bedding is thick to massive and moderately cemented in some places. This formation is commonly friable, but can be moderately consolidated in some areas. Thickness can be approximately 100 feet but can be up to several hundred feet in areas with complex faulting (Pampeyan 1994). These rocks are mapped along the northwest and southeast boundaries of the Project area.

SERPENTINITE, JURASSIC TO CRETACEOUS

These metamorphic rocks occur both as a large flat-lying sheet with a gentle westward dip which increases near the San Andreas Fault Zone, and as near-vertical lenses and pods paralleling the San Andreas Fault (Pampeyan 1994). These rocks are mapped throughout the majority of the Project area.

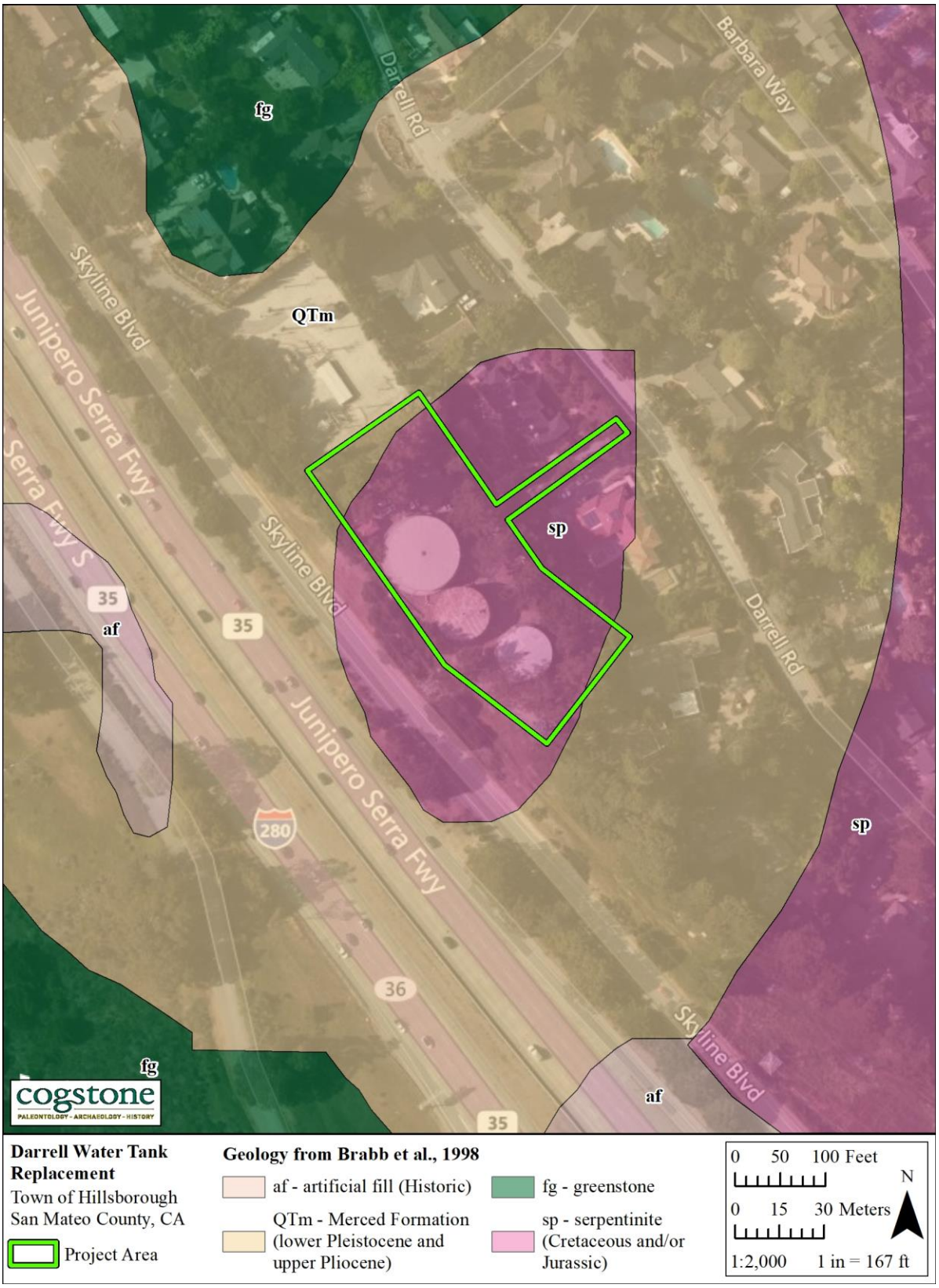

Figure 4. Project geology map

GENERAL OVERVIEW OF REGIONAL PALEONTOLOGY

In general, the entire western margin of North America is very rich with marine fossils. This is because the coastline has been tectonically active for millions of years, creating numerous marine basins that received large amounts of sediment from the adjacent land mass. Each such basin has a sequence of stacked sediments and fossils that record the history of the basin. A typical basin goes through several stages including rifting, deepening, and filling with sediment. Some basins fill with enough sediment to form shallow terrestrial plains that accumulate river, lake, and alluvial fan deposits. Although some fossilization occurs in lakes and rivers, very little occurs in other environments. This makes terrestrial fossils, and especially vertebrates, rare when compared to marine fossils.

The central coast is a relatively important region for geologic and paleontologic studies of western North America because the stratigraphic sequence of its sediments is very complete; there are only a few gaps in a nearly continuous sequence of sedimentary deposits from the Late Cretaceous (~70 Ma) through the present. Unfortunately, there has been very little paleontological work done in central coast above Santa Barbara and below San Francisco so our knowledge of regional fossils is very poor.

In Central California, marine deposits of Late Cretaceous age (~70 - ~65 Ma) near the coast predominantly yield fossil mollusks with the infrequent vertebrate. Fishes and marine reptiles are better known from more inland Cretaceous age deposits, such as the Moreno Formation in the Coalinga area. Although some dinosaurs and small mammals are known from Californian formations, they are extremely rare. Most of California was under water during the Cretaceous so any terrestrial animal or plant would have had to have been washed out to sea to be preserved in our fossil record.

The record of Paleocene (~65 - ~55 Ma) life in the San Luis Obispo County area is primarily that of invertebrates and the occasional shark and bony fish. The mass extinction at the end of the Cretaceous killed all dinosaurs except for birds, all marine reptiles except for turtles and the marine cephalopods known as ammonites. This left major ecological niches that mammals would come to dominate in the next 65 million years, but during the Paleocene, mammals were still small and had not colonized the oceans yet.

Early Californian coastal deposits of Eocene (~55 - ~34 Ma) and Oligocene (~34 - ~23 Ma) age have yielded abundant invertebrate assemblages with infrequent vertebrate fossils. If they were to produce vertebrate fossils, they would most likely be of sharks, bony fishes, marine turtles, birds, early cetaceans, and the occasional terrestrial mammal that had been washed out to sea.

It is not until the Miocene (~23 - ~5 Ma) that marine deposits in the coastal zone began to preserve diverse marine vertebrate assemblages in addition to abundant assemblages of fossil invertebrates. These vertebrate assemblages include sharks, bony fishes, turtles, birds, sea cows, sea lions, walruses, dolphins, and whales.

During the Pliocene Epoch (~5 - ~2 Ma) coastal California began to emerge progressively from the sea, and most deposits of this age represent relatively shallow, near shore marine environments. More modern-appearing groups of animals are thus present in deposits of this age. The mollusks are increasingly represented by living genera, and even by some living species. The cetaceans and pinnipeds of Pliocene age usually are members of living families and genera. As most of these deposits were still marine, fossils of terrestrial animals continued to be rare.

In general, although the central California coastal region is not known for a wealth of Miocene and Pliocene marine vertebrate fossils, there have been enough specimens found to indicate the high potential for significant new discoveries in any rocks of this age in the area. Among the fossil marine mammal specimens that have been reported in the literature there are a relatively high percentage of holotype specimens that have been used to describe new species.

As the ocean continued to recede (or the land to rise), coastal California changed from shallow marine to terrestrial by the Pleistocene Epoch (~2.6 Ma – ~11, 000 years ago). The developing terrestrial landscape had a climate that was moister than the present, with free flowing streams and relatively abundant standing water. Numerous water sources provided numerous opportunities for fossilization, giving us a fairly complete view of Pleistocene life. An increase in water also allowed the vegetation to flourish and would have resembled the flora that is now found near Monterey, California. Megafauna present in the region included ground sloths, mammoth, mastodon, horse, camel, bison, antelope, peccary, wolf, and saber-toothed cat. Small animals were abundant and included most of the same species found in the same areas today.

RECORDS SEARCH

The following are confidential museum records. As such no maps of the localities are provided unless the locality may be impacted by the Project. Cogstone requested a records search from the University of California Museum of Paleontology (UCMP) that covered the Project area as well as a one-mile radius (Holroyd 2020; Appendix B). Additional records from the UCMP online database (UCMP 2020), the PaleoBiology Database (PBDB 2020), and print sources were searched for fossil records.

RECORDS SEARCH RESULTS

The UCMP has no record of fossils that lie directly within the Project area. The closest localities within the Merced Formation consist of marine invertebrates located approximately three miles north-northwest of the Project area (Holroyd 2020).

A search of the online databases of the UCMP and PBDB produced four vertebrate localities, 32 marine invertebrate localities, and a two plant localities have been recovered from the Merced Formation (Table 1). Columbian mammoth, ground sloth, baleen whale, and sea otter have all been collected from the Merced Formation.

There were no records of fossils from the online databases or from print sources from the serpentinite within San Mateo County. As this is a highly metamorphosed rock, there is a very low to zero probability of encountering fossils.

Table 1. Fossils from the Merced Formation in San Mateo County

Extinct species are noted by †. All data from UCMP (2020).

Common Name	Taxon	Age/ dates	Locality	Location
sea otter	*Enhydra* sp.	Pleistocene	Bivalve Point	UCMP V99892
ground sloth	† *Glossotherium* sp.	Pleistocene	Franklin Point S	UCMP V81094
crab	Brachyura	Pliocene	Junipero Serra Blvd.	UCMP IP6837
Mason's pine	† *Pinus masoni*	Pliocene?	Mussel Rock	UCMP 159
Douglas fir	*Pseudotsuga taxifolia*			
Lawson's pine	† *Pinus lawsoniana*	Pliocene	San Mateo	UCMP PA162
angular unicorn (sea snail)	*Acanthinucella spirata*	Pliocene, Pleistocene	Seven Mile Beach	UCMP 1728-
Columbian mammoth	† *Mammuthus columbi*	Pleistocene	Thornton Beach 1	UCMP V6422
mammoth	† *Mammuthus* sp.			
baleen whale	Mysticeti	Pleistocene	Thornton Beach 2 and 3	UCMP V6442, V6443
tabled whelk (sea snail)	*Neptunea tabulata*	Pliocene, Pleistocene	Twelve Mile Creek	UCMP 1736-
frilled dogwinkle (sea snail)	*Nucella lamellosa*	Pliocene, Pleistocene	Twelve Mile Creek	UCMP D5921
crab	† *Cancer marri*	Pliocene, Pleistocene	Westborough Housing Development	UCMP D3799
frilled dogwinkle (sea snail)	*Nucella lamellosa franciscana*	Pliocene, Pleistocene	Westborough Interchange	UCMP D3688
dogwinkle (sea snail)	*Nucella* sp.	Pliocene, Pleistocene	Westborough Interchange	UCMP D3691
frilled dogwinkle (sea snail)	*Nucella lamellosa*	Pliocene, Pleistocene	unlisted	UCMP 1721-
sand dollar	† *Scutellaster interlineatus*	Pliocene, Pleistocene	unlisted	UCMP 1726-
angular unicorn (sea snail)	*Acanthinucella spirata*	Pliocene, Pleistocene	unlisted	UCMP 1727-
file dog winkle (sea snail)	*Nucella lima*			
lean western nassa (sea snail)	*Nassarius mendicus*			
cockle	† *Cerastoderma edulis*	Pliocene	unlisted	UCMP 90-
sea snail	*Buccinum echinophorum*			
sand dollar	† *Scutellaster interlineatus*	Pliocene	unlisted	UCMP A6885
milky venus (clam)	*Clementia* cf. *C. subdiaphana*	Pliocene	unlisted	UCMP B4799
moon snail	† *Polinices* cf. *P. galianoi*			
California softshell clam	*Cryptomya californica*	Pliocene	unlisted	UCMP B4800
straight horsemussel	*Modiolus rectus*			
Oregon sand dollar	† *Scutellaster oregonensis*	Pliocene	unlisted	UCMP B4801
tabled whelk (sea snail)	*Neptunea tabulata* var. *colmaensis*			

Common Name	Taxon	Age/ dates	Locality	Location
sea snail	† *Moniliopsis graciosana* var. *mercedensis*			
softshell clam	*Mya*? sp.	Pliocene	unlisted	UCMP B4802
Pacific razor clam	*Siliqua* cf. *S. patula*			
sand dollar	† *Scutellaster interlineatus*	Pliocene	unlisted	UCMP B4803
dish surfclam	*Mactromeris catilliformis*	Pliocene	unlisted	UCMP B4804
Merced surfclam	† *Mactromeris mercedensis*			
onyx slippersnail	*Crepidula* cf. *C. onyx*			
slippersnail	† *Crepidula princeps*			
sea snail	† *Pusio fortis*			
rock snail	*Stramonita* cf. *S. canaliculata*	Pliocene	unlisted	UCMP B4805
Modesto tellin (marine clam)	*Ameritella* aff. *A. modesta*	Pliocene	unlisted	UCMP B4806
California butterclam	*Saxidomus nuttalli*			
western white slippersnail	*Crepidula nummaria*			
carinate dove shell	*Alia carinata*			
dog whelk (marine snail)	† *Nassarius mendicus*			
dog whelk (marine snail)	† *Nassarius* cf. *N. californianus*			
bent-nose macoma (marine clam)	*Macoma nasuta*	Pliocene	unlisted	UCMP B4807
softshell clam	*Mya*? sp.			
jacknife clam	*Solen sicarius*	Pliocene	unlisted	UCMP B4808
bent-nose macoma (marine clam)	*Macoma nasuta*			
dog whelk (marine snail)	† *Nassarius moranianus*			
white wentletrap (marine snail)	*Epitonium indianorum*			
purple dwarf olive (marine snail)	*Olivella biplicata*			
Nuttall's cockle	*Clinocardium* cf. *C. nuttallii*	Pliocene, Pleistocene	unlisted	UCMP B4810
common mussel	*Mytilus edulis*			
green falsejingle (bivalve)	*Pododesmus macroschisma*			
marine snail	*Cryptonatica russa*			
angular unicorn (marine snail)	*Acanthinucella spirata*			
frilled dogwinkle (sea snail)	*Nucella lamellosa*			
dog whelk (marine snail)	† *Nassarius moranianus*			

Common Name	Taxon	Age/ dates	Locality	Location
dog whelk (marine snail)	† *Nassarius mendicus*			
pointed macoma (marine clam)	*Macoma inquinata*	Pliocene	unlisted	UCMP B4811
California butterclam	*Saxidomus nuttalli*			
Lewis's moon snail	*Neverita* cf. *N. lewisii*			
San Pedro dwarf olive (marine snail)	† *Olivella pedroana*			
Olympia oyster	*Ostrea lurida*	Pliocene	unlisted	UCMP B4812
marine clam	† *Macrocallista densa*			
lord dwarf-venus	*Nutricola lordi*			
marine clam	† *Moniliopsis* cf. *M. incisa*			
northern lacuna (marine snail)	*Lacuna* cf. *L. divaricata*			
pyramid snail	*Turbonilla alderi*			
sand dollar	† *Scutellaster major*	Pliocene	unlisted	UCMP B6704
venus clam	† *Chione (Securella) securis*	Pliocene	unlisted	UCMP B7816
sand dollar	† *Scutellaster interlineatus*	Pliocene	unlisted	UCMP D1520
mussel	† *Mytilus condoni*	Pliocene, Pleistocene	unlisted	UCMP D3364
sand dollar	† *Scutellaster interlineatus*	Pliocene	unlisted	UCMP IP12607
Merced surfclam	† *Mactromeris mercedensis*			
surfclam	† *Mactromeris albaria*	Pliocene	unlisted	UCMP IP12609

PALEONTOLOGICAL FIELD RECONNAISSANCE

METHODS

The paleontological resources survey is a crucial part of a Project's environmental assessment phase. One purpose is to verify the exact location of all previously identified, accessible paleontological localities within a Project area and to check if more fossil materials are present. The survey is also to assess the potential for the Project area sediments to contain fossil resources and to confirm that field observations conform to the geological maps of the Project area. All undeveloped ground surface areas that may be impacted within the proposed Project area are examined. Portions of the Project where potentially fossiliferous sediments were present at the surface or where existing ground disturbances (e.g., cutbanks, ditches, animal burrows, etc.) incised into potentially fossiliferous sediments are intensely surveyed. Photographs of the Project area, including ground surface visibility and items of interest, are taken with a digital camera.

RESULTS

Cogstone archaeologist and cross-trained paleontologist, Maria Hawley, surveyed the Project area on December 3, 2020. Ground visibility within the Project area was good with most of the open ground surface exposed (Figure 5). The survey consisted of one- to three-meter wide transects. Visible sediments within the Project area are consistent with mapping by Pampeyan (1994) and Brabb et al. (1998), although modern artificial fill was visible at the surface in some areas of the Project (Figure 6).

Figure 5. Overview of west boundary facing north

Figure 6. Artificial fill was present over some of the study area

PALEONTOLOGICAL SENSITIVITY

A multilevel ranking system was developed by professional resource managers within the Bureau of Land Management (BLM) as a practical tool to assess the sensitivity of sediments for fossils. The Potential Fossil Yield Classification (PFYC) system (BLM 2016; Appendix C) has a multi-level scale based on demonstrated yield of fossils. The PFYC system provides additional guidance regarding assessment and management for different fossil yield rankings.

Fossil resources occur in geologic units (e.g., formations or members). The probability for finding significant fossils in a Project area can be broadly predicted from previous records of fossils recovered from the geologic units present in and/or adjacent to the study area. The geological setting and the number of known fossil localities help determine the paleontological sensitivity according to PFYC criteria.

All alluvial deposits may increase or decrease in fossiliferous potential depending on how coarse the sediments are. Sediments that are close to their basement rock source are typically coarse; those farther from the basement rock source are finer. The chance of fossils being preserved greatly increases once the average size of the sediment particles is reduced to 5 mm or less in diameter. Moreover, fossil preservation also greatly increases with rapid burial in flood-plains, rivers, lakes, oceans, etc. Remains left on the ground surface become weathered by the sun or consumed by scavengers and bacterial activity, usually within 20 years or less. So the sands, silts, and clays of flood-plains, rivers, lakes, and oceans are the most likely sediments to contain fossils.

Using the PFYC system, geologic units are classified according to the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts within the known extent of the geological unit. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher PFYC value; instead, the relative abundance of localities is intended to be the major determinant for the value assignment.

Based on recorded localities in other California valleys, Pleistocene fossils typically begin appearing about eight to ten feet deep. Shallower sediments in the valleys usually do not contain the remains of extinct animals, although Holocene (less than 11,700 years old) remains may be present.

The modern artificial fill deposits are assigned very low potential for fossils (PFYC 1; Table 2). The late Pliocene to early Pleistocene Merced Formation is assigned a moderate paleontological sensitivity (PFYC 3) based on fossils being found in these deposits near to the Project area. The

Jurassic to Cretaceous serpentinite is assigned a very low paleontological sensitivity for fossils due to the lack of fossils in these rocks (PFYC 1).

Table 2. Potential Fossil Yield Classification of Project Sediments

Unit	Paleontological Sensitivity				
	1: very low	2: low	3: moderate	4: high	5: very high
artificial fill, modern	X				
Merced Formation, late Pliocene to early Pleistocene			X		
serpentinite, Jurassic to Cretaceous	X				

POTENTIAL PALEONTOLOGICAL IMPACT

Based on the current over-excavation plan (Figure 7) and the Project geology (Figure 4), the Project will be excavating approximately 16 feet into the Jurassic serpentinite. Grading impacts to the late Pliocene to early Pleistocene Merced Formation will be low to very low.

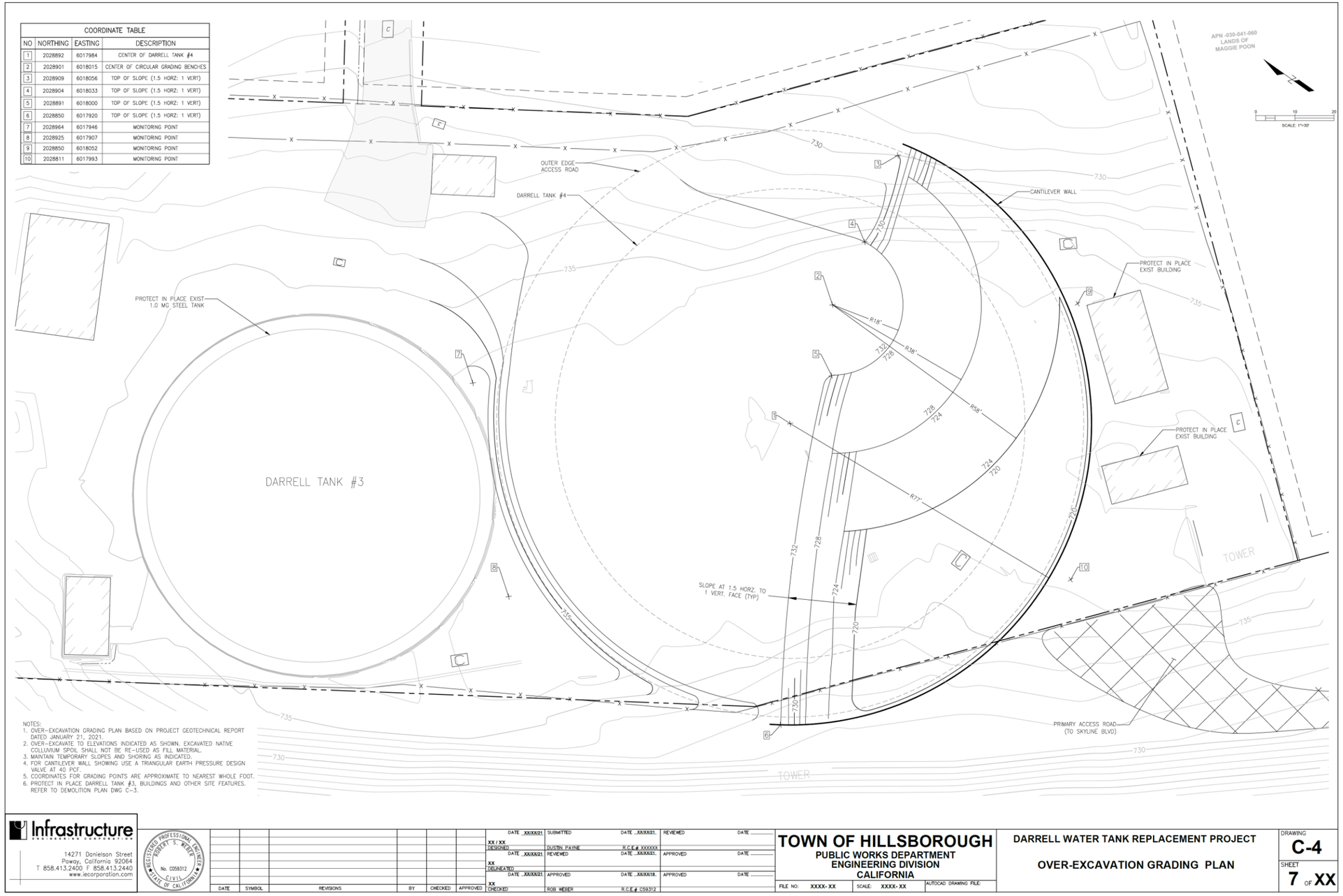

Figure 7. Planned areas of excavation and over-excavation

CONCLUSIONS AND RECOMMENDATIONS

The Project surface is mapped as late Pliocene to early Pleistocene Merced Formation, and Jurassic to Cretaceous serpentinite. Although not mapped, the Project area contains unknown amounts of modern artificial fill that was noted during the pedestrian survey. The record search revealed no fossil localities within the Project area, however various vertebrate, invertebrate, and plant fossil localities are known from the Merced Formation near the Project area.

The modern artificial fill deposits are assigned very low potential for fossils (PFYC 1). The lower Pleistocene to upper Pliocene Merced Formation is assigned a moderate paleontological sensitivity (PFYC 3). The serpentinite is assigned a very low paleontological sensitivity for fossils due to the lack of fossils in these rocks (PFYC 1).

Based on the current over-excavation plan and the Project geology, the Project will be excavating approximately 16 feet into the Jurassic serpentinite. Grading impacts to the late Pliocene to early Pleistocene Merced Formation will be low to very low. Due to the low potential for impacts to the Merced Formation, no mitigation measures are currently recommended. No mitigation is required for any excavation into the serpentinite and artificial fill.

If unanticipated discoveries of paleontological resources occur during construction, all work within 25 feet of the discovery should be halted until the find has been evaluated by a qualified paleontologist.

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APPENDIX A. QUALIFICATIONS

KIM SCOTT
Principal Investigator for Paleontology

EDUCATION

2013 M. S., Biology with Paleontology Emphasis, California State University San Bernardino
2000 B. S., Geology, University of California, Los Angeles

SUMMARY QUALIFICATIONS

Ms. Scott has more than 20 years of experience in California as a paleontologist and sedimentary geologist and 17 years with Cogstone. She has written over 100 paleontological assessments, paleontological mitigation plans, and monitoring compliance reports to all agency requirements. She has experience with street, roadway, interchange, bridge, and grade separation Projects. She has managed multiple Projects and prepared technical reports with Caltrans/FHWA/FTA/FRA as the lead agency and is knowledgeable of the processes and procedures required to obtain NEPA, NHPA Section 106 and CEQA environmental approvals. Ms. Scott meets the qualifications outlined in Attachment 1 to Caltrans Section 106 Programmatic Agreement with the FHWA; and Chapter 1, Volume 8, on paleontology of the Caltrans Standard Environmental Reference (SER). Ms. Scott serves as company safety officer and is the author of the company safety and paleontology manuals. She is a Member of the Society of Vertebrate Paleontology and the Pacific Section of the Society of Economic Paleontologists and Mineralogists.

SELECTED PROJECTS

State Route 46 (SR-46) East Intersection Alignment Project, Caltrans District 5, City of El Paso de Robles, San Luis Obispo County, CA. This Project was to realign and reconstruct the Union Road and SR-46 East Intersection. Prepared the combined Paleontological Identification / Paleontological Evaluation Report as well as the Paleontological Mitigation Plan. Sub to Michael Baker International, Inc. Principal Paleontologist. 2018-2020

Albion River Bridge Replacement/Rehabilitation on **State Route 1 (SR-1), Caltrans District 1, Albion, Mendocino County, CA.** This Project was to replace the obsolete and structurally deficient bridge and to provide safe access for pedestrians and bicyclists across the bridge. Prepared the combined Paleontological Identification / Paleontological Evaluation Report. Sub to ICF International. Principal Paleontologist. 2020

Elk Creek Bridge on State Route 1 (SR-1) Improvement Project, Caltrans District 1, Mendocino County, CA. This Project was to ensure uninterrupted traffic movement in the event of a collision or emergency incident, seismic event or other catastrophic failure, and to provide safe access for pedestrians and bicyclists across Elk Creek Bridge along SR-1. Prepared the combined Paleontological Identification / Paleontological Evaluation Report. Sub to ICF International. Principal Paleontologist. 2020

Gualala Shoulders on State Route 1 (SR-1) Improvement Project, Caltrans District 1, Town of Gualala, Mendocino County, CA. This Project was to realign the road and include shoulder and edge-line rumble strips outside of Gualala along SR-1. Prepared the combined Paleontological Identification / Paleontological Evaluation Report. Sub to ICF International. Principal Paleontologist. 2020

I-280/Wolfe Road Improvement Project, Caltrans District 4, City of Cupertino, Santa Clara County, CA. This Project was to improve traffic operations and facilities for multimodal forms of transportation, including bicycle, pedestrian, and high occupancy vehicle uses, at the Interstate 280 (I-280)/Wolfe Road Interchange. Prepared the combined Paleontological Identification / Paleontological Evaluation Report. Sub to David J. Powers & Associates, Inc. Principal Paleontologist. 2019

Richmond San Rafael Bridge Access Improvement Project, Caltrans District 4, Marin and Contra Costa counties, CA. This Project was for approximately 6 miles of improvements including bicycle and pedestrian access and a new automobile travel lane. Co-authored the Paleontological Identification Report. Sub to HNTB Corporation. Field Director/Report Co-author. 2015-2016

cogstone
PALEONTOLOGY - ARCHAEOLOGY - HISTORY

KELLY VREELAND
Paleontologist

EDUCATION

2010 B.S., Geology with paleontology emphasis, California State University, Fullerton
2014 M.S., Geology with a paleontology emphasis, California State University, Fullerton

SUMMARY QUALIFICATIONS

Vreeland is a Paleontologist with over 10 years of experience in paleontology and geology. Her field and laboratory experience includes fieldwork, fossil preparation and curation, and research Projects throughout California and Nevada, as well as conducting fieldwork and surficial geologic mapping in Montana.

SELECTED PROJECTS

South Campus Student Housing Project, City of Sacramento, Sacramento County, CA. Work on this Project included preparation of the Paleontological Resources Monitoring and Mitigation Plan as well as developing and conducting the Workers Environmental Awareness Program (WEAP) training for the South Campus Student Housing Project in Sacramento. This involved the construction and operation of student housing facilities for upper-division university students adjacent to the California State University, Sacramento campus. 2020

Alameda Corridor East Grade Separation Projects, various cities, Los Angeles County, CA. Tasks included on-call paleontological resource monitoring for various railway grade separation Projects and preparation of Paleontological Mitigation Plans. 2019-2020

American Kings Solar Project, Kings County, CA. This Project involved a Paleontological Analysis for the proposed construction, operation, maintenance, and decommissioning of an up to 128-megawatt alternating current photovoltaic solar power-generating facility. 2019

Camino Del Norte Improvements Project, City of Lake Elsinore, Riverside County, CA. The Project consisted of extending the alignment of Camino del Norte to join with the intersection of Franklin Street/Grunder Drive and Canyon View Drive and Canyon Estates Drive in Lake Elsinore. Work conducted included preparing the Paleontological Resources Impact Mitigation Program, paleontological resource monitoring, and preparation of the final monitoring report for the Project. 2019

High Desert Gateway West Project, City of Hesperia, San Bernardino County, CA. The Project included construction of nine retail buildings totaling 126,763 sf and 939 vehicle parking spaces, including 11 Americans with Disabilities Act-accessible stalls. Work conducted included preparation of the Paleontological Resources Technical Letter Report for the Project, paleontological resource monitoring, and a final paleontological monitoring report. 2019

I-15/Railroad Canyon Road Project, Cities of Wildomar and Lake Elsinore, Riverside County, CA. The Project involved reconstructing the northbound diagonal ramps to a hook configuration at Grape Street, maintaining a diamond configuration for the southbound ramps at Railroad Canyon Road, widening the southbound entrance ramp to two lanes at Railroad Canyon Road merging to a single lane as it connects with the planned auxiliary lane to southbound I-15, and constructing an acceleration lane at the entrance ramps and a deceleration lane at the exit ramps. Responsibilities included preparation of the Paleontological Mitigation Plan for the Project, paleontological resources monitoring, and preparation of a final monitoring report. 2019

La Pata Avenue Road Extension Project, City of San Juan Capistrano, Orange County, CA. This Project consisted of a massive undertaking to extend La Pata Avenue and Camino del Rio in San Juan Capistrano, and involved the removal of 14.8 million cubic yards of earth material. Responsibilities included paleontological resource monitoring; fossil salvage, preparation, and identification; and preparation of a final monitoring report. 2015-2016

APPENDIX B. PALEONTOLOGICAL RECORDS SEARCH

From: Patricia HOLROYD
To: Logan Freeberg
Cc: escott@cogstone.com; Kim Scott
Subject: Re: 4969 Darrell Water Tank Paleo Record Search
Date: Tuesday, October 27, 2020 3:28:52 PM

Dear Logan,

I have conducted a review of the University of California Museum of Paleontology records for paleontological resources in or near your project area. I found no records of previous finds. The nearest localities are very early 20th century discoveries of marine invertebrates approximately 3 mi NNW in what was called the Merced Fm. and now lies under the asphalt of San Bruno.

Billing will arrive separately from our campus business office.

Thank you, Pat Holroyd

Patricia A. Holroyd, Ph.D.
Senior Museum Scientist
Museum of Paleontology
University of California
Berkeley, CA 94720

APPENDIX C. PALEONTOLOGICAL SENSITIVITY RANKING CRITERIA

PFYC Description Summary (BLM 2016)	**PFYC Rank**
Very Low. The occurrence of significant fossils is non-existent or extremely rare. Includes igneous (excluding air-fall and reworked volcanic ash units), metamorphic, or Precambrian rocks. Assessment or mitigation of paleontological resources is usually unnecessary except in very rare or isolated circumstances that result in the unanticipated presence of fossils.	1
Low. Sedimentary geologic units that are unlikely to contain vertebrate or scientifically significant nonvertebrate fossils. Includes rock units less than 10,000 years old and sediments with significant physical and chemical changes (e.g., diagenetic alteration) which decrease the potential for fossil preservation. Assessment or mitigation of paleontological resources is not likely to be necessary.	2
Moderate. Units are known to contain vertebrate or scientifically significant nonvertebrate fossils, but these occurrences are widely scattered and/or of low abundance. Common invertebrate or plant fossils may be found and opportunities may exist for casual collecting. Paleontological mitigation strategies will be based on the nature of the proposed activity. Management considerations cover a broad range of options that may include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Surface-disturbing activities may require assessment by a qualified paleontologist to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources.	3
High. Geologic units containing a high occurrence of significant fossils. Fossils must be abundant per locality. Vertebrates or scientifically significant invertebrate or plant fossils are known to occur and have been documented, but may vary in occurrence and predictability. Mitigation plans must consider the nature of the proposed disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access that could result in looting. Detailed field assessment is normally required and on-site monitoring or spot-checking may be necessary during land disturbing activities. In some cases avoidance of known paleontological resources may be necessary.	4
Very High. Highly fossiliferous geologic units that consistently and predictably produce vertebrate or scientifically significant invertebrate or plant fossils. Vertebrate fossils or scientifically significant invertebrate fossils are known or can reasonably be expected to occur in the impacted area. Paleontological resources are highly susceptible to adverse impacts from surface disturbing activities. Paleontological mitigation may be necessary before or during surface disturbing activities. The area should be assessed prior to land tenure adjustments. Pre-work surveys are usually needed and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.	5
Unknown. An assignment of "Unknown" may indicate the unit or area is poorly studied and field studies are needed to verify the presence or absence of paleontological resources. The unit may exhibit features or preservational conditions that suggest significant fossils could be present, but little information about the actual unit or area is known. Literature searches or consultation with professional colleagues may allow an unknown unit to be provisionally assigned to another Class, but the geological unit should be formally assigned to a Class after adequate survey and research is performed to make an informed determination.	U
Water or Ice. Typically used only for areas which have been covered thus preventing an examination of the underlying geology.	W, I

Appendix B

Records Search Results

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA, COLUSA, CONTRA COSTA, DEL NORTE, HUMBOLDT, LAKE, MARIN, MENDOCINO, MONTEREY, NAPA, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLATA, SANTA CRUZ, SOLANO, SONOMA, YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

11/13/2020 NWIC File No.: 20-0872

Stella D'Oro
Albion Environmental, Inc.
1414 Soquel Avenue, Suite 205
Santa Cruz, CA 95062

Re: Darrell Tank Replacement

The Northwest Information Center received your record search request for the project area referenced above, located on the Montara Mountain and San Mateo USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a 300-foot and one-quarter mile radius:

Resources within project area:	None
Resources within ¼-mile radius:	P-41-000538
Reports within project area:	S-21879, S-27930, S-36757, S-46397, S-49917
Reports within 300-foot radius:	S-36851

Resource Database Printout (list):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☒ enclosed	☐ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☒ enclosed	☐ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☒ enclosed	☐ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed
Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Jessika Akmenkalns, Ph.D.
Researcher

Appendix C

Native American Outreach

Communication Log for Native American Consultation: Darrell Tank Replacement

Stella sent NAHC Request 10/30/2020
NAHC responded 11/3/2020
Letters sent to Tribes 11/18/2020

Name	Tribe	Date	Action	Response
Irenne Zwierlein	Amah Mutsun Tribal Band of Mission San Juan Bautista	11/18/2020	Mailed certified letter	No response
		12/23/2020	Emailed letter and attachments	Responded 1/2/202021: All crews have Cultural Sensitivity Training. California Trained Archaeological Monitors when digging. Qualified Native American Monitors when digging.
Tony Cerda	Costanoan Rumsen Carmel Tribe	11/18/2020	Mailed certified letter	No response
		12/23/2020	Emailed letter and attachments	No response
		1/14/2021	Telephoned	Number is disconnected or no longer in service.
Ann Marie Sayers	Indian Canyon Mutsun Band of Costanoan	11/18/2020	Mailed certified letter	No response
		12/23/2020	Emailed letter and attachments	No response
		1/14/2021	Telephoned	Have a trained archaeologist and a Native American present for all ground disturbing activities.
Kanyon Sayers-Roods	Indian Canyon Mutsun Band of Costanoan	11/18/2020	Mailed certified letter	No response
		12/23/2020	Emailed letter and attachments	No response
		1/14/2021	Telephoned	Call didn't go through. I got a busy tone and then the line disconnected.

Name	Tribe	Date	Action	Response
Monica Arellano	Muwekma Ohlone Indian Tribe of the SF Bay Area	11/18/2020	Mailed certified letter	No response
		12/23/2020	Emailed letter and attachments	No response
		1/14/2021	Telephoned	The mailbox is full and cannot accept any messages.
Charlene Nijmeh	Muwekma Ohlone Indian Tribe of the SF Bay Area	11/18/2020	Mailed certified letter	No response
		12/23/2020	Emailed letter and attachments	No response
		1/14/2021	Telephoned	Left a voicemail.
Andrew Galvan	The Ohlone Indian Tribe	11/18/2020	Mailed certified letter	No response
		12/23/2020	Emailed letter and attachments	No response
		1/14/2021	Telephoned	Left a voicemail.

Native American Heritage Commission
Tribal Consultation List
San Mateo County
11/3/2020

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA, 94062
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com
Costanoan

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street
Pomona, CA, 91766
Phone: (909) 629 - 6081
Fax: (909) 524-8041
rumsen@aol.com
Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org
Costanoan

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com
Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano,
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org
Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Charlene Nijmeh, Chairperson
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 464 - 2892
cnijmeh@muwekma.org
Costanoan

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com
Bay Miwok
Ohlone
Patwin
Plains Miwok

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Cultural Resources Assessment for the Darrell Tank Water Replacement, Hillsborough Project, San Mateo County.

NATIVE AMERICAN HERITAGE COMMISSION

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Luiseño

VICE CHAIRPERSON
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Chumash

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Pomo

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West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

November 3, 2020

Stella D'Oro
Albion Environmental, Inc.

Via Email to: sdoro@albionenvironmental.com
Cc: ahashem@hillsborough.net
amahmutsuntribal@gmail.com
chochenyo@aol.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Cultural Resources Assessment for the Darrell Tank Water Replacement, Hillsborough Project, San Mateo County

Dear Ms. D'Oro:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

- A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;
- Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
- Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and
- If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

- Any report that may contain site forms, site significance, and suggested mitigation measures.

  All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was positive. Please contact Amah Mutsun Tribal Band of Mission San Juan Bautista and the Ohlone Indian Tribe on the attached list for more information.

4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Sarah.Fonseca@nahc.ac.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

November 16, 2020

Ms. Monica Arellano
20885 Redwood Road, Suite 232
Castro Valley, California 94546

RE: Native American Outreach for the Darrell Tank Water Replacement Project, Hillsborough, San Mateo County, California

Dear Ms. Arellano:

Albion Environmental, Inc (Albion), on behalf of the City of Hillsborough, seeks your consultation for the Darrell Tank Water Replacement Project (Project). The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition of the two existing steel Tanks (No.1 and No. 2) and the construction of a single new replacement tank.

PROJECT DESCRIPTION

The Town of Hillsborough (Town) operates a complex water distribution system to supply portable water for domestic use, landscape irrigation and fire suppression. The normal source of water is the San Francisco Public Utilities Commission's (SFPUC), Sunset Pipeline No.1 and Crystal Springs Pipeline No. 2. The Town stores this water in 17 active storage tanks and one reservoir located at 10 sites throughout the Town with a total storage of over 8 million gallons.

Darrell water tanks are one component of the Town's water system that provides approximately 25% of the Town's water storage facilities. There are three existing steel tanks at Darrell site comprise of Tanks No.1 and No. 2 of 500 million gallon capacity each (60 feet diameter and 24 feet height), and Tank No. 3 of one million gallon capacity (85 feet diameter and 24 feet height), built in 1950 and 1958, respectively.

The 2003 inspection that Town performed for the existing water tanks found both Darrell Tanks No.1 and 2 have seriously degraded coatings, and both the coatings and the underlying steel were also found to be degraded in Tank No. 2 in a 2009 inspection. On the inspection condition results, Town put Darrell Tanks No1. and 2 on the top of highest priority water storage replacement project.

The goal of the project is to replace Darrell tanks No.1 and 2 with a larger two million gallons pre-stressed concrete tank. Construction of the new larger tank at Darrell would enable the Forest View tanks and the Oaks Pump Station to be decommissioned and taken out of service. It will provide larger storage water capacity with improved seismic performance.

1414 Soquel Avenue, Suite 205
Santa Cruz, CA 95062

(831) 469-9128 Santa Cruz
(805) 592-2222 San Luis Obispo

albionenvironmental.com

REGULATIONS

Albion is assisting Infrastructure Engineering Corporation (IEC) in its development of an Initial Study/Mitigated Negative Declaration (IS/MND) for the City of Hillsborough, pursuant to the requirements of the California Environmental Quality Act (CEQA). The overall goal of Albion's work is to provide IEC with an inventory of the known and potentially significant cultural and paleontological resources, archaeological sites, and tribal cultural resources within the Project area. Albion will work to anticipate the constraints these resources may place on Project designs and work with all parties to find the best fit to minimize Project impacts and facilitate development.

RESULTS OF LITERATURE SEARCHES

NATIVE AMERICAN HERITAGE COMMISSION (NAHC)

The results of the NAHC's sacred lands file search were positive. A copy of the letter is included in Attachment 2.

NORTHWEST INFORMATION CENTER (NWIC)

Results of a records search conducted at NWIC reveals five studies have been conducted within the Project APE and one study has been conducted within a 1/4-mile of the Project APE. The detailed list of the studies requested from NWIC are in Attachment 3; the studies are not included with this letter due to their sizes, but they are available if requested. No cultural resources have been recorded within the Project APE and one cultural resource has been recorded within a $^{1}/_{4}$-mile radius of the APE. A copy the resource record is in Attachment 4 and is described below.

P-41-000538 is an historic residence also called The Carolands, built from 1914 to 1916. The structure is made of reinforced concrete and includes 4.5 stories. The structure was placed on the National Register of Historic Places in 1975 (Solomonson 1990)

Thank you for considering this outreach request. Please contact me at your earliest convenience to discuss this Project. I may be reached by email at sdoro@albionenvironmental.com or telephone, 831.345.7504.

Sincerely,

Stella D'Oro
Senior Archaeologist, MA, RPA

Attachment 1. Location Map

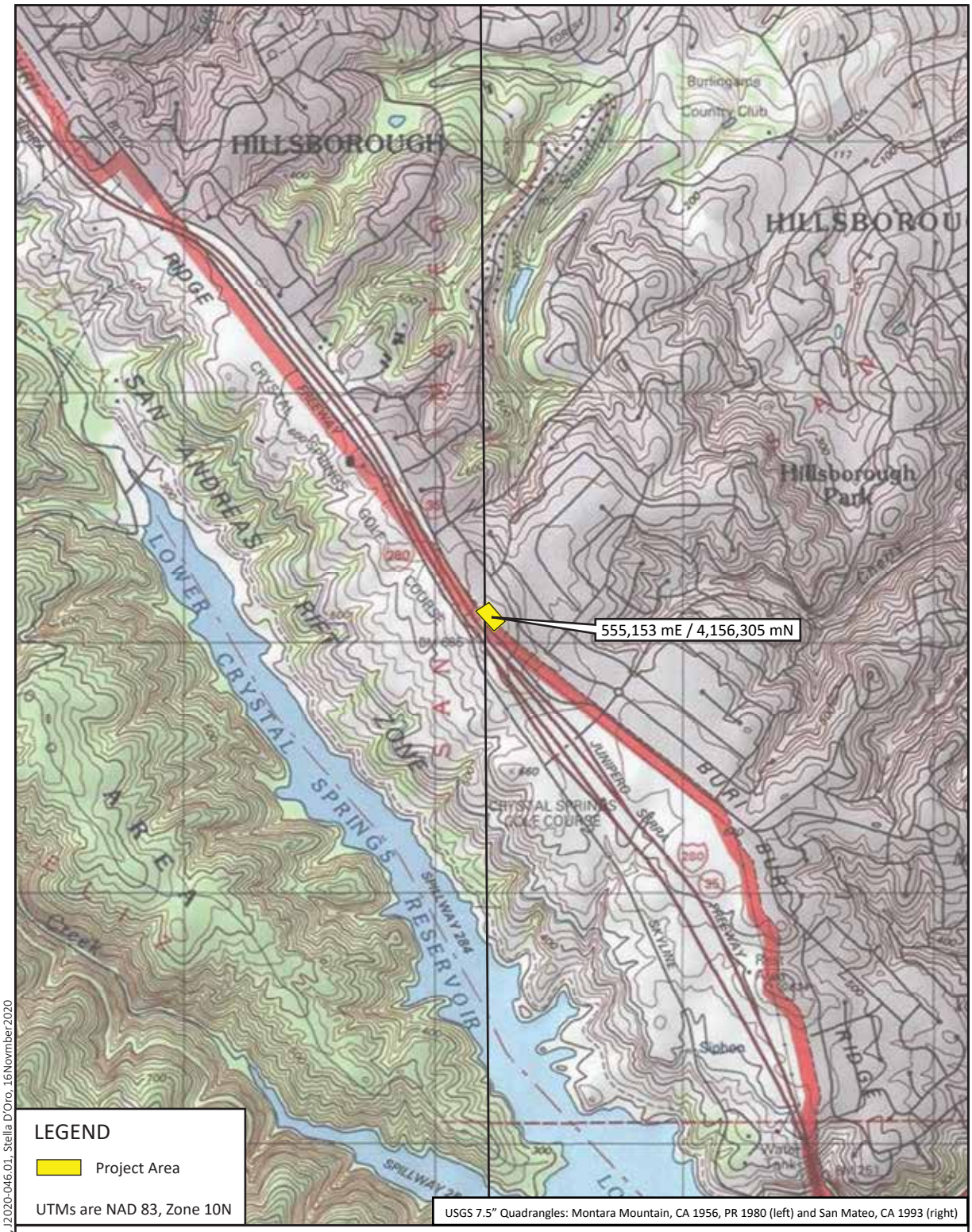
Attachment 2. Results of NAHC Request
Attachment 3. Archaeological Studies
Attachment 4: Cultural Resources

REFERENCE CITED

Solomonson
1990 The Carolands, 565 Remillard, Hillsborough, CA. *Hillsborough Historic Resources Inventory:]*.

Attachment 1

Location Map



File name: Attanchment_1.ai; J2020-046.01, Stella D'Oro, 16Novmber 2020

Attachment 1. Location map, Darrell Tanks.

Attachment 2

Results of NAHC Request

NATIVE AMERICAN HERITAGE COMMISSION

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Laura Miranda
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nahc@nahc.ca.gov
NAHC.ca.gov

November 3, 2020

Stella D'Oro
Albion Environmental, Inc.

Via Email to: sdoro@albionenvironmental.com
Cc: ahashem@hillsborough.net
amahmutsuntribal@gmail.com
chochenyo@aol.com

Re: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Cultural Resources Assessment for the Darrell Tank Water Replacement, Hillsborough Project, San Mateo County

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4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

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If you have any questions, please contact me at my email address: Sarah.Fonseca@nahc.ac.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
San Mateo County
11/3/2020

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA, 94062
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com
Costanoan

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street
Pomona, CA, 91766
Phone: (909) 629 - 6081
Fax: (909) 524-8041
rumsen@aol.com
Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org
Costanoan

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com
Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano,
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org
Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Charlene Nijmeh, Chairperson
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 464 - 2892
cnijmeh@muwekma.org
Costanoan

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com
Bay Miwok
Ohlone
Patwin
Plains Miwok

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Cultural Resources Assessment for the Darrell Tank Water Replacement, Hillsborough Project, San Mateo County.

Attachment 3

Archaeological Studies (Redacted)

Attachment 4

Cultural Resources (Redacted)

November 16, 2020

Mr. Tony Cerda
240 E. 1st Street
Pomona, California 91766

RE: Native American Outreach for the Darrell Tank Water Replacement Project, Hillsborough, San Mateo County, California

Dear Mr. Cerda:

Albion Environmental, Inc (Albion), on behalf of the City of Hillsborough, seeks your consultation for the Darrell Tank Water Replacement Project (Project). The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition of the two existing steel Tanks (No.1 and No. 2) and the construction of a single new replacement tank.

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(805) 592-2222 San Luis Obispo

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Thank you for considering this outreach request. Please contact me at your earliest convenience to discuss this Project. I may be reached by email at sdoro@albionenvironmental.com or telephone, 831.345.7504.

Sincerely,

Stella D'Oro
Senior Archaeologist, MA, RPA

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Attachments 1-4

(Redacted)

November 16, 2020

Mr. Andrew Galvan
P.O. Box 3388
Fremont, California 94539

RE: Native American Outreach for the Darrell Tank Water Replacement Project, Hillsborough, San Mateo County, California

Dear Mr. Galvan:

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Attachments 1-4

(Redacted)

November 16, 2020

Charlene Nijmeh
20885 Redwood Road, Suite 232
Castro Valley, California 94546

RE: Native American Outreach for the Darrell Tank Water Replacement Project, Hillsborough, San Mateo County, California

Dear Charlene Nijmeh:

Albion Environmental, Inc (Albion), on behalf of the City of Hillsborough, seeks your consultation for the Darrell Tank Water Replacement Project (Project). The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition of the two existing steel Tanks (No.1 and No. 2) and the construction of a single new replacement tank.

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Attachments 1-4

(Redacted)

November 16, 2020

Ms. Ann Marie Sayers
P.O. Box 28
Hollister, California 95024

RE: Native American Outreach for the Darrell Tank Water Replacement Project, Hillsborough, San Mateo County, California

Dear Ms. Sayers:

Albion Environmental, Inc (Albion), on behalf of the City of Hillsborough, seeks your consultation for the Darrell Tank Water Replacement Project (Project). The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition of the two existing steel Tanks (No.1 and No. 2) and the construction of a single new replacement tank.

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Attachments 1-4

(Redacted)

November 16, 2020

Ms. Kanyon Sayers-Roods
1615 Pearson Court
San Jose, California 95122

RE: Native American Outreach for the Darrell Tank Water Replacement Project, Hillsborough, San Mateo County, California

Dear Ms. Sayers-Roods:

Albion Environmental, Inc (Albion), on behalf of the City of Hillsborough, seeks your consultation for the Darrell Tank Water Replacement Project (Project). The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition of the two existing steel Tanks (No.1 and No. 2) and the construction of a single new replacement tank.

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Attachments 1-4

(Redacted)

November 16, 2020

Ms. Irenne Zwierlein
789 Canada Road
Woodside, California 94062

RE: Native American Outreach for the Darrell Tank Water Replacement Project, Hillsborough, San Mateo County, California

Dear Ms. Zwierlein:

Albion Environmental, Inc (Albion), on behalf of the City of Hillsborough, seeks your consultation for the Darrell Tank Water Replacement Project (Project). The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition of the two existing steel Tanks (No.1 and No. 2) and the construction of a single new replacement tank.

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(Redacted)

Appendix D

California Department of Parks and Recreation Form

State of California ♉ The Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI #
PRIMARY RECORD
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

Page 1 **of** 2 ***Resource Name or #:** Darrell Water Tanks
P1. Other Identifier: 549 Darrell Road Hillsborough, CA

*P2. **Location:** ☐ **Not for Publication** ☐ **Unrestricted**

***a. County** San Mateo **and** (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Montara Mountain and San Mateo **Date** 1956 PR 1980 and 1993 **T** ; **R** ; ☐ **of** ☐ **of Sec** ; **B.M.** Rancho San Mateo

c. Address 549 Darrell Road City Hillsborough Zip 94010

d. UTM: (Give more than one for large and/or linear resources) NAD 83, Zone 10N, 555,153 mE/ 4,156,305 mN

e. Other Locational Data: The tanks are located between Darrel Road and Skyline Boulevard at 549 Darrell Road, San Mateo.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) The Darrell Tanks were built in the 1950s, with Tanks #1 and #2 constructed in 1952 and Tank #3 built in 1958.

***P3b. Resource Attributes:** See P3a

***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐Site ☐ District ☐Element of District ☐Other

P5b. Description of Photo: (view, date, accession #) Darrell Tanks 1 and 2, looking SW

***P6. Date Constructed/Age and Source:** ☒ Historic ☐ Prehistoric ☐Both

***P7. Owner and Address:** City of Hillsborough, 549 Darrell Road, Hillsborough, CA

***P8. Recorded by**
John Ellison
Albion Environmental Inc.
1414 Soquel Ave, Suite 205
Santa Cruz, CA 95062
Date Recorded: 3 December 2020

***P10. Survey Type:** (Describe)
Pedestrian Survey 10-15m transects.

***P11. Report Citation**:
Blackmore et al. 2020 "Phase I Cultural Resource Inventory: for the 549 Darrell Road Project, Hillsborough, San Mateo County, California"

***Attachments:** ☐ NONE ☒Location Map ☐Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

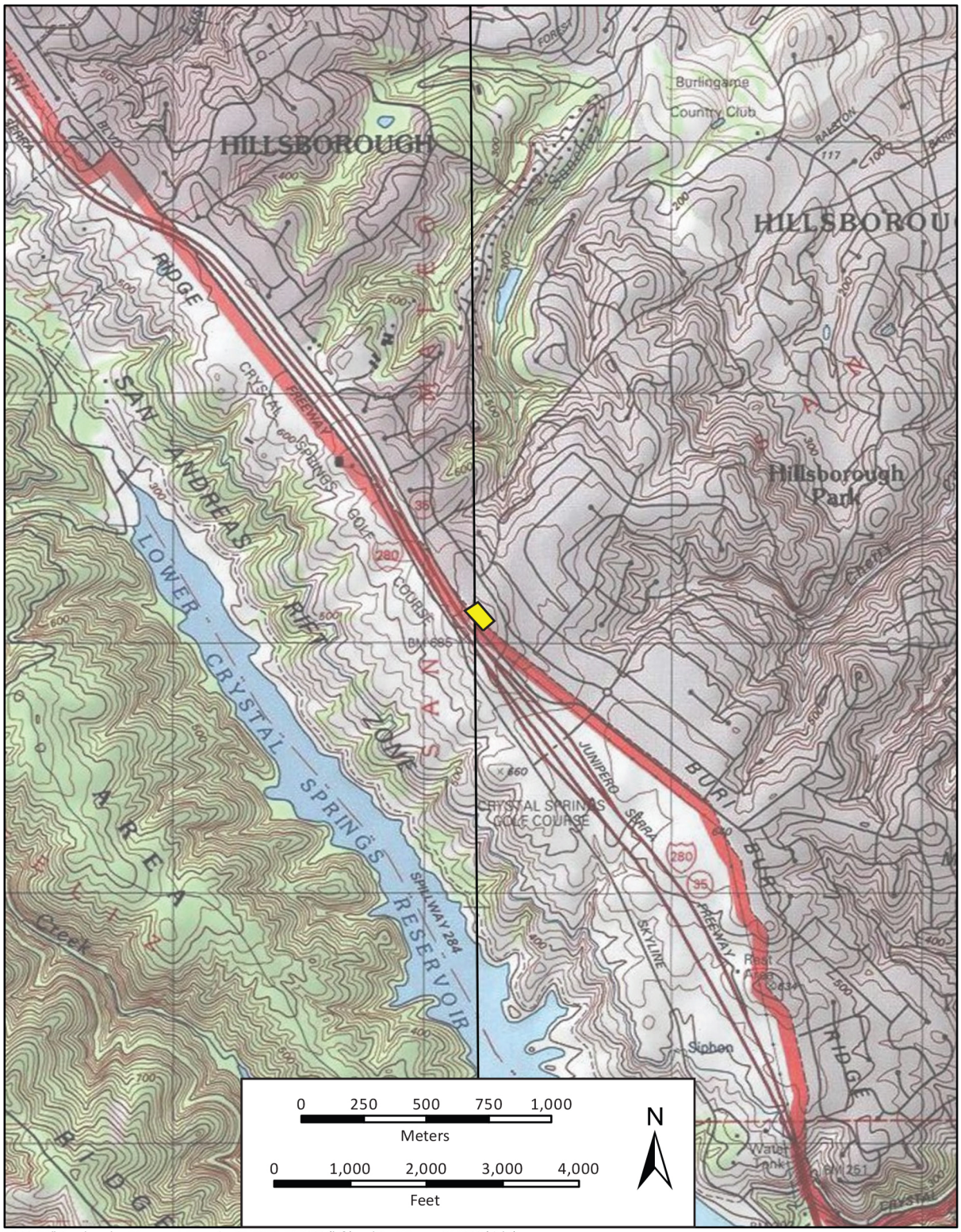
State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #
HRI#
Trinomial

***Resource Name or #:** Darrell Water Tanks

***Map Name:** Montara Mountain / San Mateo ***Scale:** 1:24,000 ***Date of Map:** 1956 PR 1980 / 1993



USGS 7.5" Quadrangles: Montara Mountain, CA 1956, PR 1980 (left) and San Mateo, CA 1993 (right)

*Required information

Appendix D:

Geology and Soils

CORNERSTONE EARTH GROUP

Type of Services	**Updated Geotechnical Investigation**
Project Name	**Darrell Water Tank Replacement**
Location	**Darrell Road** **Hillsborough, California**
Client	**Infrastructure Engineering Corporation**
Client Address	**14271 Danielson Street** **Poway, California**
Project Number	**996-2-1**
Date	**January 21, 2021**

DRAFT

Prepared by **Nicholas S. Devlin, P.E.**
Principal Engineer
Geotechnical Project Manager

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CORNERSTONE EARTH GROUP

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CORNERSTONE EARTH GROUP

Type of Services	**Updated Geotechnical Investigation**
Project Name	**Darrell Water Tank Replacement**
Location	**Darrell Road** **Hillsborough, California**

SECTION 1: INTRODUCTION

This updated geotechnical report was prepared for the sole use of Infrastructure Engineering Corporation and the Town of Hillsborough for the Darrell Water Tank project located in Hillsborough, California. Cornerstone previously prepared a geotechnical investigation report for the project site dated April 18, 2008. This report is intended to update the findings, conclusions and recommendations provided in our previous report. The location of the site is shown on the Vicinity Map, Figure 1. For our use, we were provided with the following documents:

- Topographic and boundary survey titled "Darrell Water Tanks, 549 Darrell Road, Hillsborough, California", prepared by Sandis Civil Engineers, Surveyors, Planners, dated January 12, 2021.
- Project plans titled "Town of Hillsborough, Darrell Water Tank Replacement Project, Figure 1", prepared by Infrastructure Engineering Corporation, not dated.
- Document titled "Town of Hillsborough, Water Master Plan, Phase 1 – Inventory and Assessment, Alternative Capital Improvement Programs", prepared by CSG Consultants, Inc., dated April 2011.
- Record utility plans and drawings titled "Darrell Tank Site", dated April 7, 2011.
- Topographic surveys titled "Topographic Surveys / Exist Utilities, Darrell Water Tanks, Water Tank Replacement, Town of Hillsborough, California, dated February 23, 2008.

1.1 PROJECT DESCRIPTION

We understand the project will include replacing two existing 0.5 million-gallon (MG) welded-steel water tanks (Tanks #1 and #2) with a new 2 MG pre-stressed concrete water tank that will occupy the footprints of Tanks #1 and #2 including additional site area and will have a diameter of about 120 feet plus a 15-foot-wide paved access around the perimeter of the new tank. The

proposed footprint of the new tank development will extend close to the fences of the existing water tank site and an off-site utility tower. We understand that Tank #3 will remain, and the new tank will have a height of 27 feet including 3 feet of free board. The planned water tank is anticipated to be constructed in accordance with the American Water Works Association (AWWA) D110 Type 1 pre-stressed concrete water tank. Based on conversations with Peterson Structural Engineers (PSE), the project structural engineer, we understand the new tank foundations will consist of shallow spread footings including a perimeter (ring) foundation with isolated interior column footings and a "membrane" slab-on-grade supported on engineered fill and bedrock. Dead plus live loads for the new tank are anticipated to be 6 kips per lineal foot and 115 kips for the perimeter "ring" and interior columns, respectively, with a reported maximum differential settlement criteria of ¼ inch over a horizontal distance of 50 feet. Additionally, a 24-foot water stack load of 1,500 pounds per square foot is anticipated for the slab areas of the tank.

Based on the subsurface conditions, geotechnical constraints, and a finish floor at Elevation 735 feet for the new tank, over-excavation of the existing fill, colluvium, and expansive claystone will be needed to construct a uniform pad for the new tank. Since concrete tanks are very sensitive to settlement, chemical treatment of the on-site soil with cement or lime and cement may be needed to reduce the compressibility of the engineered fill soil to be placed to construct the new tank pad, or the tank pad may require ground improvement to reduce total and differential settlement to tolerable amounts. Based on the referenced project plans, site grading including cuts on the order of 2 to 5 feet and fills of up to about 10 feet are anticipated. Cut-fill transitions are anticipated and will have to be mitigated by over-excavation and re-compaction of the on-site materials. In addition to the cut-fill transitions, additional site grading for keyways and benches, over-excavating undocumented fill, unsuitable colluvium materials, and expansive claystone bedrock should be anticipated and planned for by the contractor. This grading may require shoring to support temporary cuts and/or removal of oversize materials (e.g. cobbles and boulders). Restrained (?) retaining walls will be needed due to the proximity of the tank and planned grading to existing slopes and site boundaries. In addition to construction of the water tank, underground utilities such as pipelines, valves, vaults, and electrical and control systems, pavements, and other improvements for the project are anticipated.

1.2 SCOPE OF SERVICES

Our scope of services was presented in our proposal dated February 17, 2020 and consisted of field and laboratory programs to evaluate physical and engineering properties of the subsurface soils, engineering analysis to prepare recommendations for site work and grading, tank foundations, retaining walls, pavements, and preparation of this report. Brief descriptions of our exploration and laboratory programs are presented below.

1.3 EXPLORATION PROGRAMS

As discussed, we previously prepared a geotechnical investigation report for the project site that included field explorations consisting of exploratory borings. Our supplemental exploration program included exploratory borings and shallow test pits.

1.3.1 Previous Exploration Program

Field exploration consisted of five borings drilled on October 9, 2007 and March 11, 2008 with truck-mounted, rotary wash drilling equipment. The borings were drilled to depths of 15½ to 37½ feet below the existing grades.

1.3.2 Supplemental Exploration Program

Our supplemental field explorations consisted of three borings drilled on September 29 and 30, 2020 with track-mounted, limited-access, hollow-stem auger drilling equipment, and three shallow exploratory test pits excavated on November 12, 2020. The borings were drilled to depths of 30 to 39¾ feet, and the test pits were excavated to depths of 3¼ to 4¾ feet below the existing grades.

The borings were backfilled with cement grout in accordance with local requirements, and the test pits were backfilled loosely with the excavation spoils; exploration permits were obtained as required by local jurisdictions. The approximate locations of our exploratory borings (previous and supplemental) and test pits are shown on the Site Plan and Geologic Map, Figure 2. Details regarding our supplemental field program are included in Appendix A.

1.4 LABORATORY TESTING PROGRAMS

In addition to visual classification of samples, the laboratory programs focused on obtaining data for foundation design and slope stability analysis.

1.4.1 Previous Laboratory Testing Program

Testing included moisture contents, dry densities, a shrink swell / expansion pressure test, triaxial consolidated-undrained compression tests, and soil corrosion screening.

1.4.2 Supplemental Laboratory Testing Program

Testing included moisture contents, dry densities, grain size analyses, washed sieve analyses, Plasticity Index tests, remolded triaxial compression tests, a one-dimensional consolidation test, lime stability tests, and soil corrosion screening.

Details regarding our laboratory programs are included in Appendix B.

1.5 ENVIRONMENTAL SERVICES

Cornerstone Earth Group also provided environmental services for this project, including a Phase 1 site assessment and soil quality profiling; environmental findings and conclusions are provided under separate covers.

SECTION 2: REGIONAL SETTING

2.1 REGIONAL GEOLOGIC SETTING

The San Francisco Peninsula a northerly extension of the Santa Cruz Mountains separating the Pacific Ocean from San Francisco Bay. This represents one mountain range in a series of northwesterly-aligned mountains forming the Coast Ranges geomorphic province of California that stretches from the Oregon border nearly to Point Conception. In the San Francisco Bay area, most of the Coast Ranges have developed on a basement of tectonically mixed Cretaceous- and Jurassic-age (70- to 200-million years old) rocks of the Franciscan Complex. Locally these basement rocks are capped by younger sedimentary and volcanic rocks. Most of the Coast Ranges are covered by still younger surficial deposits that reflect geologic conditions of the last million years or so.

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The Darrell Road Tank site is located on top of a prominent northwesterly trending ridge (known as “Buri Buri Ridge”), which separates the upper San Mateo Creek drainage from the eastern foothills of the Peninsular range and the San Francisco Bay Plain. A number of published geologic maps are available that cover the region and central portion of San Mateo County and the Montara Mountain 7.5-minute quadrangle (Pampeyan, 1981, 1994: Brabb and Pampeyan, 1983, 1993; Brabb and others, 1998; California Geological Survey, 2018). This area is mapped as underlain by Franciscan Complex and associated basement bedrock as well as isolated outcrops of younger formations. The Franciscan Complex bedrock is shown as capped or unconformably overlain by Merced Formation as shown on the Vicinity Geologic Map, Figure 2. Pampeyan (1981, 1994) shows the Merced Formation as gently dipping toward the southwest. Here greenstone is the uppermost unit that crops out north and west of the site, and a window of serpentinite is shown as underlying the central portion of the site. Our supplemental field exploration has provided a more in-depth understanding of the geology at the site and in the immediate area surrounding the site (see Sections 3.3 and 3.5).

2.2 GEOMORPHOLOGY

The Darrell Water Tank site is located on a graded horizontal pad at the crest of Buri Buri Ridge. The existing ground surface slopes gently for about 0.3 mile to the southwest before it inclines more steeply in the San Andreas Fault rift zone and for a similar distance to the east before it steepens in the upper slopes of Cherry Canyon. The existing tank pads as shown on the Vicinity Geologic Map, Figure 3, were constructed with both cuts and fills, although the existing ground surface consists of imported aggregate base rock, concrete, and asphalt. The deepest fills are to the northeast of Tank 1 and north of Tank 3 where existing slope faces are inclined up to about 30 degrees and are indicated locally. Natural slopes in the vicinity of the tanks

range from about 4 to 14 degrees. The ground surface of the natural slopes is covered with grass and trees with patches of brush.

Skyline Boulevard / Highway 35 is cut into the ridge southwest of the Darrell Water Tank site and about 25 feet below the elevation of the existing tank pads. The slope of the road cut was measured as 35 and 36 degrees in the field and is shown at 37 degrees on the Vicinity Geologic Map, Figure 3. The slope was most likely designed to be at 1.5:1 (horizontal:vertical) or 34 degrees. The top of the existing road cut is about 14 feet from Tank 3. Interstate 280 is at the base of a cut slope below and southwest of Skyline Boulevard / Highway 35.

2.3 REGIONAL SEISMICITY

Northern California and the San Francisco Bay area is one of the most seismically active areas in the Country. While seismologists cannot predict earthquake events, geologists from the U.S. Geological Survey have recently updated earlier estimates from their 2014 Uniform California Earthquake Rupture Forecast (Version 3) publication. The estimated probability of one or more magnitude 6.7 earthquakes (the size of the destructive 1994 Northridge earthquake) expected to occur somewhere in the San Francisco Bay Area has been revised (increased) to 72 percent for the period 2014 to 2043 (Aagaard et al., 2016). The faults in the region with the highest estimated probability of generating damaging earthquakes between 2014 and 2043 are the Hayward (33%), Calaveras (26%), and San Andreas Faults (22%). In this 30-year period, the probability of an earthquake of magnitude 6.7 or larger occurring is 22 percent along the San Andreas Fault and 33 percent for the Hayward Fault.

The faults considered capable of generating significant earthquakes are generally associated with the well-defined areas of crustal movement, which trend northwesterly. The table below presents the State of California considered active faults within 25 kilometers of the site.

Table 1: Approximate Fault Distances

Fault Name	Distance	
	(miles)	(kilometers)
San Andreas (1906)	0.4	0.6
San Gregorio	6.0	9.6
Monte Vista-Shannon	9.0	14.5

A regional fault map is presented as Figure 4, illustrating the relative distances of the site to significant fault zones.

SECTION 3: SITE CONDITIONS

3.1 SITE BACKGROUND

The available historic aerial photos indicate the southernmost water tank (Tank #1) was constructed at the site just prior to 1956 and the central water tank (Tank #2) was constructed in

1956. The northernmost tank (Tank #3) was constructed sometime between 1956 and 1965. Fill is mapped across much of the site surface and abuts the existing tank's concrete ring foundations, but it is unclear if the foundations required excavation into the natural ground surface or if the foundations received imported fill that was placed around the perimeter of the foundations to provide a lateral buttress. Fill materials are generally capped with gravels across much of the site. A garage structure and cellular antenna tower facilities are also located on the site.

3.2 SURFACE DESCRIPTION

As discussed, the approximately 3-acre site is located west of Darrell Road and east of Skyline Boulevard / Highway 35 in Hillsborough, California and is currently occupied by three steel water tanks as shown on the Site Plan and Geologic Map, Figure 2. An asphalt driveway between two existing residences provides access to the site from Darrell Road. The topography of the site is generally level and slopes downward to the north, south, east, and west and ranges from about Elevation 718 feet North American Vertical Datum 1988 (NAVD 88) in the northwestern portion of the site to Elevation 738 feet in the southwestern portion of the site. The site access road ranges from about Elevation 711 feet at Darrell Road to Elevation 730½ feet at the west end of the road. The site is bounded by residential development to the east and south, an electrical substation to the north, and a utility easement and Skyline Boulevard / Highway 35 to the west. Road cuts below the site to the southwest along Skyline Boulevard / Highway 35 are roughly cut at 1½:1 (horizontal to vertical). Several shallow landslides were observed in the cut slope. The site is partially vegetated, particularly along the northeast, undeveloped portion of the site, with large mature trees. The ground surface around the tanks consists of aggregate base. The perimeter of the site is partially vegetated, particularly along the northern undeveloped portion of the site, with several trees. Several areas on cut slope for Skyline Boulevard / Highway 35 exhibit evidence of soil creek and raveling of the surficial soil. These scars are generally less than two feet deep.

Although not encountered in our borings, surface pavement for the driveway generally consisted of asphalt concrete. Based on our observations, the existing pavement is in fair to poor condition with trench and pothole patches and some linear cracking.

3.3 SUBSURFACE CONDITIONS

As discussed, we performed subsurface explorations at the site consisting of Exploratory Borings EB-1 through EB-8 and Test Pits TP-1 through TP-3. EB-1 through EB-5 were performed in 2007 and 2008 and EB-6 through EB-8 and TP-1 through TP-3 were performed in 2020. Based on our borings, test pits, and geologic maps, the site is generally underlain by artificial fill (Af) over residual soil over bedrock consisting of Serpentinite (sp) and Merced Formation (QTm) (including pebble conglomerate, sandstone, siltstone and claystone). Fill is mapped across much of the site surface and abuts the concrete ring foundations for the existing Water Tanks 1 through 3 but it is unclear if the foundations required excavation into the underlying native soil and/or bedrock or if imported fill was placed around the perimeter of the foundations to provide a lateral buttress.

3.3.1 Previous Explorations (EB-1 through EB-5)

Our Exploratory Borings EB-1 through EB-5 generally encountered artificial fill (Af) overlying Merced Formation (QTm) to a depth of 37½ feet below the existing grades (corresponding to Elevation 697½ feet). The upper 6 to 12 inches of the artificial fill (Af) consisted of gravel (i.e. aggregate base) and topsoil overlying silt with gravel and sandy silt to depths of 2½ to 5½ feet below the existing grades (corresponding to Elevations 733 and 729½ feet). Merced Formation (QTm) was encountered beneath the artificial fill (Af) consisting of siltstone, siltstone with gravel, sandstone, and claystone to depths of 15½ to 37½ feet (corresponding to Elevations 719¾ and 697½ feet, respectively). However, an approximately 1-foot-thick layer of colluvium (Qc) consisting of silt was encountered in EB-1 underlying the artificial fill (Af) at depths of 3 to 4 feet (corresponding to Elevations 731½ and 730½ feet, respectively).

3.3.2 Supplemental Explorations (EB-6 through EB-8 and TP-1 through TP-3)

Our supplemental Boring EB-6 encountered 6 inches of topsoil underlain by residual soil consisting of hard, lean clay with sand to a depth of 3 feet (corresponding to Elevation 729 feet) below the existing grade. The residual soil is underlain by Merced Formation (QTm) consisting of interlayered silty sandstone and pebble conglomerate to a depth of 30 feet (corresponding to Elevation 702 feet) below the existing grade. Boring EB-7 encountered 6 inches of artificial fill (Af) consisting of hard, sandy elastic silt with gravel underlain by Serpentinite (sp) to a depth of 13 feet (corresponding to Elevation 719¾ feet) underlain by Merced Formation (QTm) consisting of sandy claystone and silty sandstone to the terminal depth of the boring at 39¾ feet (corresponding to Elevation 692 feet). As discussed above, Serpentinite (sp) was not encountered within our previous borings. Additionally, Serpentinite (sp) is an older geologic unit than Merced Formation (QTm). This unexpected juxtaposition of geologic units indicated that further exploration was warranted in the vicinity of EB-7. The geometric relationships between the geologic units in the western central portion of the site were further evaluated with our exploratory Test Pits TP-1 through TP-3 discussed below. Boring EB-8 encountered artificial fill (Af) consisting of medium dense, clayey sand to a depth of 1¼ feet (corresponding to Elevation 731¾ feet) below the existing grade. Residual soil was encountered below the fill (Af) to a depth of 3 feet (corresponding to Elevation 730½ feet). Merced Formation (QTm) consisting of silty and clayey sandstone, pebble conglomerate, and sandy claystone was encountered to a depth of 30 feet (corresponding to Elevation 703½ feet) beneath the fill and residual soil.

Our Test Pits TP-1 through TP-3 generally encountered artificial fill (Af) and residual soil underlain by Merced Formation (QTm) and/or Serpentinite (sp) to depths of 3¼ to 4¾ feet below the existing grades. Test Pit TP-2 however encountered Merced Formation (QTm) consisting of sandstone on the northwest portion of TP-2, juxtaposed against Serpentinite (sp) and ultramafic rock on the southeast portion of TP-2. This is interpreted to be a fault contact (see Fault Surface Rupture) discussed below.

In general, the Serpentinite (sp) encountered within our explorations was weak to moderately hard, Merced Formation (QTm) sandy claystone and silty sandstone had soft to moderate hardness, and Merced Formation (QTm) pebble conglomerate was soft and friable. Our geologic Cross Sections A-A' and B-B', Figures 5 and 6 were prepared from the site geologic

map as well as data from our Exploratory Borings EB-1 through EB-8 and our Test Pits TP-1 through TP-3.

3.3.3 Plasticity/Expansion Potential

We performed two Plasticity Index (PI) tests on representative samples. Test results were used to evaluate expansion potential of surficial soils. The results of the surficial PI tests indicated PIs ranging from 27 to 29, indicating moderate to high expansion potential to wetting and drying cycles.

3.3.4 In-Situ Moisture Contents

Laboratory testing indicated the in-situ moisture contents within the fill range from 0 to 5 percent over the estimated laboratory optimum moisture.

3.4 GROUNDWATER

Groundwater was not encountered in any of our borings and test pits during drilling; however, as predominantly clay and bedrock were encountered, the borings and test pits were not left open long enough for water to seep into the bore holes. The explorations were immediately backfilled when the boring and test pits was completed. Based on our previous experience in the area, depth to groundwater maps, CGS maps, etc., we anticipate the historic high groundwater level will be greater than 50 feet below current grades. Fluctuations in groundwater levels occur due to many factors including seasonal fluctuation, underground drainage patterns, regional fluctuations, and other factors.

3.5 SITE GEOLOGY

Merced Formation (QTm) is depicted as unconformably overlying much older Serpentinite (sp) in the vicinity of the Darrell Road Tank site (Brabb and Pampeyan, 1983; Pampeyan, 1981, 1994; Brabb et al., 2000). These published maps show an elongate knob of Serpentinite (sp) passing through the southeastern part of the site and extending from Skyline Boulevard / Highway 35 to Darrell Road. The published maps indicate that Merced Formation (QTm) forms an erosional remnant overlying a resistant knob of underlying Serpentinite (sp) and the two units are in depositional (unconformable) contact with one another. We noted blocky Serpentinite (sp) outcropping on the cut slope for Skyline Boulevard / Highway 35 and also encountered Serpentinite (sp) in our Boring EB-7. The bedding within Merced Formation (QTm) exposed in the cut slope for Skyline Boulevard / Highway 35 was observed to be dipping moderately (approximately 22 degrees) toward the northeast (i.e. into the slope). We also observed a shear attitude within the Serpentinite (sp) exposed in the cut slope that is dipping 2 degrees toward the southwest; however, this does not necessarily represent a through-going structure within the Serpentinite (sp). During our supplemental field exploration (i.e. test pits), we encountered direct evidence of a faulted contact between the Serpentinite/ultramafic rock (sp) and Merced Formation (QTm) within TP-2 located on the site (see Fault Surface Rupture). Based on consideration of the geologic field relationships, we observed the north-northwesterly contact to be faulted, and we infer the contact between the Serpentinite (sp) and Merced Formation (QTm)

further to the southeast is a depositional contact (see Figure 2, and Geologic Cross Sections A-A' and B-B').

The distribution of geologic units encountered and other details pertinent to the geologic units in the vicinity of the Darrell Water Tank site is shown on the Site Plan and Geologic Map, Figure 2 and our interpretation of subsurface geologic relationships in the vicinity of the proposed tank is shown on Geologic Cross Sections A-A′ and B-B', Figures 5 and 6, respectively. Geologic units identified on these illustrations are described below and arranged from youngest top oldest.

3.5.1 Fill (Af)

A surficial layer of artificial fill (Af) was encountered in our explorations across the ridge top and was likely placed during the initial development/grading of the site and construction of the existing water storage tanks (Tanks #1 through #3). Artificial fill (Af) was encountered within our previous and supplemental borings at the site as well as a few of our test pits. The artificial fill (Af) varies in thickness across the top of the ridge, with a maximum thickness of approximately 5½ feet in the vicinity of our Boring EB-5 and a minimal thickness of less than 1 foot was encountered within several of our explorations. The artificial fill (Af) generally consists of mixtures of silt with gravel, clayey sand, silty sand, and sandy clay. The artificial fill (Af) also contains gravel and occasional blocks of ultramafic rocks and Serpentinite (sp).

3.5.2 Residual Soil

A surficial layer of residual soil exists locally below the artificial fill (Af) at the site. This fill was encountered at the locations of our test pit excavations and is inferred to underlie the surficial artificial fill (Af) across the ridgetop. The residual soil is generally less than 2 feet thick and generally consists of sandy clay and clayey sand with gravel.

3.5.3 Merced Formation (QTm)

Merced Formation (QTm) is a sequence of shallow marine sediments that crop out on the San Francisco Peninsula generally northeast of the San Andreas Fault between Hillsborough and Lake Merced. The entire formation is more than 5,000 feet thick and includes rocks of Pliocene and Pleistocene age (Pampeyan, 1994). Sandstone forms a majority of Merced Formation (QTm) but siltstone and claystone are common locally (the ratio of sandstone to siltstone and claystone is probably less than 2:1 according to Wentworth et al., [1985; AEG, 2018]), and minor gravel (conglomerate) are also present. Merced Formation (QTm) is understood to have originated in a basin created by movement on the San Andreas Fault (Wakabayashi et al., 2004) and includes marine shelf to nearshore deposits with occasional units containing backshore soils and plant debris (Glen, 1959; Clifton and Stagg, 1986).

Although geologists would consider Merced Formation (QTm) to be moderately consolidated formational material (i.e., "bedrock"), others might consider it to be more of a dense and very stiff soil. Wentworth et al. (1985) have described it as follows:

The Formation's general physical characteristics: hardness ranging from firm to locally soft where fresh and soft to friable where weathered; fracture spacing ranging from moderate to very wide in sandstone, close in weathered clayey rock; bedding in sandstone ranges from 5 to 30 feet thick, in siltstone and claystone thin to very thick; cut-slope stability is high (approaching moderate) for a 2:1 cut 30 feet high where structure is favorable; and most of the rock is not expansive, but the claystone could be significantly expansive and compressible.

3.5.4 Serpentinite (sp)

Serpentinite (sp) was identified in a few areas on the cut slope for Skyline Boulevard / Highway 35 southeast of the powerline tower and was also encountered within the upper 13 feet of EB-7 and throughout TP-1 and TP-3 and partially within TP-2. The encountered rock consists of soft greenish gray sheared matrix material surrounding blocks of hard, strong, gray unsheared Serpentinite (sp) and other ultramafic rocks. The ultramafic rocks are associated with the Serpentinite (sp) and therefore have been included within the Serpentinite (sp) mapping unit. However, the contacts were not observed in the cut slope for Skyline Boulevard / Highway 35. Blocks of resistant Serpentinite (sp) occur within the surficial artificial fill (Af) at the ground surface suggesting Serpentinite (sp) was encountered within the areas of one or more of the existing water tanks (Tanks #1 through #3) during excavation for the construction of the tanks.

3.6 CORROSION SCREENING

We tested three samples collected at depths of 4 to 5 feet for resistivity, pH, soluble sulfates, and chlorides. The laboratory test results are summarized in Table 2A.

Table 2A: Summary of Corrosion Test Results

Boring	Depth (feet)	Soil pH[1]	Resistivity[2] (ohm-cm)	Chloride[3] (mg/kg)	Sulfate[4,5] (mg/kg)
EB-2	4.5	6.6	2,649	2	<5
EB-4	5.0	6.8	1,669	6	8
EB-6	4.0	6.9	2,137	11	9

Notes: [1]ASTM G51
[2]ASTM G57 - 100% saturation
[3]ASTM D3427/Cal 422 Modified
[4]ASTM D3427/Cal 417 Modified
[5]1 mg/kg = 0.0001 % by dry weight

Many factors can affect the corrosion potential of soil including moisture content, resistivity, permeability, and pH, as well as chloride and sulfate concentration. Typically, soil resistivity, which is a measurement of how easily electrical current flows through a medium (soil and/or water), is the most influential factor. In addition to soil resistivity, chloride and sulfate ion concentrations, and pH also contribute in affecting corrosion potential.

3.6.1 Preliminary Soil Corrosion Screening

Based on the laboratory test results summarized in Table 2A and published correlations between resistivity and corrosion potential, the soils may be considered moderately to severely corrosive to buried metallic improvements (Chaker and Palmer, 1989).

In accordance with the 2019 CBC Section 1904A.1, alternative cementitious materials for different exposure categories and classes shall be determined in accordance with ACI 318-19 Table 19.3.1.1, Table R19.3.1, and Table 19.3.2.1. Based on the laboratory sulfate test results, a cement type restriction is not required, although, in our opinion, it is generally a good idea to include some sulfate resistance and to maintain a relatively low water-cement ratio. We have summarized applicable exposure categories and classes from ACI 318-19, Table 19.3.1.1 below in Table 2B.

Table 2B: ACI 318-19 Table 19.3.1.1 Exposure Categories and Classes

Freezing and Thawing (F)	Sulfate (S, soil)	In Contact with Water (W)	Corrosion Protection of Reinforcement (C)
F0[1]	S0[2]	W0[3]	C1[4]

1 (F0) "Concrete not exposed to freezing-and-thawing cycles" (ACI 318-19)
2 (S0) "Water soluble sulfate in soil, percent by mass" is less than 0.10 (ACI 318-19)
3 (W0) "Concrete dry in service. Concrete in contact with water and low permeability is not required" (ACI 318-19)
4 (C1) "Concrete exposed to moisture but not to an external source of chlorides" (ACI 318-19)

In addition, ACI 318-19, Table 19.3.2.1 provides requirements for concrete by exposure class. Table 2C below indicates different requirements that we recommend be followed for the concrete design.

Table 2C: ACI 318-19 Table 19.3.2.1 Requirements for Concrete by Exposure Class

Exposure Class	Maximum water:cement ratio	Minimum Compressive Strength (psi)	Maximum Water-Soluble Chloride Ion Content (% wt)
F0	N/A	2,500	N/A
S0 (soil)	N/A	2,500	N/A
W0	N/A	2,500	N/A
C1	N/A	2,500	0.30 (0.06)[1]

1 Maximum water-soluble chloride ion content for non-pre-stressed concrete, (value for pre-stressed concrete).

We recommend the structural engineer and a corrosion engineer be retained to confirm the information provided and for additional recommendations, as required.

SECTION 4: GEOLOGIC HAZARDS

4.1 FAULT SURFACE RUPTURE

As discussed in Section 2.0, several significant faults are located within 25 kilometers of the site. A review of available published geologic and fault-themed maps indicates no faults have

been mapped through or adjacent to the site (CDMG, 1982; Brabb and Pampeyan, 1983; Pampeyan, 1981, 1983, and 1994; Bortugno, 1981; Brabb and Olson, 1986; Brabb et al., 1998; CDMG/CGS, 2006; Jennings and Bryant, 2010). Accordingly, the site is not located within a State-designated Alquist Priolo Earthquake Fault regulatory zone (CDMG, 1982).

Our current subsurface exploratory investigation revealed that Merced Formation (QTm) forms an erosional remnant overlying Serpentinite (sp) across much of the site. This is consistent with the geologic relationships shown on the published geologic maps. Our Test Pit TP-2 excavation however, confirmed that Serpentinite (sp) is thrust against Merced Formation (QTm). Specifically, the northerly contact between Merced Formation (QTm) and Serpentinite (sp) is faulted, whereas the southerly contact between Merced Formation (QTm) and Serpentinite (sp) appears to be depositional.

4.1.1 The Nature of the Fault

The discovered fault trends through the central portion of the site at a shallow angle of 34 degrees. The faulted contact is expressed as a zone of shearing; however, the overlying B-horizon residual soil that spans the faulted contact does not appear to be offset or warped. The degree of weathering and advanced stage of pedogenic (soil forming) processes within the undisturbed B-horizon indicated the overlying residual soil is most probably Pleistocene in age and has not been offset by the fault since formation of the soil.

This unnamed fault does not appear to be expressed geomorphically across the ridge and adjacent areas and has a trend that is nearly 90 degrees with respect to the San Andreas Fault (i.e. the dominant structural feature within the area). The previous geologic and fault-themed mapping conducted to date, and the structural and geologic outcrop patterns on the north of the site indicate the fault is not a through-going structure toward the northeast and is also discontinuous. Merced Formation (QTm) is largely eroded off of the Serpentinite (sp) and similar older geologic units in the area of Buri Buri Ridge. Given that the fault exposure is near the base of Merced Formation (QTm), which spans the Pliocene-Pleistocene time boundary and Merced Formation (QTm) is estimated to be on the order of 500 feet thick in the mapped area (Pampeyan, 1994). It is also apparent that a great amount of tectonic uplift in the area and concomitant erosion of Merced Formation (QTm) has occurred after deposition in the immediate area of Buri Buri ridge.

A fault of this minimal length would not be expected to serve as a seismogemic source (California Division of Mines and Geology, 1982; Pampeyan, 1994), and we infer that the fault may represent a co-seismically triggered offset or triggered creep with the most recent movement occurring within the Pleistocene Epoch. In terms of definitions, the fault would not be classified as active (active within the last approximately 11,700 years). We have provided recommendations to reduce the potential impact of fault surface rupture in the following sections.

4.1.2 Co-seismically Triggered Fault Surface Rupture

The short length of this fault is such that it is not unlikely to be capable of generating its own earthquake. Additionally, not enough information is currently known about the fault to determine if previous fault offset (i.e. movement) is the result of slip triggered by an event on the nearby San Andreas Fault, or another fault of the Foothill Thrust system (i.e., the Serra Fault). However, the presence of undisturbed Pleistocene soil overlying the fault suggests the following; 1) the fault has a very low geologic slip rate, and 2) the recurrence interval between triggered slip events may be spaced thousands of years to tens of thousands of years apart. Not enough is known about the fault to calculate fault offset magnitudes and we concluded it poses a low level of hazard for fault surface rupture. We have however provided mitigation measures in the event that it does experience coseismic ground rupture (see Section 6.1.5).

4.2 ESTIMATED GROUND SHAKING

Moderate to severe (design-level) earthquakes can cause strong ground shaking, which is the case for most sites within the Bay Area. A peak ground acceleration (PGA_M) was estimated following the ground motion hazard analysis procedure presented in Chapter 21, Section 21.2 of ASCE 7-16 and Supplement No.1. For our slope stability analysis, we used a PGA_M of 1.15g which was determined in accordance with Section 21.5 of ASCE 7-16.

4.3 LIQUEFACTION POTENTIAL

The site is not located within a State-designated Liquefaction Hazard Zone (CGS, San Mateo Quadrangle, 2018) and has a very low to low liquefaction potential by the Association of Bay Area Governments (ABAG, 2020). Additionally, the site is underlain by well consolidated and stiff pre-Quaternary geologic formations, and the site is located within an area that is characterized on published maps as having a very low potential for liquefaction (San Mateo County, 2007; U.S. Geological Survey and California Geological Survey, 2007). However, we screened the site for liquefaction during our site exploration by retrieving samples from the site, performing visual classification on sampled materials, and performing various tests to further classify the soil properties.

During strong seismic shaking, cyclically induced stresses can cause increased pore pressures within the soil matrix that can result in liquefaction triggering, soil softening due to shear stress loss, potentially significant ground deformation due to settlement within sandy liquefiable layers as pore pressures dissipate, and/or flow failures in sloping ground or where open faces are present (lateral spreading) (NCEER 1998). Limited field and laboratory data is available regarding ground deformation due to settlement; however, in clean sand layers settlement on the order of 2 to 3 percent of the liquefied layer thickness can occur. Soils most susceptible to liquefaction are loose, non-cohesive soils that are saturated and are bedded with poor drainage, such as sand and silt layers bedded with a cohesive cap.

As discussed in the “Subsurface” section above, we primarily encountered stiff cohesive and dense granular soils underlain by bedrock. In addition, the design groundwater level is anticipated to be below any granular soils. Based on the above, our screening of the site for

liquefaction indicates a very low potential for liquefaction and is in general agreement with local mapping for the site by ABAG.

4.4 LATERAL SPREADING

Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically, lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope. As failure tends to propagate as block failures, it is difficult to analyze and estimate where the first tension crack will form.

The potential for liquefaction to occur at the site negligible; therefore, in our opinion, the potential for lateral spreading to affect the site is very low.

4.5 SEISMIC SETTLEMENT/UNSATURATED SAND SHAKING

Loose unsaturated sandy soils can settle during strong seismic shaking. As discussed, the soils encountered at the site were predominantly stiff to very stiff clay and silt and medium dense sand overlying relatively shallow bedrock. Additionally, the existing surficial soil (i.e. fills and residual soil) will be reworked as engineered fill. Therefore, in our opinion, the potential for significant differential seismic settlement affecting the proposed improvements is very low.

4.6 LANDSLIDING AND SLOPE INSTABILITY

4.6.1 Landsliding

Our review of available geologic maps does not indicate the presence of landslides in the vicinity of the site (Brabb and Pampeyan, 1972; Wentworth 1986; Ellen et al., 1997; Wentworth et al., 1997. San Mateo County (2007), Brabb et al. (1972), and Mark (1992) show the site in an area interpreted as “least susceptible” to landsliding and/or debris flow occurrence. Weiczorek et al. (1985) indicates the site is in an area with very low susceptibility to ground failure during earthquakes. However, these studies were countywide investigations that did not take site-specific characteristics into account.

Indications of slope instability were not observed within the existing boundaries of the site; however, portions of the cut slope for Skyline Boulevard / Highway 35 indicate past occurrences of slope creep and at least one small slope failure. These are shallow features that appear to have been the result, in part, of an over steepened cut slope. The face of the slope is inclined at about 1.5:1 (horizontal:vertical), which is steeper than cuts typically performed in Merced Formation (QTm), which forms a majority of the existing slope. Wentworth et al. (1985) indicate that a 2:1 cut in Merced Formation (QTm) would have moderate, approaching high, slope stability where structure is average or favorable, but stability would be moderate where structure is adverse or low in clayey portions of the unit. The bedding attitude within Merced Formation (QTm) exposed on the cut slope was observed to be dipping moderately (22 degrees) toward the northeast (i.e. into the cut slope) and is therefore considered to be “favorable” geometry.

4.6.2 Slope Instability

As discussed, the site topography includes existing cut and fill slopes. Based on our understanding of the project, some of the existing fill will be removed during construction of the new tank pad (finish grade at Elevation 735 feet); however, engineered fill will need to be placed at or near the top of the existing slopes in order to accommodate the larger footprint of the new tank and perimeter access. We anticipate that retaining walls along the east and west sides of the new tank will need to be constructed in order to extend the existing tank pads and due to site constraints (e.g. site boundaries and the utility tower west of the site). Additionally, the existing cut slope along the western side of the site is generally at an inclination of 1½:1 (horizontal:vertical) and ranges from about 18 to 22 feet in height.

We performed a screening level static and seismic analysis of the existing slopes and proposed fills through our Geologic Cross Section A-A'. Computer assisted slope stability analysis was performed using the computer program SLIDE Version 9.001 and circular failure modes. Perimeter "ring" and column tank foundation loading of 6 kips per lineal foot and 115 kips, respectively, with a tank slab (24-foot water stack) load of 1,500 psf and a surcharge load of 200 psf for the perimeter access were used in our analysis as provided by the project structural engineer.

4.6.2.1 East Slope

Based on the current layout for the new tank and the loading provided above, our analysis of the existing slope and proposed fills on the east side of the new tank indicates the slope to be stable for both seismic and static loading conditions, with factors of safety greater than 1.0 for seismic loading and greater than 1.5 for static loading.

4.6.2.2 West Slope

Based on the current layout for the new tank and the loading provided above, our analysis of the existing cut slope and proposed fill on the west side of the new tank indicates the existing slope to be unstable for both seismic and static loading conditions, with factors of safety less than 1.0 for seismic loading and less than 1.5 for static loading. Therefore, mitigation of the existing cut slope will need to be performed in order to increase the stability for static and seismic conditions during construction of the new tank.

4.7 NATURALLY OCCURRING ASBESTOS

Chrysotile and amphibole asbestos occur naturally in certain geologic settings in the San Francisco Bay area most commonly in serpentinite and other ultramafic rocks. These are igneous and metamorphic rocks with a high content of magnesium and iron minerals. The most common type of asbestos is chrysotile, which is commonly found in serpentinite rock formations. When disturbed by construction, grading, quarrying, or surface mining operations, asbestos-containing dust can be generated. Exposure to asbestos can result in lung cancer, mesothelioma, and asbestosis. In July 2001, the California Air Resources Board approved an Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying, and

Surface Mining activities in areas where naturally occurring asbestos (NOA) will likely be found and to provide best dust mitigation measures and practices. The ATCM applies to construction, grading, quarrying, or surface mining operations on any property that contains NOA or is within a mapped ultramafic rock unit. Our reconnaissance and subsurface investigation at the site reveled a band of serpentinite and associated ultramafic rocks trending through the site. This bedrock material and the existing fill that contains some of this same material would be encountered during grading and construction activities at the site. Samples collected from this material did not detect asbestos above the laboratory reporting limit; however, the site is still subject to the ATCM since an ultramafic unit is mapped on site. Therefore, an Asbestos Dust Mitigation Plan (ADMP) will be required for construction.

SECTION 5: STATIC SETTLEMENT

We understand that engineered fill depths of 5 to 10 feet above the existing grades will be placed in the eastern and western portions of the site, respectively, in order to construct the new tank pad. Our settlement estimates are based on the site history previously described and our field explorations and are intended to provide settlement estimates for a period of 50 years after construction.

Our static settlement estimates discussed below are based on foundation loads of 6 kips per lineal foot and 115 kips for the perimeter "ring" and the interior columns, respectively, provided by PSE and our assumptions based on experience with similar projects including a 24-foot water stack slab load of 1,500 psf.

5.1 STATIC SETTLEMENT – FOUNDATION LOADS

As discussed, a 2 MG pre-stressed concrete tank 120 feet in diameter and 24 feet tall will be constructed at the site. We understand the new tank will be supported on a perimeter "ring" foundation with interior columns and a membrane concrete slab-on-grade. The following static settlement estimates are based on the provided foundation loads consisting of a maximum water height of 24 feet above the bottom of the tank and a water weight of 62.4 pounds per cubic foot. Our analysis resulted in a total static settlement of 1⅓ inches and ⅔ inch at the center and the edge (ring footing) of the new tank, respectively, resulting in a differential static settlement of about ⅓ inch between independent foundation elements (or over a horizontal distance of 25 feet).

SECTION 6: CONCLUSIONS

6.1 SUMMARY

From a geotechnical viewpoint, the project is feasible provided the concerns listed below are addressed in the project design. Descriptions of each concern with brief outlines of our recommendations follow the listed concerns.

- Potential for seismic instability of existing cut slopes
- Potential for significant static settlement in fill materials

- Presence of fill, residual soil, and colluvium materials
- Potential for co-seismically triggered fault surface rupture
- Presence of expansive soil and bedrock
- Potential for cut/fill transitions
- Difficult excavation conditions
- Soil corrosion potential

6.1.1 Potential for Seismic Instability of Existing Cut Slopes

As discussed, the site is currently occupied by existing cut and fill slopes. The most prominent slope is the existing cut slope for Skyline Boulevard / Highway 35 located along the west side of the site. Based on our understanding of the project, engineered fill will be placed in the eastern and western portions of the site in order to construct the new tank pad. Additionally, the engineered fill will be placed at the top of the existing slopes on the east and west sides of the site. We also understand that retaining walls will be constructed on the east and west sides of the new tank pad due to site constraints such as site boundaries and an existing utility tower. In order to evaluate the existing and proposed cut and fill slopes, we performed static and seismic analysis of the existing slopes and proposed fills through our Geologic Cross Section A-A' (Figure 5). Perimeter "ring" and column foundation loading of 6 kips per lineal foot and 115 kips, respectively, with a water stack slab load of 1,500 psf and a surcharge of 200 psf for the perimeter access were used in our analysis.

6.1.1.1 East Slope

Our analysis of the existing slope and proposed fills, including loads from the new tank, on the east side of the site indicates the slope to be stable for both seismic and static loading conditions, with factors of safety greater than 1.0 for seismic loading and greater than 1.5 for static loading.

6.1.1.2 West Slope

Our analysis of the existing cut slope and anticipated tank loads and proposed fills on the west side of the new tank indicates the slope to be unstable for both seismic and static loading conditions, with factors of safety less than 1.0 for seismic loading and less than 1.5 for static loading.

Based on the results of our analysis discussed above, the stability of the cut slope on the western portion of the site has factors of safety less than 1.0 and 1.5 for seismic and static loading, respectively. Our analysis indicates that estimated depths of fill to be placed to construct the new tank pad in combination with the anticipated loads from the new tank could result in slope instability, which will need to be mitigated. Potential mitigation methods include installing ground improvement or potentially deep foundations. Detailed recommendations and guidelines for ground improvement design and installation are provided in the "Foundations" section of this report.

6.1.2 Potential for Significant Static Settlement in Fill Materials

As discussed, 5 to 10 feet of engineered fill will be placed in the eastern and western portions of the site in order to construct the new pad. Based on the anticipated allowable (dead plus live) structural loads of 6 kips per lineal foot and 115 kips for the perimeter "ring" and interior columns, respectively, provided by PSE, the project structural engineer, we performed static settlement analysis for the new tank. In addition, a water stack slab load of 1,500 psf and a surcharge load of 200 psf for the perimeter access were included in our settlement analysis.

The following static settlement estimates are based on the provided foundation loads consisting of a maximum water height of 24 feet above the bottom of the tank slab and a water weight of 62.4 pounds per cubic foot. Our analysis resulted in a total static settlement of 1⅓ inches and ⅔ inch at the center and the edge (ring footing) of the new tank, respectively, resulting in a differential static settlement of about ⅓ inch estimated to occur between independent foundation elements or over a horizontal distance of 25 feet.

The total and differential settlement estimated above generally exceed typical allowable levels for pre-stressed concrete tank structures; however, in our opinion, it should be feasible to support the proposed tank on shallow foundations supported over ground improvement or on deep foundations. A design-build ground improvement contractor will need to design a ground improvement program to meet the total settlement requirement specified in subsequent sections of this report. The tank foundations will need to be designed to tolerate the post-mitigated combined total and differential settlement due to static loads. Detailed foundation recommendations are presented in the "Foundations" section of this report.

6.1.3 Presence of Fill, Residual Soil, and Colluvium Materials

Undocumented (artificial) fill materials are present on-site and were encountered within our explorations, presumably placed during grading for the existing tanks (Tanks #1 through #3) from cut materials and some imported gravel to provide level, all-weather access. Colluvium (Qc) is also present where not removed during previous grading at the site. All fill and colluvium should be removed within the new tank pad area down to native, undisturbed bedrock. Based on topographic surveys of the existing grades, we anticipated an existing fill over-excavation depth of up to about 5 feet for construction of the new tank pad. Additionally, an over-excavation depth of at least 1 foot for bedrock beneath the new tank pad may be needed in order to mitigate potential movement of the existing fault at the site and expansive bedrock.

6.1.4 Presence of Expansive Soil and Bedrock

As previously discussed, the claystone bedrock encountered in Borings EB-4, EB-7, and EB-8 is highly expansive and sensitive to moisture and stress changes. Significant changes in loading or moisture conditions within this claystone layer may cause significant volume changes due to shrink and swell. Swell caused by unloading or moisture changes could cause differential movement beneath tank foundations due to variations in the claystone thickness or due to material transitions across the tank foundations. As shown on Geologic Cross Section A-A' (Figure 5), claystone was encountered in EB-7 and EB-8, drilled on the west sides of Tanks #1

and #2, at depths of 13 to 17 feet below the existing grades, respectively, and will not likely be exposed during grading; however, claystone was encountered near the surface in Boring EB-4 drilled adjacent to Tank #1 and will likely be exposed during grading for the new tank pad. For these reasons, we recommend the claystone layer beneath the new tank pad be over-excavated and replaced with engineered fill to provide a more uniform condition beneath the pad and perimeter footing. Detailed recommendations addressing this concern are presented in the "Earthwork" section of this report.

6.1.5 Potential for Co-Seismically Triggered Fault Surface Rupture

As discussed, there is a potential for surface rupture along the unnamed existing fault that trends through the footprint of the new tank, although that potential is judged to be low. While we do not know the magnitude of such movement, based on its limited surface trace and inferred, very low geologic slip rate, a rupture event is likely to be very small (on the order of several millimeters rather than several centimeters). In order to accommodate for the uncertainties involved, and assuming a potential for triggered slip or creep (i.e. movement) of the fault, we recommend the placement of at least 2 feet of engineered fill beneath the new tank (3 feet is recommended for cut/fill transitions mitigation discussed below which would also mitigate the potential movement of the fault discussed in this section). This would accommodate for minimal offset propagating into the fill, which is intended to dissipate the actual fault displacement.

If underground utilities are proposed to cross the projected fault, we can provide supplemental recommendations to the design team generally based on mitigation methods employed by PG&E to reduce the potential for damage due to fault movement.

6.1.6 Potential for Cut/Fill Transitions

Based on the proposed footprint of the new tank and perimeter access, the finish design elevation for the new tank (Elevation 735 feet), and the existing topography of the site, the new tank will span both cuts and fills, if not mitigated. The seismic performance of a structure supported on a shallow foundation overlying a cut/fill transition could result in increased differential settlement. Therefore, we recommend that cut/fill transitions be over-excavated and that shallow tank foundations bear uniformly on similar, undisturbed native bedrock, or a relatively uniform section of engineered fill of at least 3 feet over undisturbed native bedrock. Recommendations addressing this are presented in the "Earthwork" section.

6.1.7 Difficult Excavation Conditions

Based on our exploratory boring data and blow counts obtained within the fill and underlying bedrock at the site and review of field and laboratory data by others and the local geology, we anticipate difficult excavation conditions including encountering cobbles and boulders will likely exist at the site for construction of the new water tank. Contractors should be made aware of these conditions and the likely need to provide for appropriate excavating equipment to excavate to the required depths in the anticipated subsurface conditions.

6.1.8 Soil Corrosion Potential

Our testing indicates sulfate exposure at the site is low and therefore no cement-type restrictions to buried concrete. The corrosion potential for buried metallic structures, such as metal pipes, is considered very severely corrosive. Based on the results of the preliminary soil corrosion screening, special requirements for corrosion control will likely be required to protect metal pipes and fittings. We recommend a corrosion engineer be engaged to provide recommendations for corrosion protection of metal pipes, if used on this project.

6.2 PLANS AND SPECIFICATIONS REVIEW

We recommend that we be retained to review the geotechnical aspects of the project structural, civil, and landscape plans and specifications, allowing sufficient time to provide the design team with any comments prior to issuing the plans for construction.

6.3 CONSTRUCTION OBSERVATION AND TESTING

As site conditions may vary significantly between the small-diameter borings performed during this investigation, we also recommend that a Cornerstone representative be present to provide geotechnical observation and testing during earthwork and foundation construction. This will allow us to form an opinion and prepare a letter at the end of construction regarding contractor compliance with project plans and specifications, and with the recommendations in our report. We will also be allowed to evaluate any conditions differing from those encountered during our investigation and provide supplemental recommendations as necessary. For these reasons, the recommendations in this report are contingent of Cornerstone providing observation and testing during construction. Contractors should provide at least a 48-hour notice when scheduling our field personnel.

SECTION 7: EARTHWORK

7.1 SITE DEMOLITION

All existing improvements not to be reused for the current development, including all foundations, flatwork, pavements, utilities, and other improvements should be demolished and removed from the site. Recommendations in this section apply to the removal of these improvements, which are currently present on the site, prior to the start of mass grading or the construction of new improvements for the project.

Cornerstone should be notified prior to the start of demolition and should be present on at least a part-time basis during all backfill and mass grading as a result of demolition. Occasionally, other types of buried structures (wells, cisterns, debris pits, etc.) can be found on sites with prior development. If encountered, Cornerstone should be contacted to address these types of structures on a case-by-case basis.

7.1.1 Demolition of Existing Slabs, Foundations and Pavements

All slabs, foundations, and pavements should be completely removed from within planned building areas. Existing foundations are typically mat-slabs, shallow footings, or piers/piles. If slabs or shallow footings are encountered, they should be completely removed.

7.1.2 Abandonment of Existing Utilities

All utilities should be completely removed from within planned building areas. For any utility line to be considered acceptable to remain within building areas, the utility line must be completely backfilled with grout or sand-cement slurry (sand slurry is not acceptable), the ends outside the building area capped with concrete, and the trench fills either removed and replaced as engineered fill with the trench side slopes flattened to at least 1:1, or the trench fills are determined not to be a risk to the structure. The assessment of the level of risk posed by the particular utility line will determine whether the utility may be abandoned in place or needs to be completely removed. The contractor should assume that all utilities will be removed from within building areas unless provided written confirmation from both the owner and the geotechnical engineer.

Utilities extending beyond the building area may be abandoned in place provided the ends are plugged with concrete, they do not conflict with planned improvements, and that the trench fills do not pose significant risk to the planned surface improvements.

The risk for owners associated with abandoning utilities in place include the potential for future differential settlement of existing trench fills, and/or partial collapse and potential ground loss into utility lines that are not completely filled with grout.

7.2 SITE CLEARING AND PREPARATION

7.2.1 Site Stripping

The site should be stripped of all surface vegetation, and surface and subsurface improvements to be removed within the proposed development area. Demolition of existing improvements is discussed in the prior paragraphs. A detailed discussion of removal of existing fills is provided later in this report. Surface vegetation and topsoil should be stripped to a sufficient depth to remove all material greater than 3 percent organic content by weight. Based on our site observations, surficial stripping should extend about 3 to 4 inches below existing grade in vegetated areas.

7.2.2 Tree and Shrub Removal

Trees and shrubs designated for removal should have the root balls and any roots greater than ½-inch diameter removed completely. Mature trees are estimated to have root balls extending to depths of 2 to 4 feet, depending on the tree size. Significant root zones are anticipated to extend to the diameter of the tree canopy. Grade depressions resulting from root ball removal

should be cleaned of loose material and backfilled in accordance with the recommendations in the “Compaction” section of this report.

7.3 REMOVAL OF EXISTING FILLS

As discussed, topsoil, residual soil, and artificial (undocumented) fill was encountered within our explorations to depths of up to 5½ feet below the existing grades; however, deeper fills may exist and should be anticipated and planned for by the contractor. All fills should be completely removed from within building areas and to a lateral distance of at least 5 feet beyond the building footprint or to a lateral distance equal to fill depth below the perimeter footing, whichever is greater. Provided the fills meet the “Material for Fill” requirements below, the fills may be reused when backfilling the excavations. Based on review of the samples collected from our borings, the fill may be reused. However, expansive soils and bedrock, if encountered during grading, should be chemically treated (e.g. lime treated) prior to placement as engineered fill. Recommendations for chemical treatment of on-site materials is provided in the following sections. If materials are encountered that do not meet the requirements, such as debris, wood, trash, those materials should be screened out of the remaining material and be removed from the site. Backfill of excavations should be placed in lifts and compacted in accordance with the “Compaction” section below.

7.4 CUT/FILL TRANSITION OVER-EXCAVATION

Structures underlain by cut/fill transitions should be over-excavated to provide a relatively uniform fill thickness beneath the structure footprint. The depth of over-excavation below pad grade should be equal to at least 3 feet below the bottom of foundations to provide a uniform engineered fill pad. The final depth of the over-excavation will depend on the type of material exposed and will be determined in the field during construction. In general, over-excavation should extend to at least 5 feet beyond the building footprint. Adjustments to the depth and lateral limits of the over-excavation may need to be made at the time of construction depending on the actual conditions encountered during grading.

7.5 TEMPORARY CUT AND FILL SLOPES

The contractor is responsible for maintaining all temporary slopes and providing temporary shoring where required. Temporary shoring, bracing, and cuts/fills should be performed in accordance with the strictest government safety standards. On a preliminary basis, the bedrock and the artificial fill and residual soil at the site may be classified as OSHA Soil Types B and C materials, respectively. A Cornerstone representative should be retained to confirm the preliminary site classification. Recommended soil parameters for temporary shoring are provided in the “Temporary Shoring” section of this report.

Excavations performed during site demolition and fill removal should be sloped at 3:1 (horizontal:vertical) within the upper 5 feet below building subgrade. Excavations extending more than 5 feet below building subgrade and excavations in pavement and flatwork areas should be slope at a 1:1 inclination unless the OSHA soil classification indicates the slope should not exceed 1.5:1.

7.6 BELOW-GRADE EXCAVATIONS

Below-grade excavations may be constructed with temporary slopes in accordance with the "Temporary Cut and Fill Slopes" section above if space allows. Alternatively, temporary shoring may support the planned cuts up to 10 feet. We have provided geotechnical parameters for shoring design in the section below. The choice of shoring method should be left to the contractor's judgment based on experience, economic considerations and adjacent improvements such as utilities, pavements, and foundation loads. Temporary shoring should support adjacent improvements without distress and should be the contractor's responsibility. A pre-condition survey including photographs and installation of monitoring points for existing site improvements should be included in the contractor's scope. We should be provided the opportunity to review the geotechnical parameters of the shoring design prior to implementation; the project structural engineer should be consulted regarding support of adjacent structures.

7.6.1 Temporary Shoring

Based on the site conditions encountered during our investigation, the cuts may be supported by soldier beams and tie-backs, braced excavations, soil nailing, or potentially other methods. Where shoring will extend more than about 10 feet, restrained shoring will most likely be required to limit detrimental lateral deflections and settlement behind the shoring. In addition to soil earth pressures, the shoring system will need to support adjacent loads such as construction vehicles and incidental loading, existing structure foundation loads, and street loading. We recommend that heavy construction loads (cranes, etc.) and material stockpiles be kept at least 15 feet behind the shoring. Where this loading cannot be set back, the shoring will need to be designed to support the loading. The shoring designer should provide for timely and uniform mobilization of soil pressures that will not result in excessive lateral deflections. Minimum suggested geotechnical parameters for shoring design are provided in the table below.

Table 3: Suggested Temporary Shoring Design Parameters

Design Parameter	Design Value
Minimum Lateral Wall Surcharge (upper 5 feet)	120 psf
Cantilever Wall – Triangular Earth Pressure**	40 pcf
Restrained Wall – Right Trapezoidal Earth Pressure**	Refer to FHWA Circular No.4 Sections 5.2.3 and 5.2.5*
Passive Pressure – Starting at 2 feet below the bottom of the excavation or the bottom of the adjacent Bay Mud, whichever is greater.	400 pcf up to 2,000 psf maximum uniform pressure*

* Passive pressures are assumed to act over twice the soldier pile diameter.
** The cantilever and restrained pressures are for drained designs with dewatering. If undrained shoring is designed, an additional 62.4 pcf should be added for hydrostatic pressures.
*** The active lateral earth pressure from Bay Mud should not be less than 0.25(soil unit weight x depth).

The restrained earth pressure may also be distributed as described in Figure 23(b) of the *FHWA Circular No. 4 – Ground Anchors and Anchored Systems* (with the hinge points at ¼H and ¾H) provided the total pressure is established from the uniform pressure above.

We performed our borings with hollow-stem auger and rotary-wash drilling equipment and as such were not able to evaluate the potential for caving soils, which can create difficult conditions during soldier beam, tie-back, or soil nail installation; caving soils can also be problematic during excavation and lagging placement. The contractor is responsible for evaluating excavation difficulties prior to construction. Where difficult drilling (e.g. bedrock) or cobble conditions were encountered during our explorations, pilot holes performed by the contractor may be desired to further evaluate these conditions prior to the finalization of the shoring budget.

In addition to anticipated deflection of the shoring system, other factors such as voids created by soil sloughing, and erosion of granular layers due to perched water conditions can create adverse ground subsidence and deflections. The contractor should attempt to cut the excavation as close to neat lines as possible; where voids are created, they should be backfilled as soon as possible with sand, gravel, or grout.

The above recommendations are for the use of the design team; the contractor in conjunction with input from the shoring designer should perform additional subsurface exploration they deem necessary to design the chosen shoring system. A California-licensed civil or structural engineer must design and be in responsible charge of the temporary shoring design. The contractor is responsible for means and methods of construction, as well as site safety.

7.7 SUBGRADE PREPARATION

After site clearing and demolition is complete, and prior to backfilling any excavations resulting from fill removal or demolition, the excavation subgrade and subgrade within areas to receive additional site fills, slabs-on-grade and/or pavements should be scarified to a depth of 6 inches, moisture conditioned, and compacted in accordance with the “Compaction” section below.

7.8 MATERIAL FOR FILL

7.8.1 Re-Use of On-site Soils

On-site soils with an organic content less than 3 percent by weight and bedrock may be reused as general fill. General fill should not have lumps, clods or cobble pieces larger than 6 inches in diameter; 85 percent of the fill should be smaller than 2½ inches in diameter. Minor amounts of oversize material (smaller than 12 inches in diameter) may be allowed provided the oversized pieces are not allowed to nest together and the compaction method will allow for loosely placed lifts not exceeding 12 inches.

7.8.2 Potential Import Sources

Imported and non-expansive material should be inorganic with a Plasticity Index (PI) of 15 or less, and not contain recycled asphalt concrete where it will be used within the building areas.

To prevent significant caving during trenching or foundation construction, imported material should have sufficient fines. Samples of potential import sources should be delivered to our office at least 10 days prior to the desired import start date. Information regarding the import source should be provided, such as any site geotechnical reports. If the material will be derived from an excavation rather than a stockpile, potholes will likely be required to collect samples from throughout the depth of the planned cut that will be imported. At a minimum, laboratory testing will include PI tests. Material data sheets for select fill materials (Class 2 aggregate base, ¾-inch crushed rock, quarry fines, etc.) listing current laboratory testing data (not older than 6 months from the import date) may be provided for our review without providing a sample. If current data is not available, specification testing will need to be completed prior to approval.

Environmental and soil corrosion characterization should also be considered by the project team prior to acceptance. Suitable environmental laboratory data to the planned import quantity should be provided to the project environmental consultant; additional laboratory testing may be required based on the project environmental consultant's review. The potential import source should also not be more corrosive than the on-site soils, based on pH, saturated resistivity, and soluble sulfate and chloride testing.

7.8.3 Non-Expansive Fill Using Lime Treatment

As discussed above, non-expansive fill should have a Plasticity Index (PI) of 15 or less. Due to the high clay content and PI of the on-site soil and bedrock materials, it is not likely that sufficient quantities of non-expansive fill would be generated from cut materials. As an alternative to importing non-expansive fill, chemical treatment can be considered to create non-expansive fill. Based on preliminary testing of the high PI clayey soil material, it will likely need to be mixed with at least 5 percent quicklime (CaO) or approved equivalent to adequately reduce the PI of the on-site soils to 15 or less. If this option is considered, additional laboratory tests should be performed during initial site grading to further evaluate the optimum percentage of quicklime required.

7.8.4 Controlled Low-Strength Material

Controlled Low-Strength Material (CLSM) may be used as engineered fill. As with all engineered fill, CLSM should be placed on bedrock and subgrade soils prepared in accordance with Section 6.5. CLSM should have a minimum 28-day unconfined compressive strength of 75 pounds per square inch (psi). Unconfined compression testing should be performed in accordance with ASTM D4832.

7.9 COMPACTION REQUIREMENTS

All fills, and subgrade areas where fill, slabs-on-grade, and pavements are planned, should be placed in loose lifts 8 inches thick or less and compacted in accordance with ASTM D1557 (latest version) requirements as shown in the table below. In general, clayey soils should be compacted with sheepsfoot equipment and sandy/gravelly soils with vibratory equipment; open-graded materials such as crushed rock should be placed in lifts no thicker than 18 inches consolidated in place with vibratory equipment. Each lift of fill and all subgrade should be firm

and unyielding under construction equipment loading in addition to meeting the compaction requirements to be approved. The contractor (with input from a Cornerstone representative) should evaluate the in-situ moisture conditions, as the use of vibratory equipment on soils with high moistures can cause unstable conditions. General recommendations for soil stabilization are provided in the "Subgrade Stabilization Measures" section of this report. Where the soil's PI is 20 or greater, the expansive soil criteria should be used.

Table 4: Compaction Requirements

Description	Material Description	Minimum Relative[1] Compaction (percent)	Moisture[2] Content (percent)
General Fill (within upper 5 feet)	On-Site Expansive Soils	87 – 92	>3
	Low Expansion Soils	90	>1
General Fill (below a depth of 5 feet)	On-Site Expansive Soils	95	>3
	Low Expansion Soils	95	>1
Retaining Wall Backfill	Without Surface Improvements	90	>1
Retaining Wall Backfill	With Surface Improvements	95[4]	>1
Trench Backfill – Select	On-Site Expansive Soils	87 – 92	>3
Trench Backfill	Class II Aggregate Base	95	Optimum
Trench Backfill – Select	On-Site Low Expansion Soils	90	>1
Bedding and Shading	Class I Aggregate Base	95	Optimum
Crushed Rock Fill	¾-inch Clean Crushed Rock	Consolidate In-Place	NA
Non-Expansive Fill	Imported Non-Expansive Fill	90	Optimum
Flatwork Subgrade	On-Site Expansive Soils	87 - 92	>3
Flatwork Subgrade	Low Expansion Soils	90	>1
Flatwork Aggregate Base	Class 2 Aggregate Base[3]	90	Optimum
Pavement Subgrade	On-Site Expansive Soils	87 - 92	>3
Pavement Subgrade	Low Expansion Soils	95	>1
Pavement Aggregate Base	Class 2 Aggregate Base[3]	95	Optimum
Asphalt Concrete	Asphalt Concrete	95 (Marshall)	NA

1 – Relative compaction based on maximum density determined by ASTM D1557 (latest version)
2 – Moisture content based on optimum moisture content determined by ASTM D1557 (latest version)
3 – Class 2 aggregate base shall conform to Caltrans Standard Specifications, latest edition, except that the relative compaction should be determined by ASTM D1557 (latest version)
4 – Using light-weight compaction or walls should be braced

7.9.1 Construction Moisture Conditioning

Expansive soils can undergo significant volume change when dried then wetted. The contractor should keep all exposed expansive soil subgrade (and also trench excavation side walls) moist until protected by overlying improvements (or trenches are backfilled). If expansive soils are

allowed to dry out significantly, re-moisture conditioning may require several days of re-wetting (flooding is not recommended), or deep scarification, moisture conditioning, and re-compaction.

7.10 TRENCH BACKFILL

Utility lines constructed within public right-of-way should be trenched, bedded and shaded, and backfilled in accordance with the Town of Hillsborough Standard Trench Detail C16. Utility lines in private improvement areas should be constructed in accordance with the following requirements unless superseded by other governing requirements.

All utility lines should be bedded with at least 4 inches and shaded to at least 6 inches over the top of the lines with Class I Type A permeable or materials conforming to the pipe manufacturer's requirements. Shading materials should be compacted to at least 95 percent relative compaction with vibratory equipment prior to placing subsequent backfill materials.

General backfill over shading materials may consist of 1) Class II aggregate base or 2) Controlled Density Fill (CDF) for trenches within paved areas, or select backfill material consisting of on-site native materials provided they are free from stones and lumps larger than 3 inches in largest dimension, meet the requirements in the "Material for Fill" section, and are moisture conditioned and compacted to 90 percent relative compaction.

Where utility lines will cross perpendicular to strip footings, the footing should be deepened to encase the utility line, providing sleeves or flexible cushions to protect the pipes from anticipated foundation settlement, or the utility lines should be backfilled to the bottom of footing with sand-cement slurry or lean concrete. Where utility lines will parallel footings and will extend below the "foundation plane of influence," an imaginary 1:1 plane projected down from the bottom edge of the footing, either the footing will need to be deepened so that the pipe is above the foundation plane of influence or the utility trench will need to be backfilled with sand-cement slurry or lean concrete within the influence zone. Sand-cement slurry used within foundation influence zones should have a minimum compressive strength of 75 psi.

7.11 PERMANENT CUT AND FILL SLOPES

All permanent cut and fill slopes in soil should have a maximum inclination of 2:1 (horizontal:vertical) for slopes up to 10 feet high; slopes greater than 10 feet should be inclined at no greater than 2.5:1. All permanent cuts in competent bedrock may have a maximum inclination of 1½:1. Fill slopes should be overbuilt and trimmed back, exposing engineered fill when complete. Refer to the "Erosion Control" section of this report for a discussion regarding protection of slope surfaces.

7.11.1 Keyways and Benches

Fill placed on existing ground inclined at 6:1 or greater should be benched into the existing slope and a keyway constructed at the toe of the fill. Benches should be angled slightly into the slope and be spaced vertically at no greater than 4 feet between benches and be at least 6 feet wide. Depending on the thickness of any colluvial/residual soil layer that blankets the bedrock,

the benches may need to be widened beyond the minimum width to extend into competent bedrock. The keyway should also be angled slightly into the slope (minimum 2 percent inclination), extend at least 2 feet into competent bedrock, and be at least 3 feet wide.

7.11.2 Fill Drainage

A permanent subsurface drainage system consisting of a series of perforated gravity pipes or drainage strips should be constructed between engineered fill placed against a bedrock slope and within all keyways. This system is intended to intercept perched water flowing through the bedrock and transmit it to suitable outlet structures and reduce the potential for hydrostatic pressures building up behind the fills and causing slope instability. The drain lines should be placed at the back of the keyways and benches. Bench drains should be spaced vertically at no greater than 10 feet.

The drainage system should be constructed in small trenches or v-ditches and consist of a minimum 4-inch-diameter perforated (perforations placed downward) pipe, bedded and shaded in Caltrans Class 2 Permeable Material (latest version) or ¾-inch crushed rock; if crushed rock is used, the rock should be encapsulated in filter fabric (Mirafi 140N or equivalent). The bedding should be at least 2 inches, and the trench should be at least 8 inches in width and depth. Alternatively, geocomposite strip drains may be used. All drainage lines should slope towards suitable outlet structures at an inclination of at least 0.5 percent. Suitable outlet structures may consist of connecting the drainage lines to a storm drain system, with a sump if required; if the drain lines will outlet overland at the toe of the slope, an appropriate rock spill pad should be provided; the drain lines should not outlet onto the slope.

Vertical cleanouts should be provided at all upslope ends of the drainage lines and at all 90-degree bends.

7.11.3 Plan Review and Construction Monitoring

We should be retained to review the conceptual grading and sub-drainage plans and we can provide more specific input regarding the location of keyways and fill drainage for the final plans. A Cornerstone representative should be on site during keyway and fill slope construction. Field modifications to the planned keyway and benching may be required based on encountered field conditions. In addition, it has been our experience that cut slopes in Merced Formation are prone to localized weak zones and sloughing along bedding planes. We recommend that a Cornerstone engineering geologist observe the condition of all cut slopes and evaluate the potential for localized adverse materials or bedding orientation.

We recommend that the project civil engineer or land surveyor be retained to survey in place all keyways, sub-drainage lines, solid pipes, and cleanouts, and create an as-built plan. This plan will be of use for any future maintenance or repair work.

7.12 SITE DRAINAGE

Surface runoff should not be allowed to flow over the top of or pond at the top or toe of engineered slopes or retaining walls. Ponding should also not be allowed on or adjacent to building foundations, slabs-on-grade, or pavements. Hardscape surfaces should slope at least 2 percent towards suitable discharge facilities; landscape areas should slope at least 3 percent towards suitable discharge facilities. Roof runoff should be directed away from building areas in closed conduits, to approved infiltration facilities, or on to hardscaped surfaces that drain to suitable facilities. Retention, detention or infiltration facilities should be spaced at least 10 feet from buildings, and preferably at least 5 feet from slabs-on-grade or pavements. These facilities are not recommended where stormwater infiltration may Affect slopes at lower elevations on or adjacent to the site. However, if slopes are not present at lower elevations that could potentially be Affected, and if retention, detention or infiltration facilities are located within these zones, we recommend that these treatment facilities meet the requirements in the Storm Water Treatment Design Considerations section of this report.

Lined v-ditches should be included at the top of slopes and intermediate benches, and at the toe of slopes or behind retaining walls adjacent to planned or existing development. All v-ditches and drain inlets should be sized to accommodate the design storm events for the upslope tributary area. Concrete-lined v-ditches should be reinforced as required and have adequate control and construction joints and should be constructed neat in excavations; backfill around formed ditches should not be allowed.

Upslope sources of water should be evaluated. If upslope irrigation of is present or planned, additional surface and subsurface drainage, or construction of drained buttress fills may be needed to protect site improvements. We should be consulted if this issue will Affect the project.

7.12.1 Subsurface Drainage

As discussed in the “Permanent Cut and Fill Slopes” section, subsurface drainage improvements should be installed as part of earthwork for fill construction. These improvements should include positive surface gradients for keyways and benches and the installation of a subdrain system consisting of perforated pipe and permeable gravel or drain rock. If drain rock is used, the rock and pipe should be entirely wrapped with a permeable geotextile fabric. Subdrains should also be installed at the toe of any proposed cut slopes depending on the actual conditions observed during construction. As previously discussed, a conceptual subdrain plan should be prepared once preliminary grading plans are finalized. The actual location of subdrains should be determined in the field at the time of construction.

7.13 PERMANENT EROSION CONTROL MEASURES

Hillside grading will require periodic maintenance After construction to reduce the potential for erosion and sloughing. At a minimum all slopes should be vegetated by hydroseeding or other landscape ground cover. The establishment of vegetation will help reduce runoff velocities, allow some infiltration and transpiration, trap sediment within runoff, and protect the soil from

raindrop impact. Depending on the exposed material type and the slope inclination, more aggressive erosion control measures may be needed to protect slopes for one or more winter seasons while vegetation is establishing. For slopes with inclinations of 2:1 (horizontal:vertical) or greater, erosion control may consist of jute netting, straw matting, or erosion control blankets used in combination with hydroseeding.

Both construction and post-construction Storm Water Pollution Prevention Plans (SWPPPs) should be prepared for the project-specific requirements. We recommend that final grading plans be provided for our review.

7.14 LANDSCAPE CONSIDERATIONS

Since the near-surface soils are moderately to highly expansive, we recommend greatly reducing the amount of surface water infiltrating these soils near foundations and exterior slabs-on-grade. This can typically be achieved by:

- Using drip irrigation
- Avoiding open planting within 3 feet of the building perimeter or near the top of existing slopes
- Regulating the amount of water distributed to lawns or planter areas by using irrigation timers
- Selecting landscaping that requires little or no watering, especially near foundations.

We recommend that the landscape architect consider these items when developing landscaping plans.

SECTION 8: FOUNDATIONS

As discussed, the provided structural loads of 6 kips per lineal foot for the perimeter “ring” foundation and 115 kips for the interior columns, and the estimated tank slab load of 1,500 psf are anticipated for the new tank. Detailed recommendations for foundations for the new tank are provided in the following sections.

8.1 SUMMARY OF RECOMMENDATIONS

Based on the provided structural loads and reported settlement tolerance, it is our opinion, that the proposed water tank structure may be supported on shallow foundations supported on ground improvement provided the recommendations in the “Earthwork” section and the sections below are followed. As an alternative to shallow foundations and ground improvement, the tank structure may be supported on deep foundations (e.g. drilled concrete piers).

8.2 AWWA SEISMIC DESIGN CRITERIA

The AWWA provides criteria for the seismic design of prestressed concrete tanks in ANSI/AWWA D115-17. This standard indicates seismic design and parameters to be determined in accordance with procedures outline in ASCE 7-05. The project structural engineer should confirm which standard (i.e. ASCE 7-05 or ASCE 7-16) applies for seismic design. The "Seismic Coefficients" using ASCE 7-05 to design tanks are established based on a series of tables and figures addressing different site factors, including the soil profile in the upper 100 feet below grade and mapped spectral acceleration parameters based on distance to the controlling seismic source/fault system. Based on our boring and review of local geology, the site is underlain by relatively shallow bedrock with typical SPT "N" values of greater than 50 blows per foot. Therefore, we have classified the site as Soil Classification C. Therefore, we have classified the site as Soil Classification C. The mapped spectral acceleration parameters S_S and S_1 listed in Table 5 below were calculated using the SEAOC web-based program *Seismic Design Maps*, located at https://seismicmaps.org/ (accessed on December 11, 2020), based on the site coordinates presented below and the site classification. The table below lists the various factors used to determine the seismic coefficients and other parameters. The SEAOC/OSHPD Seismic Design parameter outputs are provided in Appendix D of this report.

Table 5: AWWA Site Categorization and Site Coefficients – Storage Tanks

Classification/Coefficient	Design Value
Site Class	C
Site Latitude	37.552003°
Site Longitude	-122.375001°
Risk Category	III
0.2-second Period Mapped Spectral Acceleration[1], S_S	2.234g
1-second Period Mapped Spectral Acceleration[1], S_1	1.281g
Short-Period Site Coefficient – Fa	1.0
Long-Period Site Coefficient – Fv	1.3
0.2-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects - S_{MS}	2.234g
1-second Period, Maximum Considered Earthquake Spectral Response Acceleration Adjusted for Site Effects – S_{M1}	1.665g
0.2-second Period, Design Earthquake Spectral Response Acceleration – S_{DS}	1.489g
1-second Period, Design Earthquake Spectral Response Acceleration – S_{D1}	1.110g

[1]For Site Class B, 5 percent damped.

8.3 SHALLOW FOUNDATIONS

As discussed, the anticipated loads from the new tank and engineered fill resulted in excessive settlement within the in the eastern and western portions of the new tank pad if supported on shallow spread footings alone. Therefore, we recommend the new tank be supported on

shallow foundations (e.g. footings) over ground improvement. An alternative to shallow foundations over ground improvement is supporting the new tank on deep foundations.

8.3.1 Shallow Ring Spread Footings

Spread footings should bear on engineered fill over ground improvement and should extend at least 24 inches into the underlying engineered fill. Lowest adjacent grade is defined as the deeper of the following: 1) bottom of the adjacent interior slab-on-grade, or 2) finished exterior grade, excluding landscaping topsoil.

Footings constructed over ground improvement to the above dimensions and in accordance with the "Earthwork" recommendations of this report should be capable of supporting maximum allowable bearing pressures of 3,000 psf for dead loads, 4,500 psf for combined dead plus live loads, and 6,000 psf for all loads including wind and seismic. These pressures are based on factors of safety of 3.0, 2.0, and 1.5 applied to the ultimate bearing pressure for dead, dead plus live, and all loads, respectively. These pressures are net values; the weight of the footing may be neglected for the portion of the footing extending below grade (typically, the full footing depth). Top and bottom mats of reinforcing steel should be included in continuous footings to help span irregularities and differential settlement.

8.3.2 Footing Settlement

The typical structural loading presented in the following table was provided to us by PSE, the project structural engineer including the differential settlement criteria of not more than ¼ inch being tolerable over a horizontal distance of 50 feet.

Table 6: Anticipated Structural Loading

Foundation Area	Range of Anticipated Loads
Perimeter "Ring"	6.0 kips per lineal foot
Interior Isolated Column	115 kips
Tank Slab	1,500 psf

Based on the above loading, we estimate the total static footing settlement at the center and edge (ring foundation) of the new tank will be 1⅓ inches and ⅔ inch, respectively, with ⅓ inch of post-construction differential settlement between independent foundation elements, assumed to be on the order of 25 feet. Because the amount of settlement, and specifically the differential settlement will not meet the criteria for the tank, ground improvement will likely be necessary. Therefore, ground improvement recommendations are provided below. A design should be provided by a design-build ground improvement contractor to meet the differential settlement criteria of ¼ inch in 50 feet.

8.3.3 Lateral Loading

Lateral loads may be resisted by friction between the bottom of footing and the supporting subgrade, and also by passive pressures generated against footing sidewalls. An ultimate frictional resistance (tan δ) of 0.45 applied to the footing dead load, and an ultimate passive pressure based on an equivalent fluid pressure of 450 pcf may be used in design. The structural engineer should apply an appropriate factor of safety (such as 1.5) to the ultimate values above. Where footings are adjacent to landscape areas without hardscape, the upper 12 inches of soil should be neglected when determining passive pressure capacity.

8.3.4 Spread Footing Construction Considerations

Where utility lines will cross perpendicular to strip footings, the footing should be deepened to encase the utility line, providing sleeves or flexible cushions to protect the pipes from anticipated foundation settlement, or the utility lines should be backfilled to the bottom of footing with sand-cement slurry or lean concrete. Where utility lines will parallel footings and will extend below the "foundation plane of influence," an imaginary 1:1 plane projected down from the bottom edge of the footing, either the footing will need to be deepened so that the pipe is above the foundation plane of influence or the utility trench will need to be backfilled with sand-cement slurry or lean concrete within the influence zone. Sand-cement slurry used within foundation influence zones should have a minimum compressive strength of 100 psi.

Footing excavations should be filled as soon as possible or be kept moist until concrete placement by regular sprinkling to prevent desiccation. A Cornerstone representative should observe all footing excavations prior to placing reinforcing steel and concrete. If there is a significant schedule delay between our initial observation and concrete placement, we may need to re-observe the excavations.

8.4 GROUND IMPROVEMENT

As discussed, the static settlement estimated for the new tank based on the placement of engineered fill and the provided tank loads likely exceeds the ¼ inch of differential settlement over a horizontal distance of 50 feet criteria for pre-stressed concrete tanks. Additionally, anticipated loads from the new tank and proposed fills resulted in the factors of safety for seismic and static stability of the existing cut slope at the west side of the new tank to be less than 1.0 and 1.5, respectively. Therefore, the new tank may be supported on ground improvement to reduce the potential for differential settlement and may also mitigate/reinforce the existing slope. Guidelines for design of ground improvement to mitigate settlement and slope instability are discussed in the following sections.

8.4.1 Ground Improvement Requirements

Based on our static settlement analysis, the new tank would be subject to excessive settlement due to the static structural loads. Additionally, the existing cut slope in the western portion of the new tank pad would be subject to instability (i.e. factors of safety less than 1.0 and 1.5 for seismic and static conditions, respectively). In our opinion, ground improvement could likely

limit the expected excessive settlement to tolerable levels, and to raise the seismic and static slope stability factors of safety to greater than 1.0 and 1.5, respectively.

A design-build ground improvement contractor should design the ground improvement to meet the differential settlement criteria for the tank that we understand to be not greater than ¼ inch over a horizontal distance of 50 feet. Ground improvement should be performed after over-excavation to mitigate undocumented fills, construction of the recommended cut/fill transition and fill slopes, and placement of engineered fill to site pad grade, and would consist of techniques to reduce static settlement and improve bearing capacity and static and seismic slope performance. Feasible techniques could potentially consist of predrilled, bottom-feed vibro-replacement (i.e. stone columns) or grouted columns (i.e. Controlled Low Strength Material), or similar (bottom-feed) techniques. In our opinion, granular compaction piles (i.e. rammed aggregate and displacement piles) or other top-feed type methods would not be feasible within the underlying bedrock. The intent of the ground improvement design would be to decrease the estimated static settlement by increasing foundation support (i.e. increasing bearing capacity) and to increase the static and seismic stability of the existing slopes by reinforcing the existing slopes. The degree to which the settlement is reduced, and the bearing capacity and slope stability are increased will depend on the improvement method and spacing.

Bottom-feed vibro-replacement consists of predrilling a hole to the design depth and placing compacted open-graded gravel as a column from the bottom up. One of the potential disadvantages of this ground improvement technique are the noise and vibration (and sometimes dust) produced during construction. The vibrations may cause noise and vibrations that can be heard or felt off-site. Pre-drilling through surficial materials may reduce noise and vibration and is recommended for improvement areas adjacent to the site or existing improvements that may be sensitive to vibrations. These will need to be evaluated when considering this option.

Grouted columns are formed when weaker compressible soil is replaced with cemented Controlled Low Strength Material (CLSM). CLSM column ground improvement can mitigate settlement of heavy foundations and slabs, as well as provide reinforcement for slopes. CLSM columns are ideal for sensitive project sites such as those near critical structures that require low noise and no vibration construction methods, unreinforced masonry walls, occupied offices, sensitive soil (e.g. Bay Mud), and hazardous/contaminated soil sites where deep ground improvement is required.

The CLSM columns are separated from the bottom of the footing/slab using a minimum 6-inch layer of crushed rock or other material “cushion”. No connectivity of the CLSM columns and overlying structural element is allowed. In some cases, a “ground anchor” or reinforcement may be used in a higher strength column to resist uplift forces. Lateral resistance is provided by footing, mat, or slab bottom friction at the concrete to cushion layer interface or passive resistance of the side walls. The target strengths of the CLSM are usually between 500 to 1,000 psi at 28 days, depending on load demands. The CLSM strength is tested using standard sampling and loading methods.

Based on the chosen ground improvement technique, the upper 1 to 2 feet or more of the working pad will likely need to be removed and/or re-compacted after ground improvement installation, due to surface disturbance and potential ground heave. For this reason, we do not recommend preparation of the final pad, placement of non-expansive fill, or the construction of utilities prior to ground improvement.

Contractors to perform recommended ground improvement should have adequate experience for the proposed methods to address the requirements herein. All construction quality control and quality assurance records should be supplied to the design team for review on completion of the ground improvement. Adequate quality control readings must be available at the time of installation so that real time oversight can be provided. The instrumentation provided will depend on the ground improvement method chosen. Once a method is chosen, the geotechnical engineer should modify the project design guideline specification for the appropriate method.

8.4.2 Ground Improvement Design Guidelines

8.4.2.1 Static Settlement

The ground improvement columns will extend from foundation subgrade at a spacing and depth sufficient to meet the design criteria. The ground improvement design should reduce the differential settlement to ¼ inch or less over a horizontal distance of 50 feet. This settlement criteria should be confirmed collaboratively with the structural engineer and Town. There are many variables in performing mitigation with ground improvement, including but not limited to the types of ground improvement elements, element diameter, spacing, depth, installation energy, infill materials, experience of the installation contractor, and other variables.

Based on our preliminary review of potential ground improvement, we anticipate a ground improvement element spacing of about 3 to 4 feet on center (assuming a column diameter of at least 16 inches) beneath shallow foundations for bottom-feed stone and CLSM columns, to meet the performance criteria given above. We estimate that columns would need to be roughly 10 to 15 feet in depth. A minimum depth of 15 feet should be assumed for design, and for comparison to other alternatives until a design-build ground improvement installer can confirm the ground improvement lengths. Due to the settlement tolerance for the new tank, we recommend that ground improvement element spacing not exceed 4 feet in foundation areas.

8.4.2.2 Slope Reinforcement

The ground improvement columns for slope stabilization will extend from the fill/bedrock interface at a spacing and depth sufficient to meet the design criteria. The ground improvement design should increase the seismic and static factors of safety to at least 1.0 and 1.5, respectively. There are many variables in performing mitigation with ground improvement, including but not limited to the types of ground improvement elements, element diameter, spacing, depth, installation energy, infill materials, experience of the installation contractor, and other variables.

Based on our preliminary review of potential ground improvement, we anticipate a ground improvement element spacing of about 4 feet on center (assuming a column diameter of at least 16 inches) for bottom-feed CLSM columns, to meet the performance criteria given above. We estimate that columns would need to be roughly 15 to 20 feet in depth (below the bottom of the retaining wall footing). A minimum depth of 20 feet should be assumed for design, and for comparison to other alternatives until a design-build ground improvement installer can confirm the ground improvement lengths. Due to the stability of the existing slopes and anticipated foundation loads, we recommend that ground improvement element spacing not exceed 5 feet in these areas.

We recommend the ground improvement design include, but not be limited to: 1) drawings showing the ground improvement layout, spacing and diameter, 2) the foundation layout plan, 3) proposed ground improvement length, 4) top and bottom elevations. We should be retained to review the ground improvement contractor's plan and settlement estimates prior to construction, and to review and confirm that the contractor's ground improvement design will satisfactorily meet the design criteria based on the performance testing. Following the completion of the Ground Improvement Performance Testing indicated below, a final ground improvement design report and calculation package, including support for the ground improvement design and indicating that the design criteria will be met, should be submitted to the design team for review and approval.

Ground improvement would generally be constructed as follows: 1) clear the site of existing demolition debris, 2) mass grading to the building pad subgrade elevation (including over-excavation of undocumented fill), 3) install performance test arrays to confirm the design spacing achieves the densification requirements, verified by CPT testing and additional liquefaction analyses, 4) install the ground improvement on the approved layout, and 5) re-compact top of building pad, as required, prior to construction of remainder of pad and the foundations.

8.4.3 Ground Improvement Performance Testing

On a preliminary basis, foundation areas must meet the above differential settlement criteria, or potentially a more stringent criteria, which will include all settlement estimated from static loads. Analysis of settlement for static loading should include compression within the treatment area due to structural and fill loads. Ground improvement must also provide adequate support for the design bearing capacity. In addition, ground improvement for increased slope stability should meet the above stability criteria including seismic and static conditions.

Verification testing would include the performance of a modulus test in the area of the proposed tank. To validate the parameters selected for a specific project, a modulus load test is performed on a test pier typically constructed in locations chosen in coordination with the geotechnical engineer. Modulus tests are conducted to a pressure equal to at least 150% of the maximum design top of pier stress to assure a reasonable level of safety which supports long term settlement control and demonstrates that the ground improvement element has adequate strength. Performing modulus testing beyond the limit state top of pier stress meets the intent of

the building code with respect to shallow foundation support. Modulus testing should be performed in general accordance with ASTM D1143.

We should observe and monitor installation of the test arrays and production ground improvement on a full-time basis and review the post-test array settlement analyses provided by the contractor.

8.5 DEEP FOUNDATIONS

If the estimated settlement discussed above is not tolerable by shallow foundations supported on ground improvement or using auger cast piles is more cost effective, the new tank may be supported on deep foundations. Additionally, deep foundations (i.e. drilled piers) may also increase the stability of the existing cut slope along the western side of the site. Detailed recommendations for the design of deep foundations can be provided upon request.

SECTION 9: CONCRETE SLABS

9.1 TANK SLAB-ON-GRADE

As the Plasticity Index (PI) of the surficial soils ranges up to 29, the proposed mat/slabs proposed for the tank structure should be supported on at least 12 inches of non-expansive fill (NEF) to reduce the potential for mat/slab damage due to soil heave, which should extend to at least 3 feet outside the tank footprint. The NEF layer should be constructed over subgrade prepared in accordance with the recommendations in the “Earthwork” section of this report. If significant time elapses between initial subgrade preparation and non-expansive fill construction, the subgrade should be proof-rolled to confirm subgrade stability, and if the soil has been allowed to dry out, the subgrade should be re-moisture conditioned to at least 3 percent over the optimum moisture content.

SECTION 10: VEHICULAR PAVEMENTS

10.1 ASPHALT CONCRETE

The following asphalt concrete pavement recommendations tabulated below are based on the Procedure 608 of the Caltrans Highway Design Manual, estimated traffic indices for various pavement-loading conditions, and on design R-values of 5 and 15 for the native soil and engineered fill subgrade materials, Tables 7A and 7B, respectively. The design R-values were chosen based on our experience in the vicinity of the site and engineering judgment considering the variable surface conditions.

Table 7A: Asphalt Concrete Pavement Recommendations, Untreated Subgrade

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base* (inches)	Total Pavement Section Thickness (inches)
4.0	2.5	7.5	10.0
4.5	2.5	9.5	12.0
5.0	3.0	10.0	13.0
5.5	3.0	12.0	15.0
6.0	3.5	12.5	16.0
6.5	4.0	14.0	18.0

*Caltrans Class 2 aggregate base; minimum R-value of 78

Table 7B: Asphalt Concrete Pavement Recommendations, Engineered Fill Subgrade

Design Traffic Index (TI)	Asphalt Concrete (inches)	Class 2 Aggregate Base* (inches)	Total Pavement Section Thickness (inches)
4.0	2.5	6.5	9.0
4.5	2.5	8.0	10.5
5.0	3.0	8.0	11.0
5.5	3.0	10.0	13.0
6.0	3.5	10.5	14.0
6.5	4.0	11.5	15.5

*Caltrans Class 2 aggregate base; minimum R-value of 78

Frequently, the full asphalt concrete section is not constructed prior to construction traffic loading. This can result in significant loss of asphalt concrete layer life, rutting, or other pavement failures. To improve the pavement life and reduce the potential for pavement distress through construction, we recommend the full design asphalt concrete section be constructed prior to construction traffic loading. Alternatively, a higher traffic index may be chosen for the areas where construction traffic will use the pavements.

Asphalt concrete pavements constructed on expansive subgrade where the adjacent areas will not be irrigated for several months after the pavements are constructed may experience longitudinal cracking parallel to the pavement edge. These cracks typically form within a few feet of the pavement edge and are due to seasonal wetting and drying of the adjacent soil. The cracking may also occur during construction where the adjacent grade is allowed to significantly dry during the summer, pulling moisture out of the pavement subgrade. Any cracks that form should be sealed with bituminous sealant prior to the start of winter rains. One alternative to reduce the potential for this type of cracking is to install a moisture barrier at least 24 inches deep behind the pavement curb.

SECTION 11: RETAINING WALLS

We anticipate that site retaining walls up to 10 feet in height will likely be needed to expand/construct the pad for the new tank. Recommendations for retaining walls are provided in the following sections.

11.1 STATIC LATERAL EARTH PRESSURES

The structural design of any site retaining wall should include resistance to lateral earth pressures that develop from the soil behind the wall, any undrained water pressure, and surcharge loads acting behind the wall. Provided a drainage system is constructed behind the wall to prevent the build-up of hydrostatic pressures as discussed in the section below, we recommend that the walls be designed for the following pressures:

Table 8: Recommended Lateral Earth Pressures

Wall Condition	Lateral Earth Pressure*	Additional Surcharge Loads
Unrestrained – Cantilever Wall	45 pcf	⅓ of vertical loads at top of wall
Restrained – Braced Wall	45 pcf + 8H** psf	½ of vertical loads at top of wall

* Lateral earth pressures are based on an equivalent fluid pressure for level backfill conditions

If adequate drainage cannot be provided behind the wall, an additional equivalent fluid pressure of 40 pcf should be added to the values above for both restrained and unrestrained walls for the portion of the wall that will not have drainage. Damp proofing or waterproofing of the walls may be considered where moisture penetration and/or efflorescence are not desired.

11.2 SEISMIC LATERAL EARTH PRESSURES

The 2019 CBC states that lateral pressures from earthquakes should be considered in the design of basements and retaining walls. Because walls greater than about 6 feet are planned, and peak ground accelerations greater than 0.40g are expected, we recommend checking the walls for the seismic condition in accordance with the interim recommendations of the above referenced paper and the 2019 CBC.

The CBC prescribes basic load combinations for structures, components and foundations with the intention that their design strength equals or exceeds the effects of the factored loads. With respect to the load from lateral earth pressure and groundwater pressure, the CBC prescribes the basic combinations shown in CBC equations 16-2 and 16-7 below.

$1.2(D + F) + 1.6(L + H) + 0.5(L_r \text{ or } S \text{ or } R)$ [Eq. 16-2]

In Eq. 16-2: H - should represent the total static lateral earth pressure, which for the site walls will be unrestrained (use 45 pcf)

$0.9(D + F) + 1.0E + 1.6H$ [Eq. 16-7]

In Eq. 16-7: H - should represent the static “active” earth pressure component under seismic loading conditions (use 45 pcf)

E - should represent the seismic increment component in Eq. 16-7, a triangular load with a resultant force of $28.7H^2$, which should be applied one third of the height up from the base of the wall (and which can also be expressed as an equivalent fluid pressure equal to 57.4 pcf).

Retaining walls designed as “restrained” should be considered based on the magnitude of the estimated seismic increment discussed above. The interim recommendations in the SEAOC paper more appropriately split out "active" earth pressure from the seismic earth pressure increment so that different load factors can be applied in accordance with different risk levels.

11.3 WALL DRAINAGE

Adequate drainage should be provided by a subdrain system behind all walls. This system should consist of a 4-inch minimum diameter perforated pipe placed near the base of the wall (perforations placed downward). The pipe should be bedded and backfilled with Class 2 Permeable Material per Caltrans Standard Specifications, latest edition. The permeable backfill should extend at least 12 inches out from the wall and to within 2 feet of outside finished grade. Alternatively, ½-inch to ¾-inch crushed rock may be used in place of the Class 2 Permeable Material provided the crushed rock and pipe are enclosed in filter fabric, such as MirAfi 140N or approved equivalent. The upper 2 feet of wall backfill should consist of compacted on-site soil. The subdrain outlet should be connected to a free-draining outlet or sump.

Miradrain, Geotech Drainage Panels, or equivalent drainage matting can be used for wall drainage as an alternative to the Class 2 Permeable Material or drain rock backfill. Horizontal strip drains connecting to the vertical drainage matting may be used in lieu of the perforated pipe and crushed rock section. The vertical drainage panel should be connected to the perforated pipe or horizontal drainage strip at the base of the wall, or to some other closed or through-wall system such as the TotalDrain system from AmerDrain. Sections of horizontal drainage strips should be connected with either the manufacturer’s connector pieces or by pulling back the filter fabric, overlapping the panel dimples, and replacing the filter fabric over the connection. At corners, a corner guard, corner connection insert, or a section of crushed rock covered with filter fabric must be used to maintain the drainage path.

Drainage panels should terminate 18 to 24 inches from final exterior grade. The Miradrain panel filter fabric should be extended over the top of and behind the panel to protect it from intrusion of the adjacent soil.

11.4 BACKFILL

Where surface improvements will be located over the retaining wall backfill, backfill placed behind the walls should be compacted to at least 95 percent relative compaction using light compaction equipment. Where no surface improvements are planned, backfill should be compacted to at least 90 percent. If heavy compaction equipment is used, the walls should be temporarily braced.

11.5 FOUNDATIONS

Retaining walls may be supported on a continuous spread footing designed in accordance with the recommendations presented in the “Foundations” section of this report. However, supporting the walls on deep foundations may be considered to resist the estimated seismic loads discussed above.

SECTION 12: LIMITATIONS

This report, an instrument of professional service, has been prepared for the sole use of Infrastructure Engineering Corporation and the Town of Hillsborough specifically to support the design of the Darrell Water Tank Replacement project in located in Hillsborough, California. The opinions, conclusions, and recommendations presented in this report have been formulated in accordance with accepted geotechnical engineering practices that exist in Northern California at the time this report was prepared. No warranty, expressed or implied, is made or should be inferred.

Recommendations in this report are based upon the soil and groundwater conditions encountered during our subsurface exploration. If variations or unsuitable conditions are encountered during construction, Cornerstone must be contacted to provide supplemental recommendations, as needed.

Infrastructure Engineering Corporation may have provided Cornerstone with plans, reports and other documents prepared by others. Infrastructure Engineering Corporation understands that Cornerstone reviewed and relied on the information presented in these documents and cannot be responsible for their accuracy.

Cornerstone prepared this report with the understanding that it is the responsibility of the owner or his representatives to see that the recommendations contained in this report are presented to other members of the design team and incorporated into the project plans and specifications, and that appropriate actions are taken to implement the geotechnical recommendations during construction.

Conclusions and recommendations presented in this report are valid as of the present time for the development as currently planned. Changes in the condition of the property or adjacent properties may occur with the passage of time, whether by natural processes or the acts of other persons. In addition, changes in applicable or appropriate standards may occur through legislation or the broadening of knowledge. Therefore, the conclusions and recommendations presented in this report may be invalidated, wholly or in part, by changes beyond Cornerstone’s control. This report should be reviewed by Cornerstone After a period of three (3) years has elapsed from the date of this report. In addition, if the current project design is changed, then Cornerstone must review the proposed changes and provide supplemental recommendations, as needed.

An electronic transmission of this report may also have been issued. While Cornerstone has taken precautions to produce a complete and secure electronic transmission, please check the electronic transmission against the hard copy version for conformity.

Recommendations provided in this report are based on the assumption that Cornerstone will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design, and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, Cornerstone cannot assume any responsibility for any potential claims that may arise during or After construction as a result of misuse or misinterpretation of Cornerstone's report by others. Furthermore, Cornerstone will cease to be the Geotechnical-Engineer-of-Record if we are not retained for these services.

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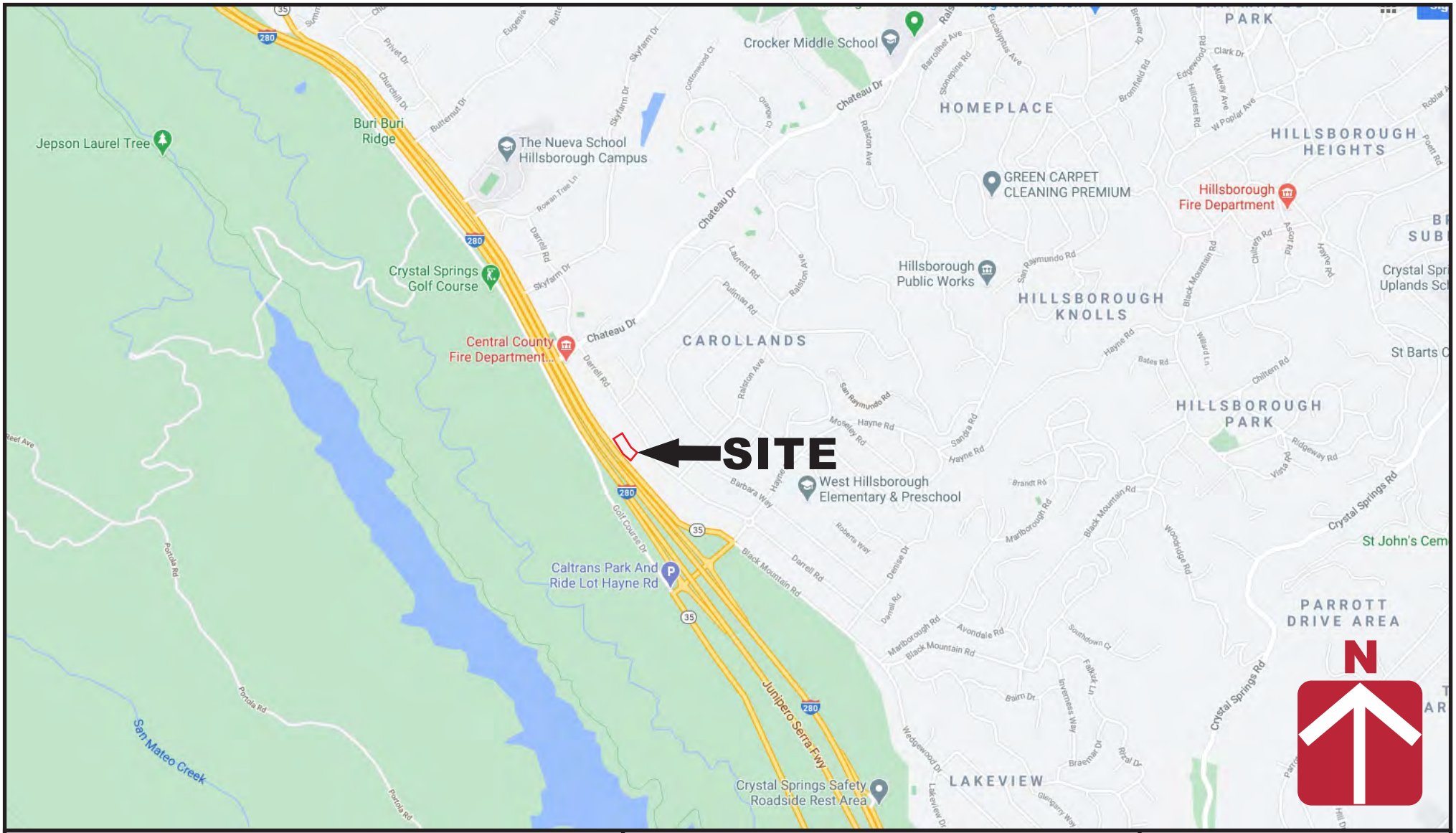
Aerial Photographs

Geomorphic features on the following aerial photographs were interpreted at the U.S. Geological Survey in Menlo Park as part of this investigation:

Date	Flight	Frames	Scale	Type
October 11, 1943	CIV-286-2B	111, 112	1:20,000	vertical black & white
July 9, 1946	GS-CP-2	136, 137	1:20,000	vertical black & white
May 27, 1956	DDB-2DD-1R	53	1:20,000	vertical black & white
April 18, 1968	GS-VBZJ-1	204, 205	1:30,000	vertical black & white
May 8, 1973	3567-3	117, 118, 119	1:20,000	Natural color
June 25, 1974	Area 9	9-20	1:30,000	vertical black & white

The following single frame aerial photos were reviewed through NetrOnline:

Date	Flight	Frames	Scale	Type
1946	N/A	N/A	variable	vertical black & white
1968	N/A	N/A	variable	vertical black & white
1987	N/A	N/A	variable	vertical black & white
1993	N/A	N/A	variable	vertical black & white
2012	N/A	N/A	variable	vertical: natural color
2016	N/A	N/A	variable	vertical: natural color



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Vicinity Map

Darrell Water Tank Replacement
Hillsborough, CA

Project Number	996-2-1
Figure Number	Figure 1
Date	January 2021
Drawn By	RRN

Darrell Road

SKYLINE BLVD
(WIDTH VARIES)
(PUBLIC STREET)

APN -030-041-100
LANDS OF
THE CITY AND COUNTY
OF SAN FRANCISCO

APN -030-041-060
LANDS OF
MAGGIE POON

Tank #3
WATER TANK

Tank #2
WATER TANK

Tank #1
WATER TANK

Proposed concrete water tank

Existing utility tower

EB-1
EB-2
EB-3
EB-4
EB-5
EB-6
EB-7
EB-8
TP-1
TP-2
TP-3

A
A'
B
B'

Af/QTm
Af/sp+/-um
Af/Qtm
QTm

Geologic Units

Af	Artificial fill
sp+/-um	Serpentinite with ultramafic rocks
QTm	Merced Formation

Legend

- Approximate location of exploratory boring (EB) (Cornerstone, current investigation)
- Approximate location of exploratory boring (EB) (Cornerstone, 2008)
- Approximate location of test pit (TP)
- Approximate location of cross section
- Area of soil creep
- Area of soil slump
- Unnamed thrust fault
- Geologic contact
- Bedding measurement

0 30 60
APPROXIMATE SCALE (FEET)

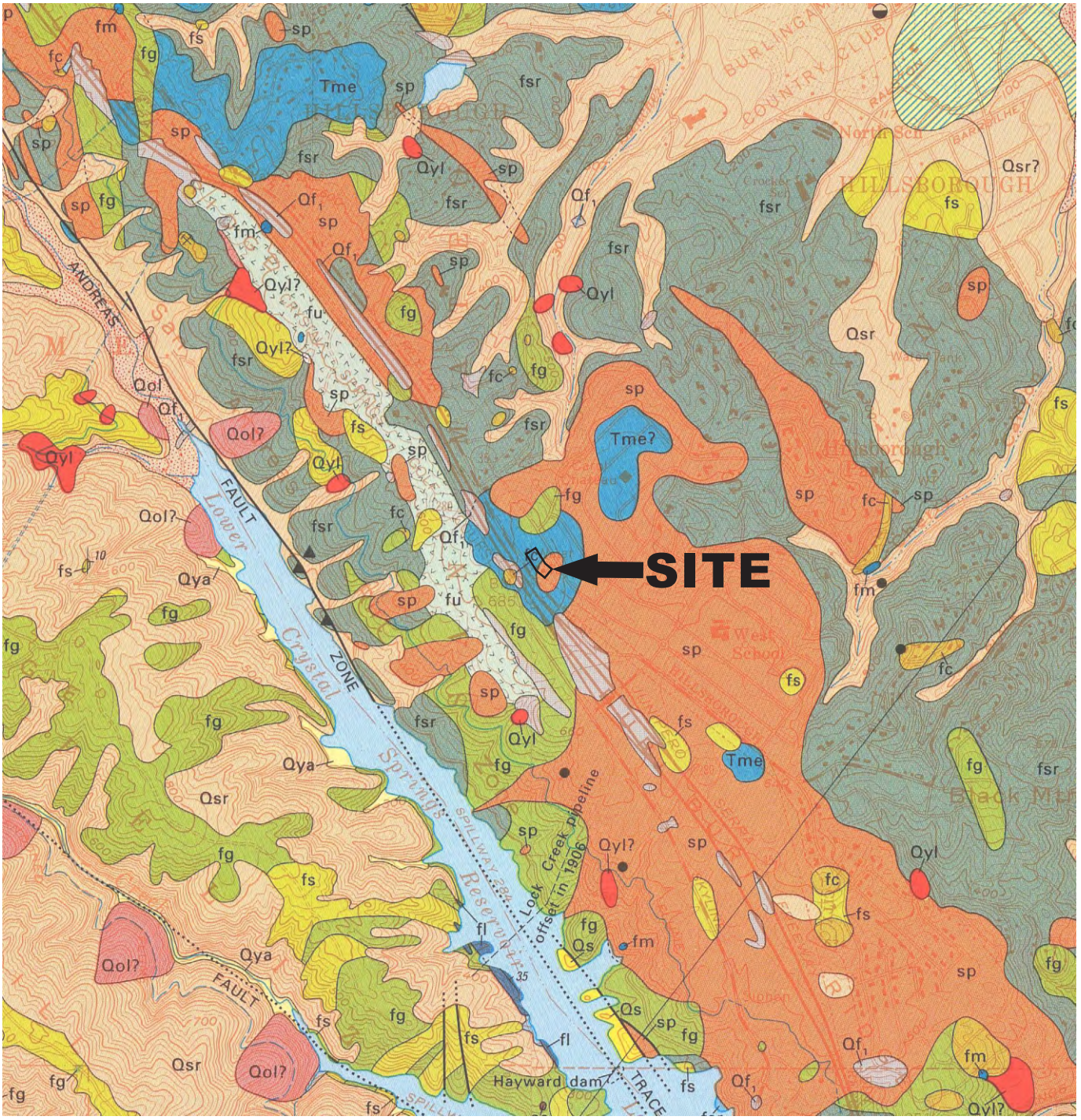
Base by Google Earth, dated 05/10/2018
Overlay by Sandis, Topographic and Boundary Survey - Sheet 1, dated 10/16/2020
Reference: CSG Consultants Inc., Topographic Survery/Existing Utilities - Sheet 2, dated 02/23/2008

Project Number 996-2-1
Figure Number Figure 2
Drawn By RRN
Date January 2021

Site Plan and Geologic Map

Darrell Water Tank Replacement
Hillsborough, CA

CORNERSTONE EARTH GROUP



Geologic Units

Qf_1	Artificial fill, Unit 1 (Holocene)
Tme	Merced Formation (upper Pliocene)
	Franciscan Complex
fu	Meta-igneous and metasedimentary rocks
fg	Greenstone
fc	Chert
sp	Serpentinite

Explanation

Contact - dashed where approximate, dotted where concealed

N

0 2000 4000

APPROXIMATE SCALE (FEET)

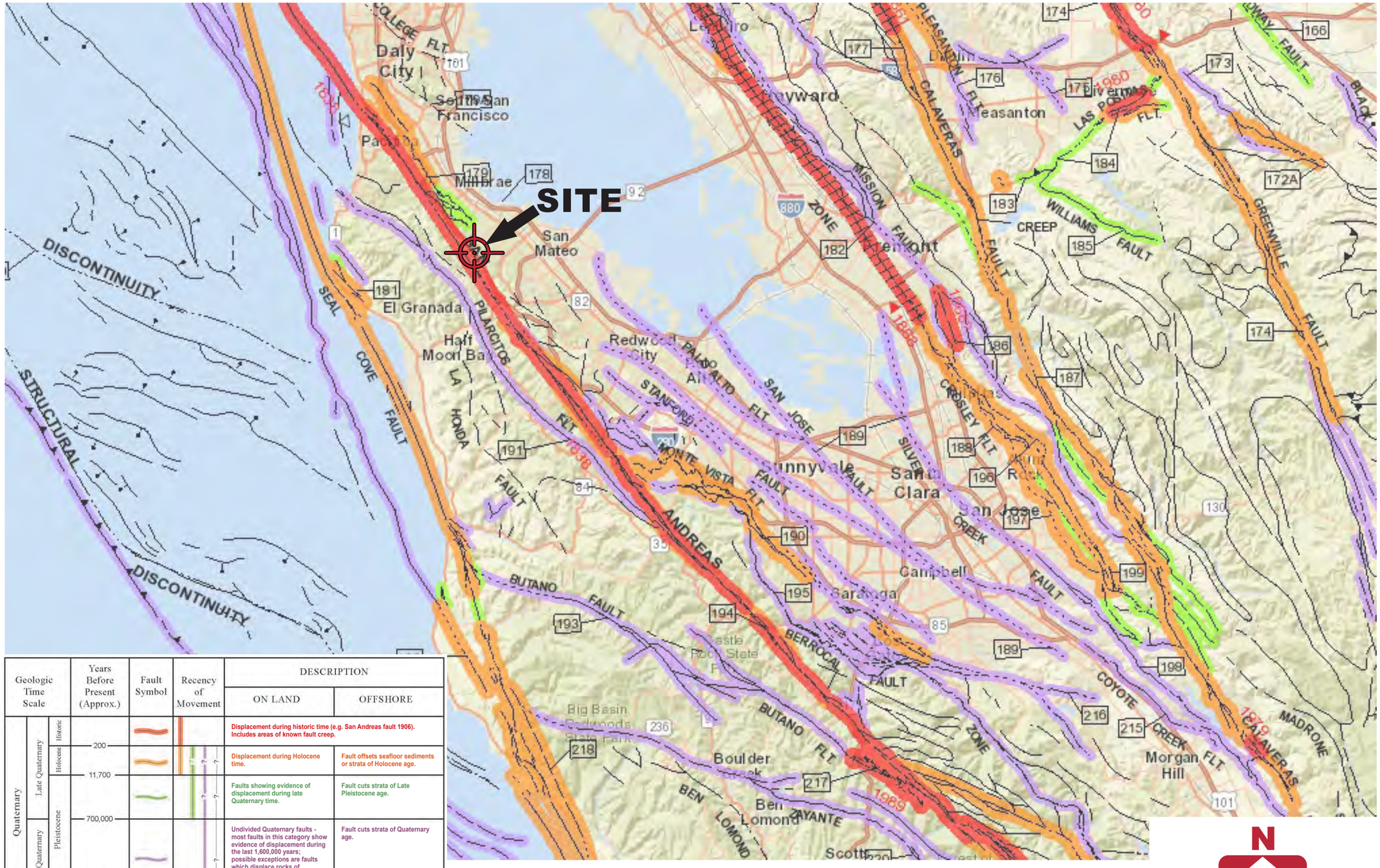
Base: USGS, Geologic Map of the Montara Mountain and San Mateo 7.5' Quadrangles, San Mateo County, California, by Pampeyan, 1994

CORNERSTONE EARTH GROUP

Vicinity Geologic Map

Darrell Water Tank Replacement
Hillsborough, CA

Project Number	996-2-1
Figure Number	Figure 3
Date	January 2021
Drawn By	RRN



Geologic Time Scale		Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION: ON LAND	DESCRIPTION: OFFSHORE
Quaternary	Late Quaternary – Holocene	200			Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		11,700		? ? ?	Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
	Pleistocene			? ? ?	Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
	Early Quaternary	700,000		?	Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Pilo-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary		1,600,000			Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.
		4.5 billion (Age of Earth)				

Base by California Geological Survey - 2010 Fault Activity Map of California (Jennings and Bryant, 2010)

N

0 5 10

APPROXIMATE SCALE (MILES)

Project Number: 996-2-1

Figure Number: Figure 4

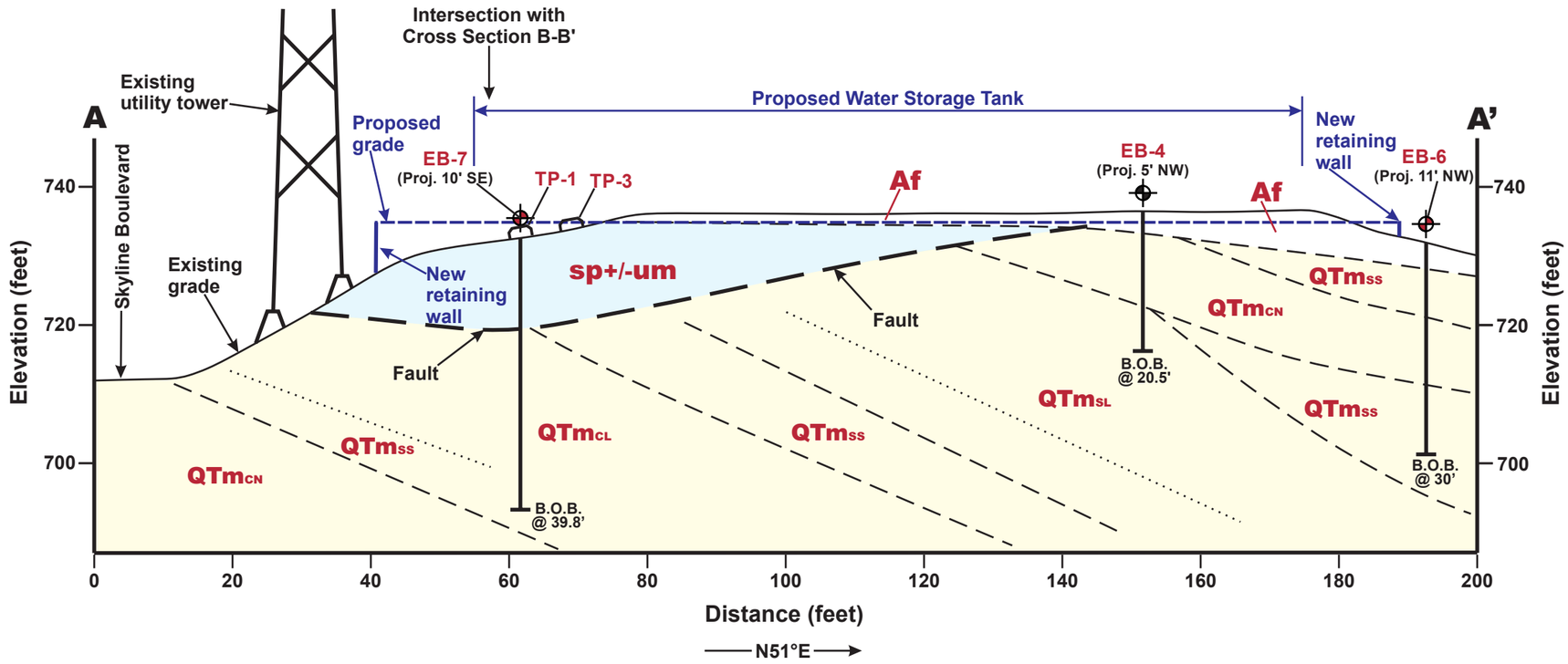
Date: January 2021

Drawn By: RRN

Regional Fault Map

Darrell Water Tank Replacement
Hillsborough, CA

CORNERSTONE EARTH GROUP



Section A-A'

(View Looking Northwest)
1"=20' H:V

Explanation

Geologic Units

- **Af** — Artificial fill
- **sp+/-um** — Serpentinite with ultramafic rocks
- **QTm** — Merced Formation
  - **QTmss** — Sandstone member
  - **QTmCN** — Conglomerate member
  - **QTmSL** — Siltstone member
  - **QTmCL** — Claystone member

Symbols

- Approximate location of exploratory boring (EB) (Cornerstone, current investigation)
- Approximate location of test pit (TP) (Cornerstone, current investigation)
- Approximate location of exploratory boring (EB) (Cornerstone, 2008)
- Fault (Discovered this investigation)
- Geologic (depositional) contact
- Apparent bedding angle

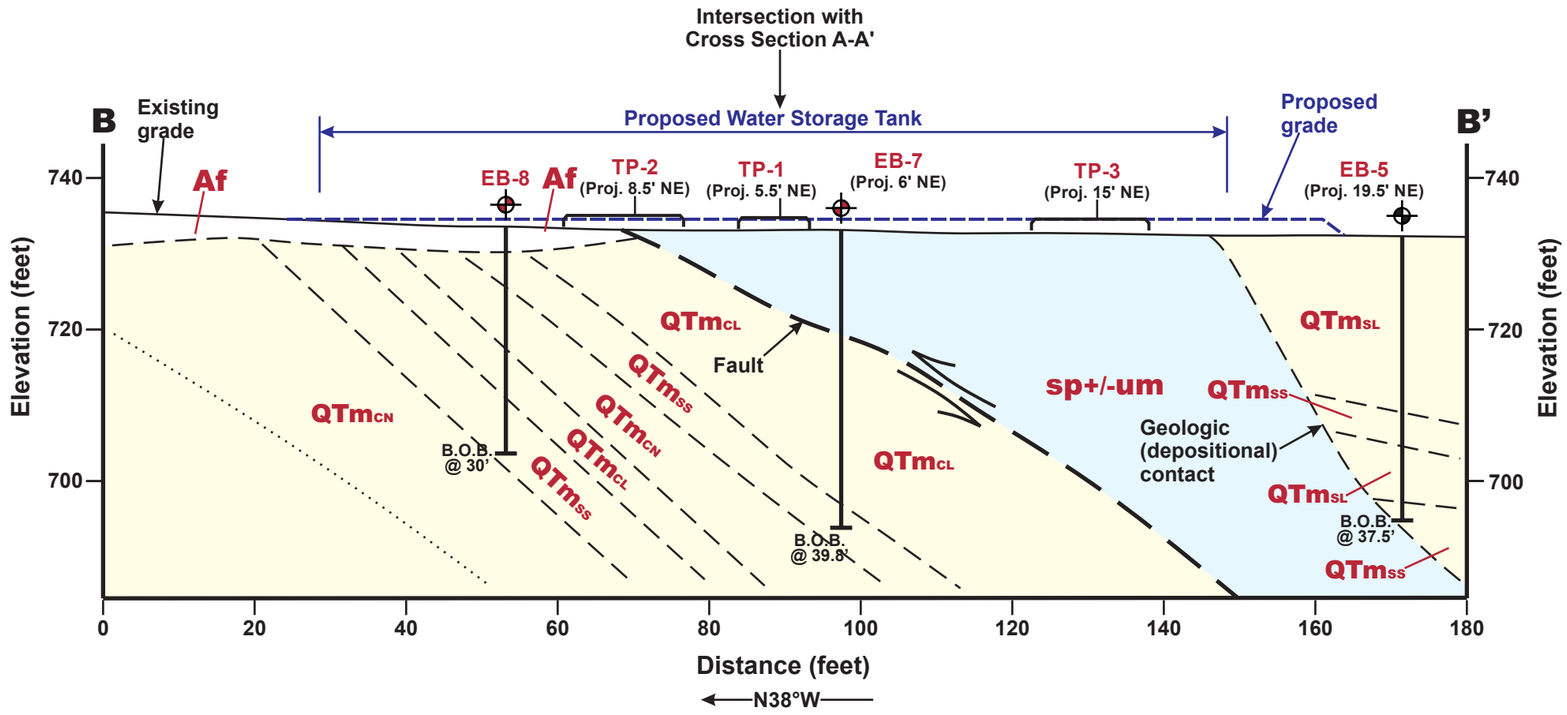
Notes:
1) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
2) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced borings. Actual subsurface conditions may vary significantly between borings.
3) See Figure 2 for location of cross section.

Project Number 996-2-1
Figure Number Figure 5
Drawn By RRN
Date January 2021

Geologic Cross Section A-A'

Darrell Water Tank Replacement
Hillsborough, CA

CORNERSTONE EARTH GROUP



Section B-B'

(View Looking Northeast)
1"=20' H:V

Explanation

Geologic Units

- **Af** — Artificial fill
- **sp+/-um** — Serpentinite with ultramafic rocks
- **QTm** — Merced Formation
  - **QTmSS** — Sandstone member
  - **QTmCN** — Conglomerate member
  - **QTmSL** — Siltstone member
  - **QTmCL** — Claystone member

Symbols

- Approximate location of exploratory boring (EB) (Cornerstone, current investigation)
- Approximate location of test pit (TP) (Cornerstone, current investigation)
- Approximate location of exploratory boring (EB) (Cornerstone, 2008)
- Fault (Discovered this investigation)
- Geologic (depositional) contact
- Apparent bedding angle

Notes:
1) Surficial fills associated with existing pavements, landscaping or utilities are not shown.
2) The subsurface profile is conceptual and is based on limited subsurface data obtained from widely spaced borings. Actual subsurface conditions may vary significantly between borings.
3) See Figure 2 for location of cross section.

Project Number 996-2-1
Figure Number Figure 6
Drawn By RRN
Date January 2021

Geologic Cross Section B-B'

Darrell Water Tank Replacement
Hillsborough, CA

CORNERSTONE EARTH GROUP

APPENDIX A: FIELD INVESTIGATION

The field investigations consisted of a surface reconnaissance and a subsurface exploration programs using truck-mounted, rotary-wash and track-mounted, hollow-stem auger drilling equipment. Five 8-inch-diameter exploratory borings were drilled on October 9, 2007 and March 11, 2008 to depths of 15½ to 37½ feet. Three 6½-inch-diameter exploratory borings were drilled on September 29 and 30, 2020 to depths of 30 to 39¾ feet. In addition, three shallow test pits were excavated at the site on November 12, 2020 with a backhoe-equipped tractor. The test pits extended to depths of 3¼ to 4¾ feet below the existing grades. The approximate locations of exploratory borings and test pits are shown on the Site Plan and Geologic Map, Figure 2. The soil and bedrock encountered were continuously logged in the field by our representative and described in accordance with the Unified Soil Classification System (ASTM D2488). Boring and test pit logs, as well as a key to the classification of the soil and bedrock, are included as part of this appendix.

Boring and test pit locations were approximated using existing site boundaries and other site features as references. Boring elevations were based on interpolation of plan contours. The locations and elevations of the borings should be considered accurate only to the degree implied by the method used.

Representative soil samples were obtained from the borings at selected depths. All samples were returned to our laboratory for evaluation and appropriate testing. The standard penetration resistance blow counts were obtained by dropping a 140-pound hammer through a 30-inch free fall. The 2-inch O.D. split-spoon sampler was driven 18 inches and the number of blows was recorded for each 6 inches of penetration (ASTM D1586). 2.5-inch I.D. samples were obtained using a Modified California Sampler driven into the soil with the 140-pound hammer previously described. Unless otherwise indicated, the blows per foot recorded on the boring log represent the accumulated number of blows required to drive the last 12 inches. The various samplers are denoted at the appropriate depth on the boring logs.

Field tests included an evaluation of the unconfined compressive strength of the soil samples using a pocket penetrometer device. The results of these tests are presented on the individual boring logs at the appropriate sample depths.

Attached boring and test pit logs and related information depict subsurface conditions at the locations indicated and on the date designated on the logs. Subsurface conditions at other locations may differ from conditions occurring at these boring and test pit locations. The passage of time may result in altered subsurface conditions due to environmental changes. In addition, any stratification lines on the logs represent the approximate boundary between soil types and the transition may be gradual.

BORING NUMBER EB-1

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Road Tank
PROJECT NUMBER 184-1-1
PROJECT LOCATION Hillsborough

DATE STARTED 10/9/07 **DATE COMPLETED** 10/9/07
GROUND ELEVATION 734.5 FT +/- **BORING DEPTH** 31.5 ft.
DRILLING CONTRACTOR
LATITUDE **LONGITUDE**
DRILLING METHOD Rotary Wash
GROUND WATER LEVELS:
LOGGED BY CBB
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
734.5	0	6 inches gravel (Aggergate Base)						
734.0		**Silt and Gravel (FILL)** Hand Auger						
731.5		**Silt (ML)**						
730.5		Hand Auger						
	5	**Siltstone (Bedrock)** soft, mottled gray/ orange-brown to brown, highly weathered	47	MC-1B	121	10		
		Mud up 5 to 10 feet (cased)						
725.5		**Sandstone**						
	10	mottled gray/ brown, medium weathered, with less weathered nodules	67	SPT-2B		16		
720.5		(1000 psi)						
	15	pitcher barrell 750 psi-2000 psi at 18 inches stopped pitcher barrell		ST				
		Siltstone soft, light brown, severely weathered						
	20		50/5.5"	SPT-3A		15		
		severely weathered, brown with black mottling						
	25	2000 psi-stopped at 2 feet		ST				
		Siltstone medium, mottled light brown to orange-brown, medium weathered						
	30	hard at 28 1/2 feet	78	SPT-4A		18		
703.0		**Siltstone** mottled orange-brown to brown, with lenses-less weathered, medium weathering						
		Bottom of Boring at 31.5 feet.						
	35							

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:03 - P:\DRAFTING\GINT FILES\184-1-1 DARRELL RD TANK.GPJ

BORING NUMBER EB-2

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Road Tank
PROJECT NUMBER 184-1-1
PROJECT LOCATION Hillsborough

DATE STARTED 10/9/07 **DATE COMPLETED** 10/9/07
GROUND ELEVATION 735.3 FT +/- **BORING DEPTH** 15.5 ft.
DRILLING CONTRACTOR
LATITUDE **LONGITUDE**
DRILLING METHOD Rotary Wash
GROUND WATER LEVELS:
LOGGED BY CBB
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
735.3	0	Silt and Gravel (FILL) Hand Auger						
732.8		change in color (Native?) hard drilling **Siltstone (Bedrock)** light brown/ gray, medium weathered (or fine Sandstone)	62	MC-1B	120	8		
	10	light brown to orange-brown, severely weathered	46	SPT-2A		12		
	15	brown, nodules of fresh rock	51	SPT-3A		20		
719.8		Bottom of Boring at 15.5 feet.						

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:03 - P:\DRAFTING\GINT FILES\184-1-1 DARRELL RD TANK.GPJ

BORING NUMBER EB-3

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Road Tank
PROJECT NUMBER 184-1-1
PROJECT LOCATION Hillsborough

DATE STARTED 10/9/07 **DATE COMPLETED** 10/9/07
GROUND ELEVATION 737.5 FT +/- **BORING DEPTH** 20.5 ft.
DRILLING CONTRACTOR
LATITUDE **LONGITUDE**
DRILLING METHOD Rotary Wash
GROUND WATER LEVELS:
LOGGED BY CBB
AT TIME OF DRILLING Not Encountered
NOTES Fraste Multi-Drill XL D51
AT END OF DRILLING Not Encountered

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
737.5	0	Gravel						
737.0		**Silt (ML)** **Silt with Gravel (ML) [Fill]**						
734.5		**Siltstone (Bedrock)**						
733.5	5	soft, light brown and brown, severely weathered some roots	33	MC-1A	111	8		
	10	**SitIstone** brown to orange-brown, very severely weathered	20	SPT-2A		19		
724.5		**Silt with Gravel (ML)**						
	15	soft, mottled orange-brown to brown/ gray, very severely weathered	21	SPT-3A		15		
719.5		**Siltstone**						
	20	dark gray/ orange brown	32	SPT-4A		15		
717.0		Bottom of Boring at 20.5 feet.						
	25							
	30							
	35							

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:03 - P:\DRAFTING\GINT FILES\184-1-1 DARRELL RD TANK.GPJ

BORING NUMBER EB-4

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Road Tank
PROJECT NUMBER 184-1-1
PROJECT LOCATION Hillsborough

DATE STARTED 10/9/07 **DATE COMPLETED** 10/9/07
GROUND ELEVATION 736.6 FT +/- **BORING DEPTH** 20.5 ft.
DRILLING CONTRACTOR _____ **LATITUDE** _____ **LONGITUDE** _____
DRILLING METHOD Rotary Wash
GROUND WATER LEVELS:
LOGGED BY CBB ▽ **AT TIME OF DRILLING** Not Encountered
NOTES _____ ▼ **AT END OF DRILLING** Not Encountered

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
736.6	0		6 inches gravel, Asphalt Chunks						
736.1			**Silt with Gravel (ML) [Fill]** dark gray						
733.1			**Shale (Bedrock)** soft, blue gray mottled rust-brown, severely weathered	21	MC-1A	66	37		
	5		smoother drilling at 7 1/2 feet						
	10		with some interbedded Siltstone, Gravel, etc.	45	MC-2A	71	46		
723.6			**Siltstone**		ST				
	15								
	20			23	SPT-3A		18		
716.1			**Siltstone** with tree root						
			Bottom of Boring at 20.5 feet.						
	25								
	30								
	35								

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:03 - P:\DRAFTING\GINT FILES\184-1-1 DARRELL RD TANK.GPJ

BORING NUMBER EB-5

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Road Tank
PROJECT NUMBER 184-1-1
PROJECT LOCATION Hillsborough

DATE STARTED 3/11/08 **DATE COMPLETED** 3/11/08
GROUND ELEVATION 735 FT +/- **BORING DEPTH** 37.5 ft.
DRILLING CONTRACTOR Gregg Drilling **LATITUDE** 37°33'5.9796" **LONGITUDE** -123°37'28.1352"
DRILLING METHOD Rotary Wash **GROUND WATER LEVELS:**
LOGGED BY AKT **AT TIME OF DRILLING** Not Encountered
NOTES Fraste Multi-Drill XL D51 **AT END OF DRILLING** Not Encountered

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT, %	PLASTICITY INDEX, %	PERCENT PASSING NO. 200 SIEVE
735.0	0	vegitation, topsoil						
734.0		**Silty Sand (SM) [FILL]** fine to medium sand, fine gravel, trace organics						
	5	greenish rock fragments						
729.5		**Siltstone (QTm)** soft, olive gray, highly weathered, with clay inclusions, trace organics clayey silt lense	50	SPT-1A				
			47	SPT-2A				
	10	grades brown with green rock fragments at 11.5 feet	33	SPT-3A				
722.5		clay lense with organics at 12.5 feet to 14.5 feet						
720.5	15	**Siltstone (QTm)** grades yellowish orange, severely weathered	28	SPT-4A				
				ST-5A	104	15.1		
	20		31	SPT-6A				
713.5		grades hard with light gray and orange mottles, increase in grain size at 21.5 feet		ST-7A	108	15.3		
		Sandstone (QTm) very dense, moist, yellowish orange						
709.5	25	**Siltstone (QTm)** soft, completely weathered, light gray with orange mottles	42	SPT-8A				
				ST-9A				
	30	grades soft, plastic to friable, severely weathered	57	SPT-10A				
702.5		**Sandstone (QTm)** intensely fractured, soft, plastic to friable, severely weathered, light brown		ST-11A				
			50/6"	SPT-12A				
	35			ST-13A				
697.5		fine grained, soft, plastic, grades to yellowish orange, wet						
	40	Bottom of Boring at 37.5 feet.						

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0 5.0

CORNERSTONE EARTH GROUP - CORNERSTONE.GDT - 4/21/08 14:19 - P:\DRAFTING\GINT FILES\184-1-1 DARRELL RD TANK.GPJ

BORING NUMBER EB-6

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Water Tank Replacement
PROJECT NUMBER 996-2-1
PROJECT LOCATION Hillsborough, CA

DATE STARTED 9/30/20 **DATE COMPLETED** 9/30/20
GROUND ELEVATION 732 FT +/- **BORING DEPTH** 30 ft.
DRILLING CONTRACTOR Cuesta Geoservices Inc
LATITUDE 37.552027° **LONGITUDE** -122.375391°
DRILLING METHOD MPP LAD Track Rig, 6½ inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY EA
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
732.0	0	topsoil with roots							
731.5		**Lean Clay with Sand (CL) [Residual soil]** hard, moist, dark brown to brown, fine sand, moderate plasticity Liquid Limit = 46, Plastic Limit = 17	19	MC-1B	99	14	29		>4.5
729.0		**Silty Sandstone [QTm]** low hardness to moderately hard, weak, deep weathering, light brown with reddish brown mottles, fine sand, minor interbeds of claystone	26	MC-2B	96	13			
	5		41	MC-3B	113	7			
			44	MC-4B	114	8			
			31	SPT-5		6			
722.0	10	**Pebble Conglomerate [QTm]** soft, friable, deep weathering, gray with reddish mottles, fine to coarse sand, fine to coarse gravel, low plasticity	29	MC-6B	116	10			
	15		19	SPT					
712.0	20	**Silty Sandstone [QTm]** low hardness to moderately hard, weak, deep weathering, light brown with reddish brown mottles, fine sand, minor interbeds of claystone	41	MC-8B	113	7			
	25								
706.0									

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UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:06 - P:\DRAFTING\GINT FILES\996-2-1 DARREL ROAD WATER TANK.GPJ

BORING NUMBER EB-6

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Water Tank Replacement

PROJECT NUMBER 996-2-1

PROJECT LOCATION Hillsborough, CA

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ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
706.0				43	SPT					
704.0			**Pebble Conglomerate [QTm]** soft, friable, deep weathering, gray with reddish mottles, fine to coarse sand, fine to coarse gravel, low plasticity	30	SPT-10		18			
702.0	30		Bottom of Boring at 30.0 feet.							
	35									
	40									
	45									
	50									
	55									

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:06 - P:\DRAFTING\GINT FILES\996-2-1 DARREL ROAD WATER TANK.GPJ

BORING NUMBER EB-7

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Water Tank Replacement
PROJECT NUMBER 996-2-1
PROJECT LOCATION Hillsborough, CA

DATE STARTED 9/29/20 **DATE COMPLETED** 9/29/20
GROUND ELEVATION 732.7 FT +/- **BORING DEPTH** 39.8 ft.
DRILLING CONTRACTOR Cuesta Geoservices Inc
LATITUDE 37.518130° **LONGITUDE** -122.375731°
DRILLING METHOD MPP LAD Track Rig, 6½ inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY EA
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
732.7	0	**Sandy Elastic Silt with Gravel (MH) [Fill]**							
732.2		hard, brown, fine to coarse sand, high plasticity	34	MC-1B	59	54	27		>4.5
		Liquid Limit = 64, Plastic Limit = 37	50/5"	MC					
		Serpentine [sp]							
		moderately hard, weak, deep weathering, light gray with yellow and dark gray mottles, high plasticity	50/5"	MC-3	63	52			
	5		50/5"	MC-4B	66	33			
			50/5"	MC-5B	77	19			
	10		50/3"	MC-6	71	31			
			36	SPT					
719.7		**Sandy Claystone [QTm]**							
		soft to low hardness, friable to weak, deep weathering, gray with reddish mottles, moderate plasticity	36	SPT					
	15		37	MC-9B	110	18			
			37	SPT					
	20		30	SPT					
			29	MC-12B	108	19			
			22	MC-13B	108	20			
	25		18	SPT					
706.7									

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

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CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:06 - P:\DRAFTING\GINT FILES\996-2-1 DARREL ROAD WATER TANK.GPJ

BORING NUMBER EB-7

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Water Tank Replacement

PROJECT NUMBER 996-2-1

PROJECT LOCATION Hillsborough, CA

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ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE
706.7		**Sandy Claystone [QTm]** soft to low hardness, friable to weak, deep weathering, gray with reddish mottles, moderate plasticity	21	MC				
	30		17	MC-16B	111	17		
698.7		**Silty Sandstone [QTm]** low hardness, weak, deep weathering, light brown with reddish brown mottles, fine sand	17	SPT				
	35							
		becomes moderately hard and moderatley strong	50/4"	SPT-18		12		
692.9	40	Bottom of Boring at 39.8 feet.						
	45							
	50							
	55							

UNDRAINED SHEAR STRENGTH, ksf
- ○ HAND PENETROMETER
- △ TORVANE
- ● UNCONFINED COMPRESSION
- ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL

1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:06 - P:\DRAFTING\GINT FILES\996-2-1 DARREL ROAD WATER TANK.GPJ

BORING NUMBER EB-8

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Water Tank Replacement
PROJECT NUMBER 996-2-1
PROJECT LOCATION Hillsborough, CA

DATE STARTED 9/30/20 **DATE COMPLETED** 9/30/20
GROUND ELEVATION 733.5 FT +/- **BORING DEPTH** 30 ft.
DRILLING CONTRACTOR Cuesta Geoservices Inc
LATITUDE 37.551889° **LONGITUDE** -122.375857°
DRILLING METHOD MPP LAD Track Rig, 6½ inch Hollow-Stem Auger
GROUND WATER LEVELS:
LOGGED BY EA
AT TIME OF DRILLING Not Encountered
NOTES
AT END OF DRILLING Not Encountered

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf
733.5	0	**Clayey Sand (SC) [Fill]** medium dense, moist, brown, fine to medium sand, some fine subangular gravel	13	MC-1B	97	5		43	
732.3		**Sandy Lean Clay (CL) [Residual soil]** hard, moist, brown, fine to medium sand, moderate plasticity	19	MC					>4.5
730.5		**Silty Sandstone [QTm]** low hardness to moderately hard, weak, deep weathering, light brown with reddish brown mottles, fine sand, minor interbeds of claystone	58	MC-3	120	8			
	5								
727.0		**Pebble Conglomerate [QTm]** soft, friable, deep weathering, gray with reddish mottles, fine to coarse sand, fine to coarse gravel, low plasticity	55	SPT					
			67	MC-5	115	13			
	10								
			53	SPT-6		8			
	15								
716.5		**Sandy Claystone [QTm]** low hardness, weak, deep weathering, gray with reddish mottles, moderate plasticity	23	SPT					
	20								
711.5		**Clayey Sandstone [QTm]** soft, friable, deep weathering, gray with reddish mottles, low plasticity	48	MC-8B	115	14			
	25								
707.5		*Continued Next Page*							

UNDRAINED SHEAR STRENGTH, ksf
○ HAND PENETROMETER
△ TORVANE
● UNCONFINED COMPRESSION
▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL
1.0 2.0 3.0 4.0

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:06 - P:\DRAFTING\GINT FILES\996-2-1 DARREL ROAD WATER TANK.GPJ

BORING NUMBER EB-8

CORNERSTONE EARTH GROUP

PROJECT NAME Darrell Water Tank Replacement

PROJECT NUMBER 996-2-1

PROJECT LOCATION Hillsborough, CA

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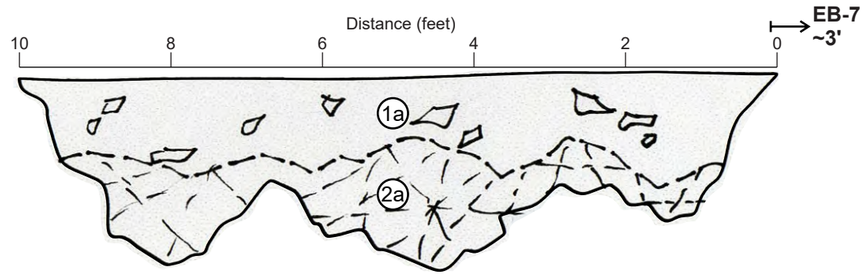
ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	SAMPLES TYPE AND NUMBER	DRY UNIT WEIGHT PCF	NATURAL MOISTURE CONTENT	PLASTICITY INDEX, %	PERCENT PASSING No. 200 SIEVE	UNDRAINED SHEAR STRENGTH, ksf (○ HAND PENETROMETER, △ TORVANE, ● UNCONFINED COMPRESSION, ▲ UNCONSOLIDATED-UNDRAINED TRIAXIAL; 1.0 2.0 3.0 4.0)
707.5			**Clayey Sandstone [QTm]** soft, friable, deep weathering, gray with reddish mottles, low plasticity	52	MC					
703.5	30		Bottom of Boring at 30.0 feet.							
	35									
	40									
	45									
	50									
	55									

CORNERSTONE EARTH GROUP2 - CORNERSTONE 0812.GDT - 1/15/21 08:06 - P:\DRAFTING\GINT FILES\996-2-1 DARREL ROAD WATER TANK.GPJ

Test Pit #1



UNIT DESCRIPTONS

1a **Residual Soil: Clayey Sand:**
Medium yellow-brown, damp, disturbed (loose).

2a **Serpentinite +/- Ultramatic rock:**
Dark gray to black, damp, moderately hard, blocky, moderately difficult to difficult to excavate.

Scale: 1” = 2’

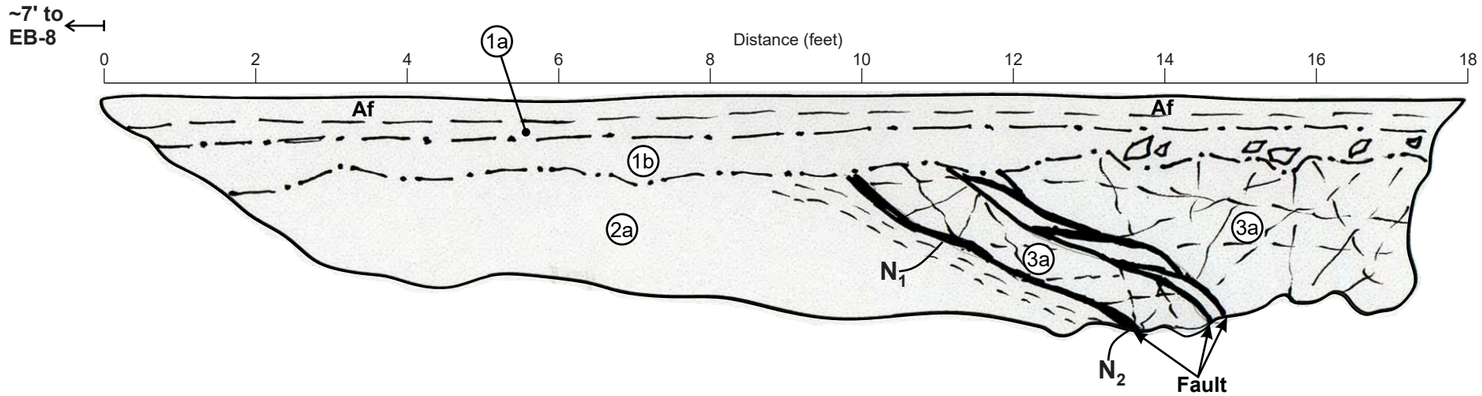
Test Pit Log #1

Darrell Water Tank Replacement
Hillsborough, CA

Project Number 996-2-1
Figure Number Figure 7
Date January 2021
Logged By CSH
Drawn By RRN

CORNERSTONE EARTH GROUP

Test Pit #2



UNIT DESCRIPTONS

Af **Artificial fill: Sandy Clay with Gravel:**
Dark brown, damp, firm.

(1a) **Residual Soil: Fat Clay:**
Very dark gray-brown, damp, stiff, some angular gravel and sand.

(1b) **Residual Soil: Sandy Fat Clay with Gravel:**
Blocky, high dry strength, well developed "B-Horizon" with gradational lower contact.

(2a) **Merced Formation: Silty fine Sandstone:**
Medium yellow-brown, damp, hard (as soil), moderately strong, slightly cemented.

(3a) **Serpentinite +/- Ultramatic rock:**
Very dark gray, hard, blocky, pervasively fractured, moderately difficult to difficult to excavate.

Notes

N_1 Shear fabric is typical, N16°E / 40°SE.

N_2 Fault contact across test pit: N43°E / 34°SE, no clayey surfaces associated with sheering, sheared fabric within QTm unit is co-planar with fault.

Scale: 1" = 2'

Project Number 996-2-1

Figure Number Figure 8

Date January 2021

Logged By CSH

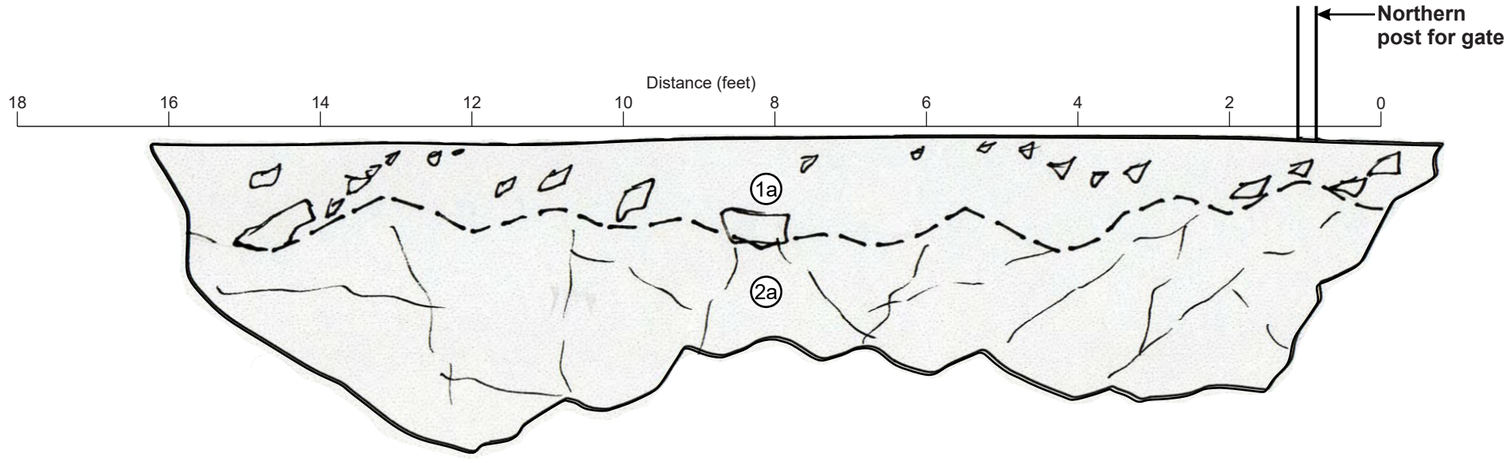
Drawn By RRN

Test Pit Log #2

Darrell Water Tank Replacement
Hillsborough, CA

CORNERSTONE EARTH GROUP

Test Pit #3



UNIT DESCRIPTONS

(1a) **Residual Soil: Sandy Fat Clay with Gravel:**
Very dark gray-brown, congula medium to coarse, residual soil.

(2a) **Serpentinite +/- Ultramatic rock:**
Dark gray to black and yellowish-gray, hard, blocky, pervasively fractured and jointed, moderately difficult to difficult to excavate.

Scale: 1” = 2’

Project Number 996-2-1
Figure Number Figure 9
Date January 2021
Logged By CSH
Drawn By RRN

Test Pit Log #3

Darrell Water Tank Replacement
Hillsborough, CA

CORNERSTONE EARTH GROUP

CORNERSTONE EARTH GROUP

APPENDIX B: LABORATORY TEST PROGRAM

The laboratory testing program was performed to evaluate the physical and mechanical properties of the soils retrieved from the site to aid in verifying soil classification.

Moisture Content: The natural water content was determined (ASTM D2216) on 39 samples of the materials recovered from the borings. These water contents are recorded on the boring logs at the appropriate sample depths.

Dry Densities: In place dry density determinations (ASTM D2937) were performed on 26 samples to measure the unit weight of the subsurface soils. Results of these tests are shown on the boring logs at the appropriate sample depths.

Washed Sieve Analyses: The percent soil fraction passing the No. 200 sieve (ASTM D1140) was determined on one sample of the subsurface soils to aid in the classification of these soils. Results of this test are shown on the boring log at the appropriate sample depth.

Plasticity Index: Two Plasticity Index determinations (ASTM D4318) were performed on samples of the subsurface soils to measure the range of water contents over which this material exhibits plasticity. The Plasticity Index was used to classify the soil in accordance with the Unified Soil Classification System and to evaluate the soil expansion potential. Results of these tests are shown on the boring logs at the appropriate sample depths and on Figure B1 in this appendix.

Consolidated-Undrained Triaxial Compression: The undrained shear strength was determined on 11 remolded and relatively undisturbed samples of soil/bedrock material by multi-stage, consolidated undrained triaxial shear strength testing (ASTM D4767). The results of these tests are included as part of this appendix.

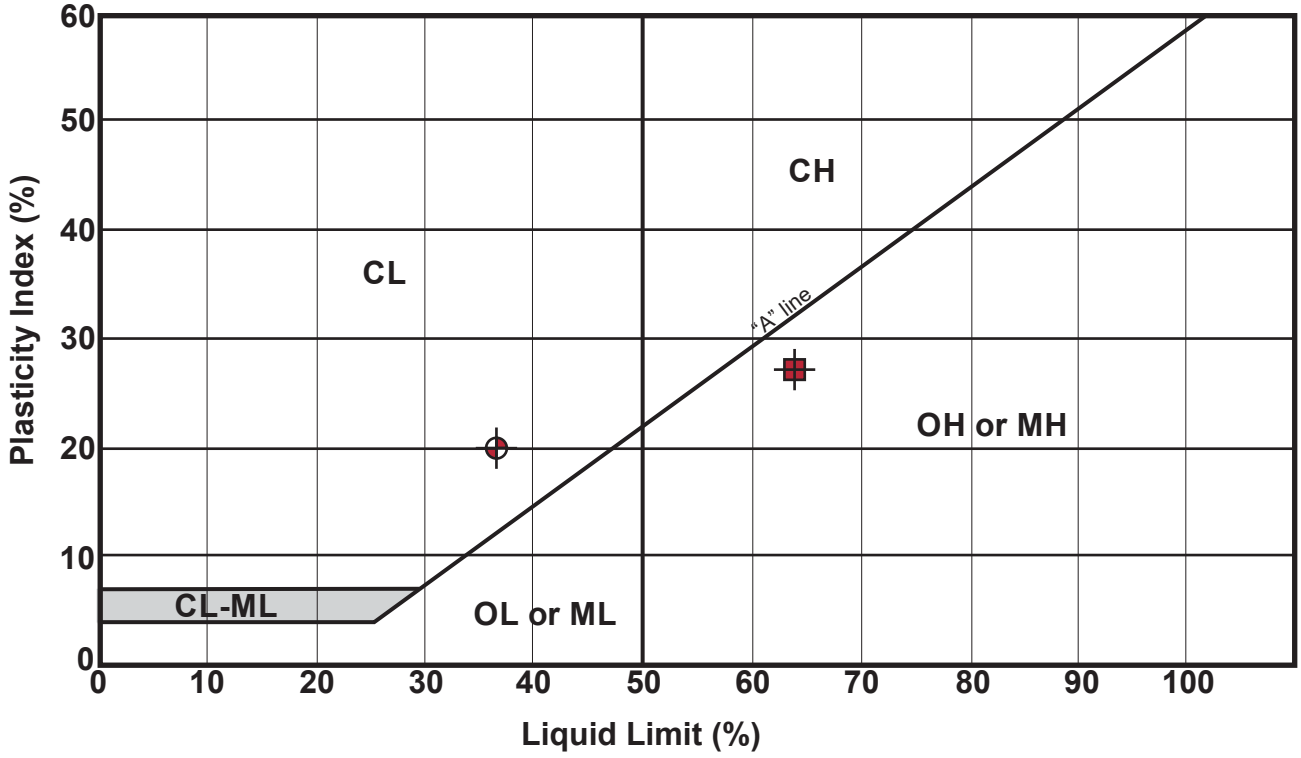
Consolidation: One consolidation test (ASTM D2435) was performed on a relatively undisturbed sample of the subsurface clayey soils to assist in evaluating the compressibility property of this soil. Results of the consolidation test are presented graphically in this appendix.

Shrink-Swell / Expansion Pressure: A modified shrink-swell / expansion pressure test was determined (ASTM D3877) on a single sample of Merced Formation claystone encountered at the site. The results of this test in included in this appendix.

Corrosion Testing: A suite of tests in accordance with Caltrans was performed for three samples, including minimum resistivity, chloride, sulfate and pH. The results of these tests are included in this appendix.

Lime Stability: A lime stability test was performed on a bulk sample of the residual soil to evaluate using pH to estimate the soil-lime proportion needed for soil stabilization. This test was performed in general accordance with ASTM D6276 testing procedures.

Plasticity Index (ASTM D4318) Testing Summary



Symbol	Boring No.	Depth (ft)	Natural Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Passing No. 200 (%)	Group Name (USCS - ASTM D2487)
⊕	EB-6	2.0	14	46	17	29	—	Lean Clay with Sand (CL) [Residual soil]
⊞	EB-7	0.3	—	64	37	27	—	Sandy Elastic Silt (MH) [Fill]

CORNERSTONE EARTH GROUP

Plasticity Index Testing Summary

Darrell Water Tank Replacement
Hillsborough, CA

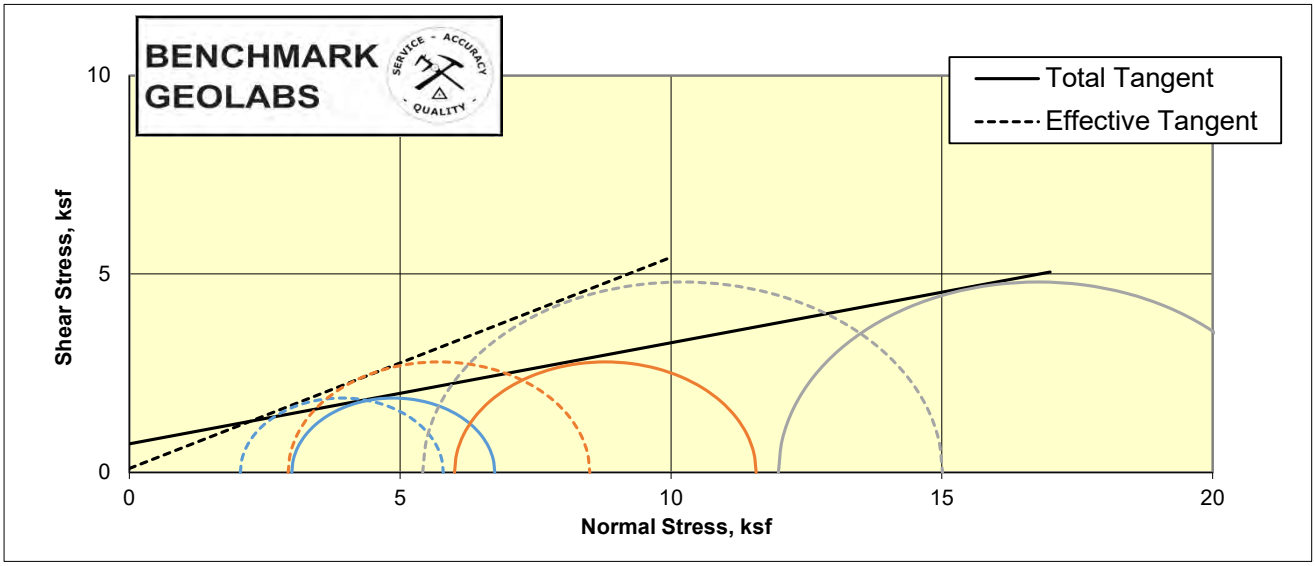
Project Number: 996-2-1

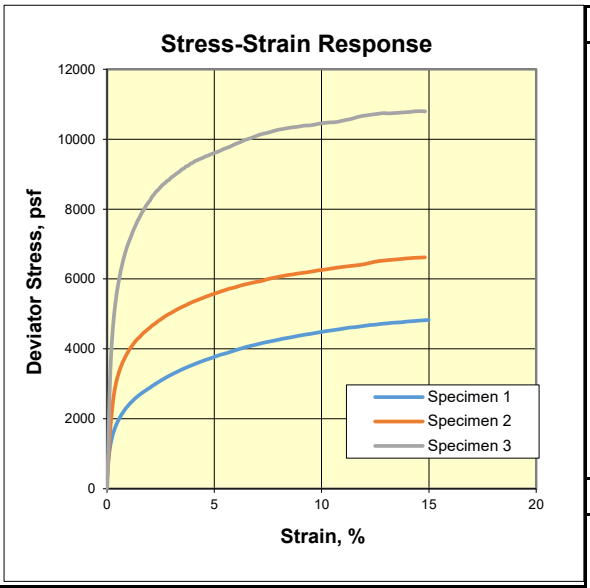
Figure Number: Figure B1

Date: November 2020

Drawn By: FLL

Consolidated Undrained Triaxial Compression with Pore Pressure
ASTM D4767





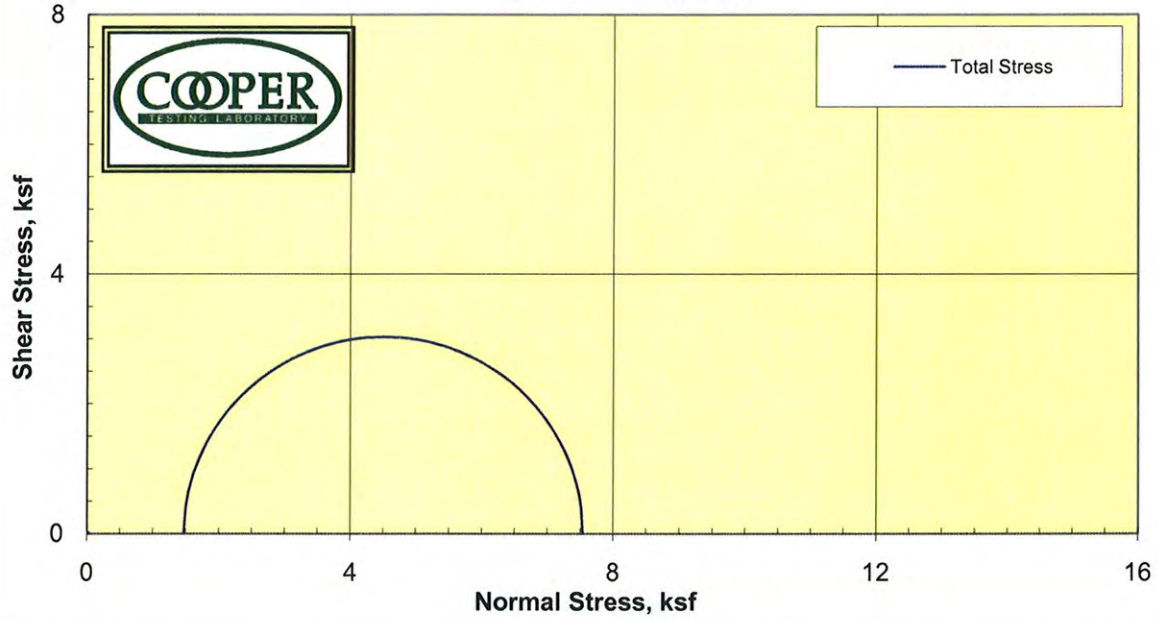
BGL Number:	043-013
Client Name:	Cornerstone Earth Group
Project Name:	Darrel Rd. Tank
Project Number:	996-2-1
Date:	11/15/2020 **By:** PJ
Total C	**0.720** **ksf**
Total phi	**14.3** **degrees**
Eff. C	**0.100** **ksf**
Eff. phi	**28.0** **degrees**

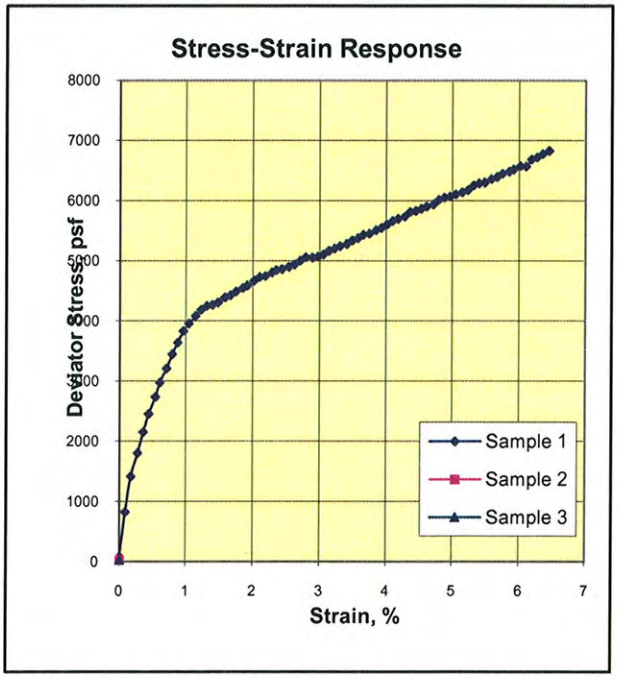
Remarks: Remolding target = 92% of 123 pcf @13.5% moisture. This material appeared to be just dry of optimum at 13.5% and required significant effort to achieve the target density. It exhibited a slight tendency to swell and it appears that the sample diameters increased slightly during saturation, which could not be measured. Therefore, 100% saturation was assumed in order to calculate estimated post-consolidation diameters for all three specimens. This material was very slow to saturate and consolidate and was sheared at the slowest reasonable speed (0.4%/ hr.).

Specimen	**1**	**2**	**3**	**4**
Boring	EB-8	EB-8	EB-8	
Sample	Bulk	Bulk	Bulk	
Depth				
Visual Description	Brown Clayey SAND	Brown Clayey SAND	Brown Clayey SAND	
MC, %	13.4	13.5	13.4	
Dry Dens, pcf	113.4	113.4	113.5	
Saturation, %	71.7	72.1	72.0	
Void Ratio	0.514	0.514	0.513	
Diameter, in.	2.41	2.41	2.41	
Height, in.	5.00	5.00	5.00	
	Final			
MC, %	19.1	18.3	17.1	
Dry Dens, pcf	112.6	114.1	116.7	
Saturation, %	100.0	100.0	100.0	
Void Ratio	0.525	0.504	0.471	
Diameter, in.	2.42	2.41	2.39	
Height, in.	5.00	4.97	4.95	
Cell Press, psi	70.8	91.7	133.2	
Back Press, psi	50.0	50.0	50.0	
	Effective Stresses At:			
Strain, %	5.0	5.0	5.0	
Deviator, ksf	3.748	5.570	9.598	
Excess PP, psi	6.6	21.3	45.6	
Sigma 1, ksf	5.796	8.501	15.013	
Sigma 3, ksf	2.049	2.931	5.415	
P, ksf	3.922	5.716	10.214	
Q, ksf	1.874	2.785	4.799	
Stress Ratio	2.829	2.900	2.772	
Rate, in/min	0.0003	0.0003	0.0003	

Triaxial Consolidated Undrained

(ASTM D4767 modified)





Sample:	1	2	3
MC, %	15.1		
Dry Dens., pcf.	103.7		
Sat. %	65.1		
Void Ratio	0.625		
Diameter in	2.90		
Height, in	6.00		
	Final		
MC, %	20.2		
Dry Dens., pcf.	104.6		
Sat. %	100.0		
Void Ratio	0.545		
Diameter, in	2.90		
Height, in	5.97		
Cell, psi	58.9		
BP, psi	48.7		
	Effective Stresses At:		
Strain, %	5.0		
Deviator ksf	6.067		
Excess PP	0.000		
Sigma 1	7.536		
Sigma 3	1.469		
P, ksf	4.502		
Q, ksf	3.034		
Stress Ratio	5.131		
Rate in/min	0.001		

Total C	**0.65**	**Effective C**	
Total Phi	**20.3**	**Effective Phi**	

Job No.: 640-077 **Date:** 3/28/2008

Client: Cornerstone Earth Group BY:DC

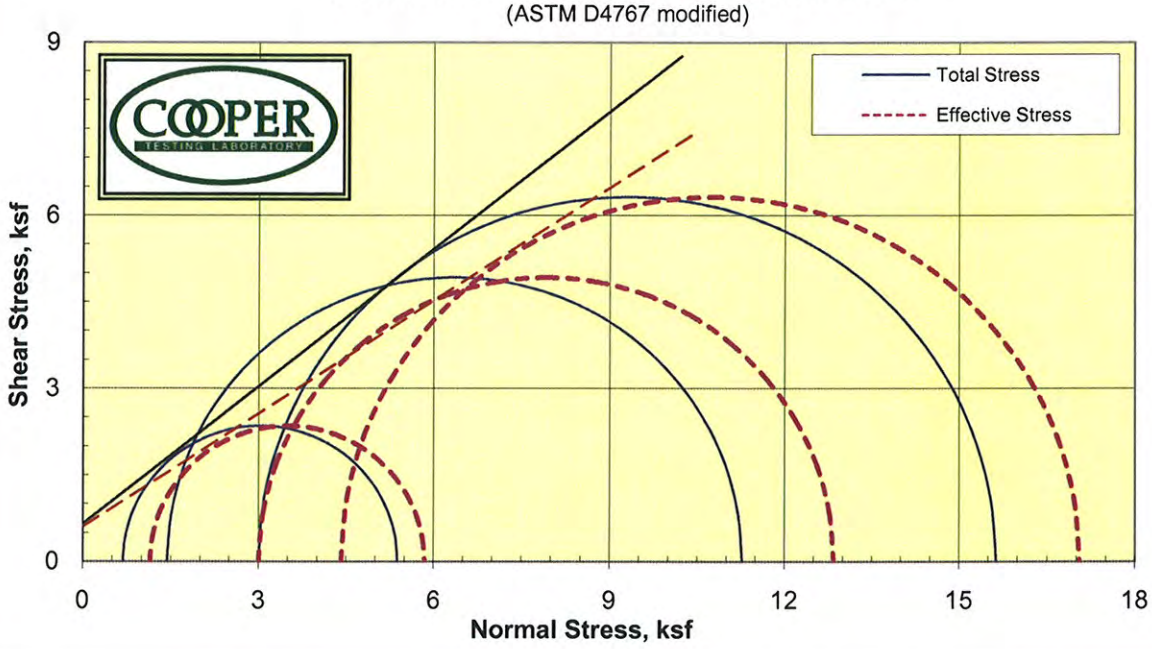
Project: Hillsborough Darrell Tank Site - 184-1-1

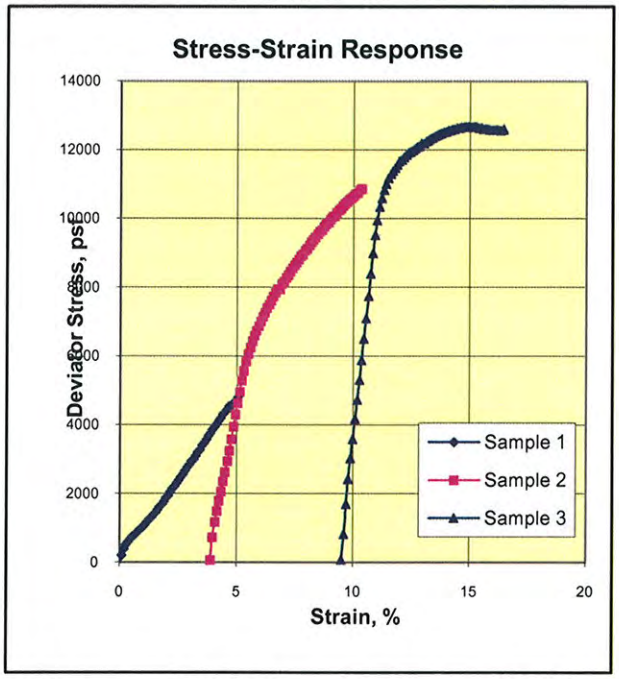
Sample: EB-4;5A @ 16.5'Yellowish Brown Silty SAND change to Sandy CLAY

Remarks: ** Staged Test ** Strengths picked at 5% strain.

Triaxial Consolidated Undrained

(ASTM D4767 modified)





Sample:	1	2	3
MC, %	15.3		
Dry Dens., pcf.	107.6		
Sat. %	73.0		
Void Ratio	0.565		
Diameter in	2.90		
Height, in	6.00		
	Final		
MC, %	20.0	19.6	19.3
Dry Dens., pcf.	108.1	108.9	109.5
Sat. %	100.0	100.0	100.0
Void Ratio	0.540	0.529	0.520
Diameter, in	2.94	2.94	3.01
Height, in	5.80	5.78	5.48
Cell, psi	43.7	48.9	59.3
BP, psi	39.0	39.0	38.5
	Effective Stresses At:		
Strain, %	5.0	5.0	5.0
Deviator ksf	4.699	9.844	12.642
Excess PP	-0.461	-1.570	-1.411
Sigma 1	5.837	12.839	17.049
Sigma 3	1.138	2.995	4.406
P, ksf	3.487	7.917	10.727
Q, ksf	2.350	4.922	6.321
Stress Ratio	5.131	4.287	3.869
Rate in/min	0.001	0.001	0.001

Total C	**0.65**	**Effective C**	**0.61**
Total Phi	**38.5**	**Effective Phi**	**33.2**

Job No.: 640-077 **Date:** 3/28/2008

Client: Cornerstone Earth Group BY:DC

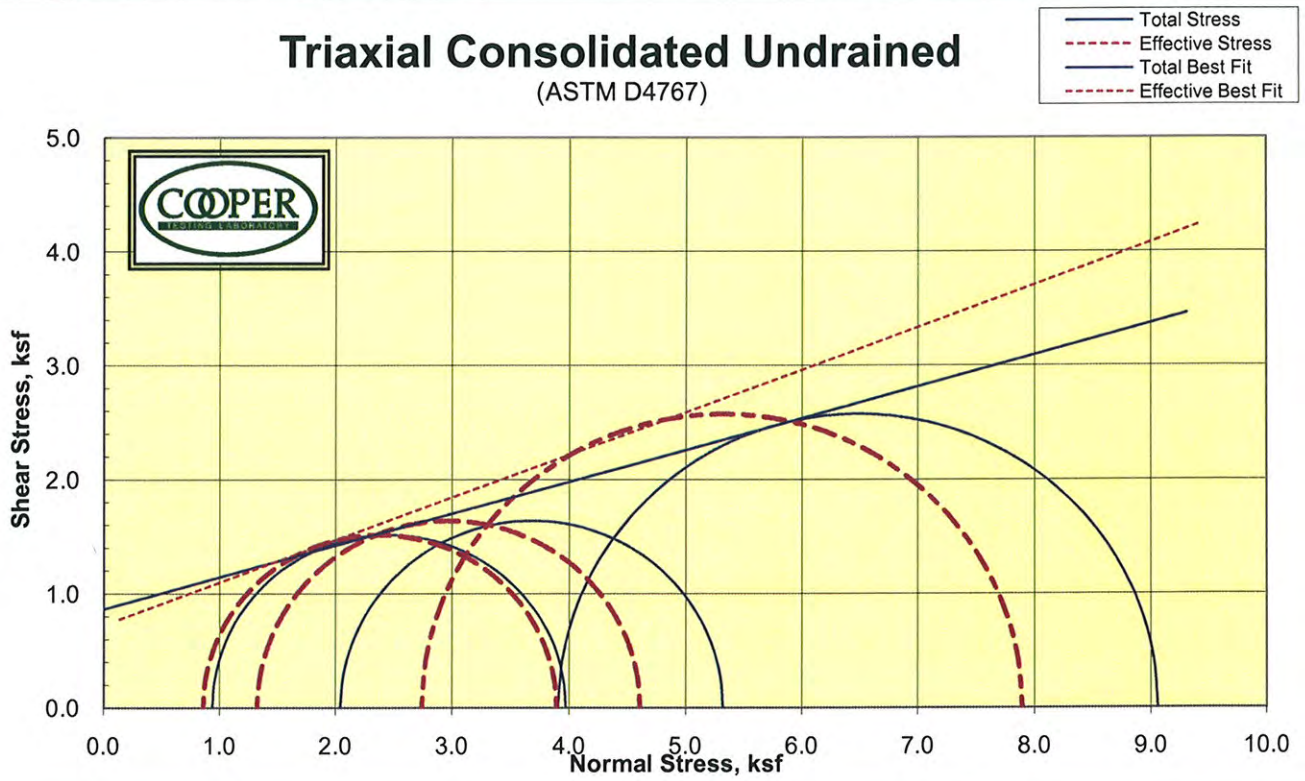
Project: Hillsborough Darrell Tank Site - 184-1-1

Sample: EB-4;7A @ 21.5'Brown Clayey SAND

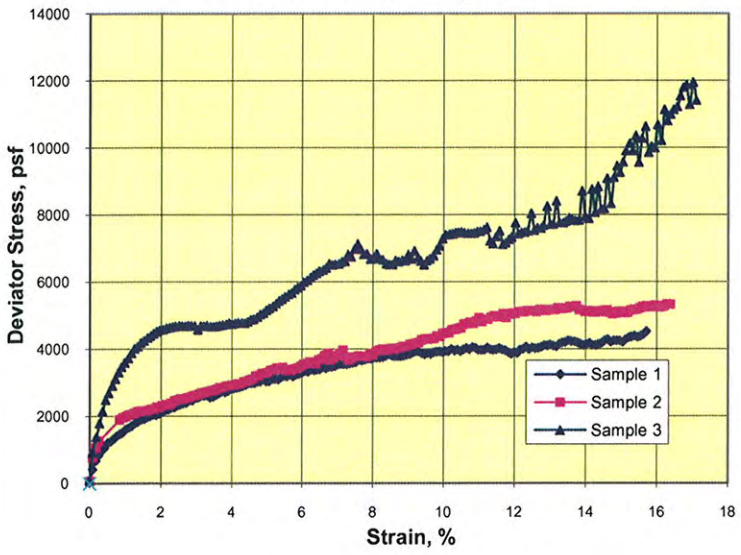
Remarks: ** Staged Test ** Strengths picked at 5% strain.
A best fit line through a curved strength envelope may overstate C.

Triaxial Consolidated Undrained

(ASTM D4767)



Stress-Strain Response



Sample:	1	2	3	4
MC, %	24.5	23.0	18.9	
Dry Dens, pcf	98.8	101.5	108.2	
Sat. %	93.7	94.3	91.3	
Void Ratio	0.706	0.660	0.557	
Diameter in	2.86	2.86	2.86	
Height, in	6.00	6.00	6.00	
	Final			
MC, %	25.4	23.8	18.5	
Dry Dens, pcf	99.9	102.6	112.4	
Sat. %	100.0	100.0	100.0	
Void Ratio	0.686	0.643	0.499	
Diameter, in	2.85	2.86	2.84	
Height, in	5.96	5.94	5.84	
Cell, psi	45.4	52.4	66.3	
BP, psi	38.9	38.3	39.2	
	Effective Stresses At:			
Strain, %	5.0	5.0	5.0	
Deviator ksf	3.034	3.281	5.155	
Excess PP	0.080	0.715	1.166	
Sigma 1	3.889	4.604	7.891	
Sigma 3	0.855	1.322	2.736	
P, ksf	2.372	2.963	5.313	
Q, ksf	1.517	1.641	2.577	
Stress Ratio	4.551	3.481	2.884	
Rate in/min	0.001	0.001	0.001	
Total C	0.9	ksf		
Total Phi	15.5	Degrees		
Eff. C	0.7	ksf		
Eff. Phi	20.4	Degrees		

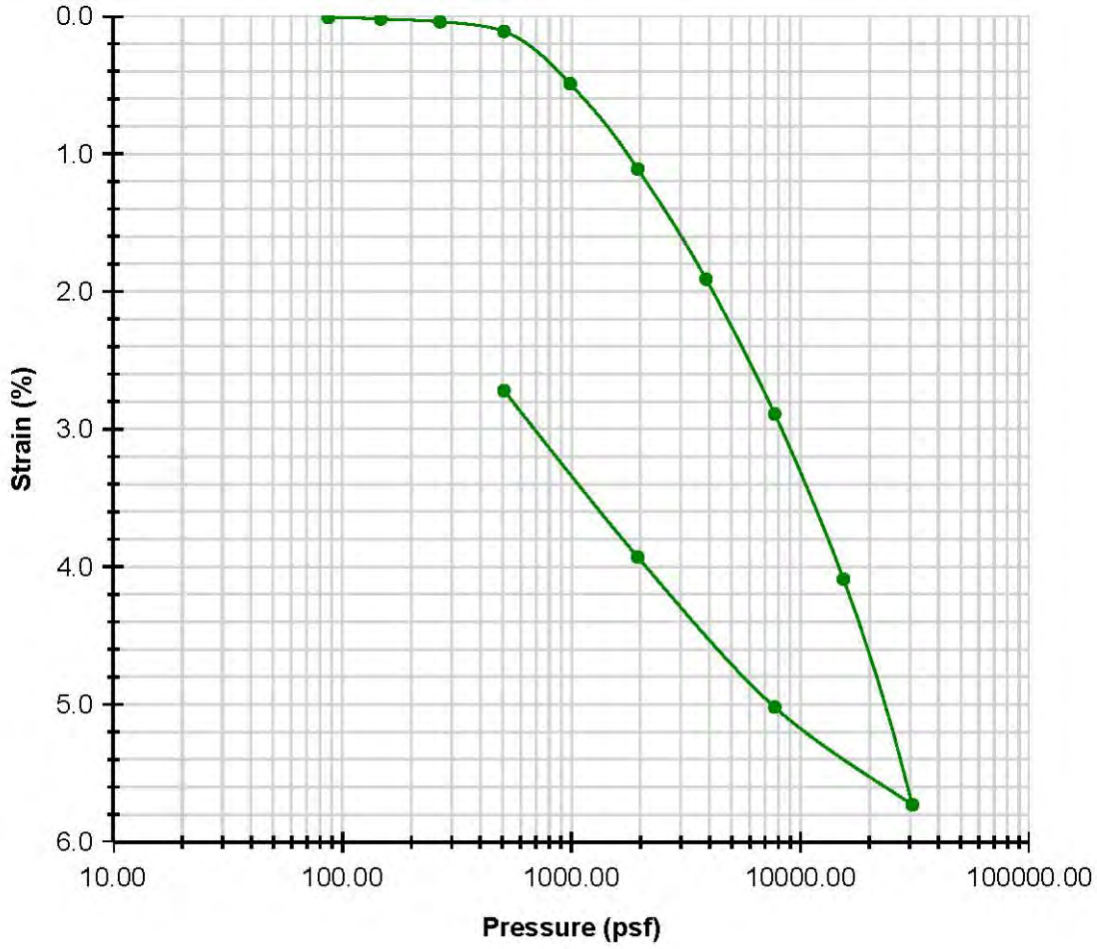
Job No.:	640-043	**Date:**	10/26/2007
Client:	Cornerstone Earth Group		BY:MD/DC
Project:	Darrell Road Tank - 184-1-1		
Sample 1)	EB-4 @ 14-16.5' (Tip-13") Olive Brown SILT (slightly plastic) (Weathered Siltstone)		
Sample 2)	EB-4 @ 14-16.5' (Tip-7") Olive Brown SILT (slightly plastic) (Weathered Siltstone)		
Sample 3)	EB-4 @ 14-16.5' (Tip) Olive Brown SILT (slightly plastic) (Weathered Siltstone)		
Sample 4)			

REMARKS: Strengths picked at 5% strain.

Consolidation Test ASTM D2435

Boring: EB-7 **Sample:** 12B **Depth:** 22.4'

Desription: Sandy Claystone [QTm]



	BEFORE	AFTER
Moisture (%)	18.6	20.0
Dry Density (pcf)	107.9	109.9
Saturation (%)	88.3	100.0
Void Ratio	0.57	0.55

(A) Stress Strain Curve

CORNERSTONE EARTH GROUP

Strain-Log Curve - EB-7 @ 22.4'

Darrell Water Tank Replacement
Hillsborough, CA

Project Number: 996-2-1

Figure Number: Figure B2

Date: November 2020

Drawn By: FLL

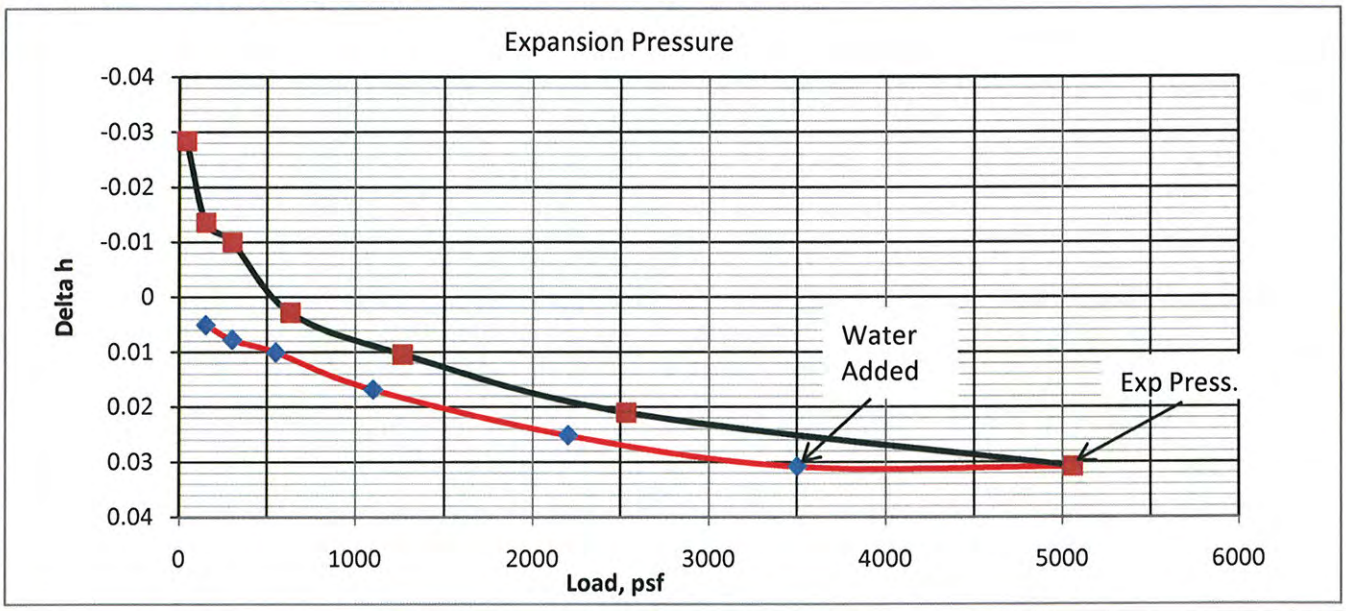
Shrink-Swell / Expansion Pressure
ASTM D 3877

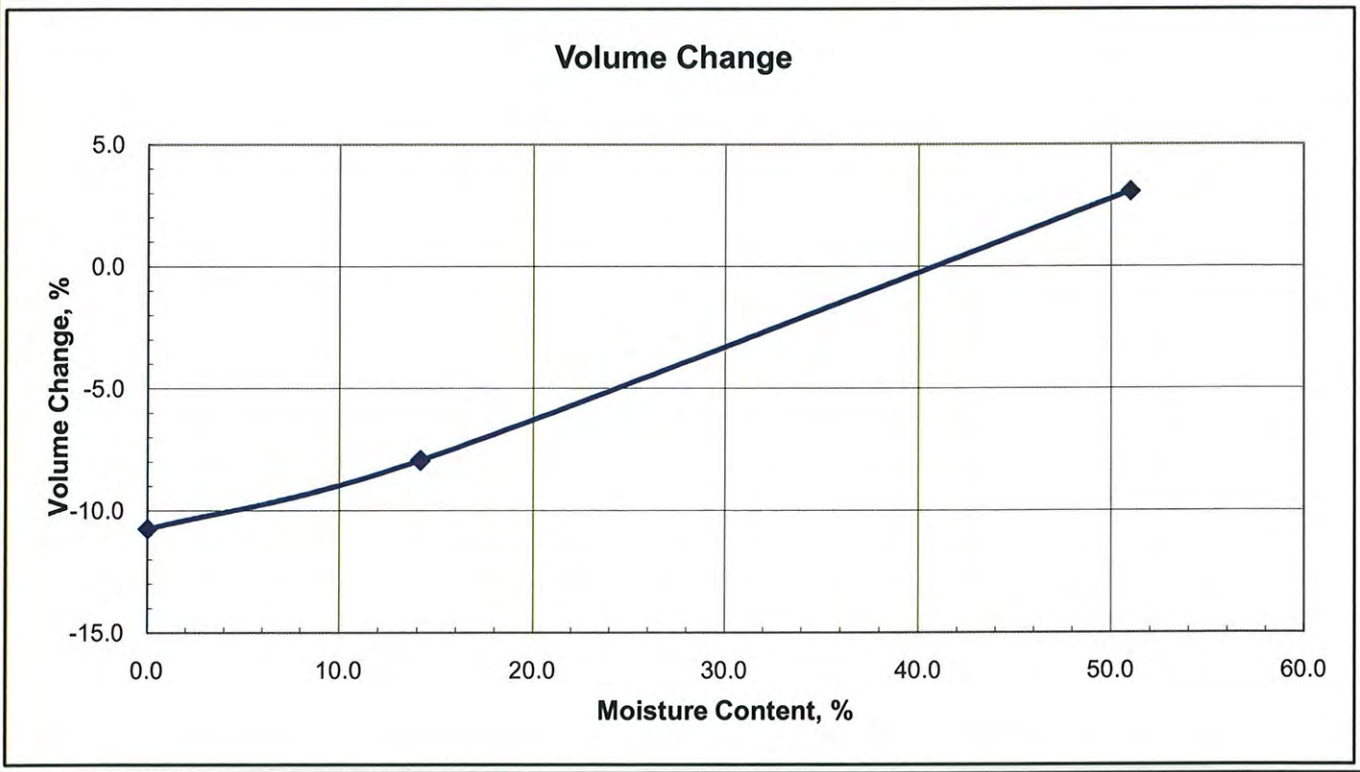
Job No.:	640-054		**LL**		**Date:**	12/20/2007
Client:	Cornerstone		**PL**		**By:**	MD
Project:	184-1-1		**PI**		**Checked By:**	DC
Boring:	EB4	**Sample:**	**Depth,ft:**	10'	**Specific Gravity:**	Assumed 2.8 / Determined
Soil Desc.	Dark Gray SILT w/Sand					

Load, psf:	5059	2530	1265	633	300	150	40
Exp., %	3.08	2.10	1.04	0.28	-1.00	-1.36	-2.84

	Field	Saturated	Air-Dry	Oven-Dry
Moisture %:	40.2	51.0	14.1	0.0
Dry Density, pcf	75.9	73.6	82.4	85.0
Saturation	86.4	103.8	35.3	0.0
Void Ratio	1.304	1.375	1.122	1.057
Volume Change	0.0	3.1	-7.9	-10.7

Remarks:
See special instruction under "Description" tab.





Corrositivity Tests Summary

CORNERSTONE EARTH GROUP

Job Number	996-2-1	Date Tested	10/21/2020
Job Name	Darrel Road Tank	Tested By	FLL
Location	Burlingame, CA		

Sample I.D.			Soil Visual Description	Moisture Content	pH	Temp. at Testing	Resistivity (Ohm-cm)		Chloride	Sulfate
							Corrected to 15.5 C°		Dry Wt.	Dry Wt.
Boring	Sample No.	Depth, ft.		%		C°	As Received	Saturated	mg/kg	mg/kg
				ASTM D2216	ASTM G51		G57	ASTM G57	ASTM D4327	ASTM D4327
EB-6	2B	4.0	Light brown Silty Sandstone [QTm]	12.8	6.9	27.0	-	2,137	11	9

Corrosivity Test Summary

CTL # 640-050 **Date:** 12/7/2007 **Tested By:** PJ **Checked:** PJ

Client: Cornerstone Earth Group **Project:** Hillsborough Darrell Tank **Proj. No:** 184-1-1

Remarks:

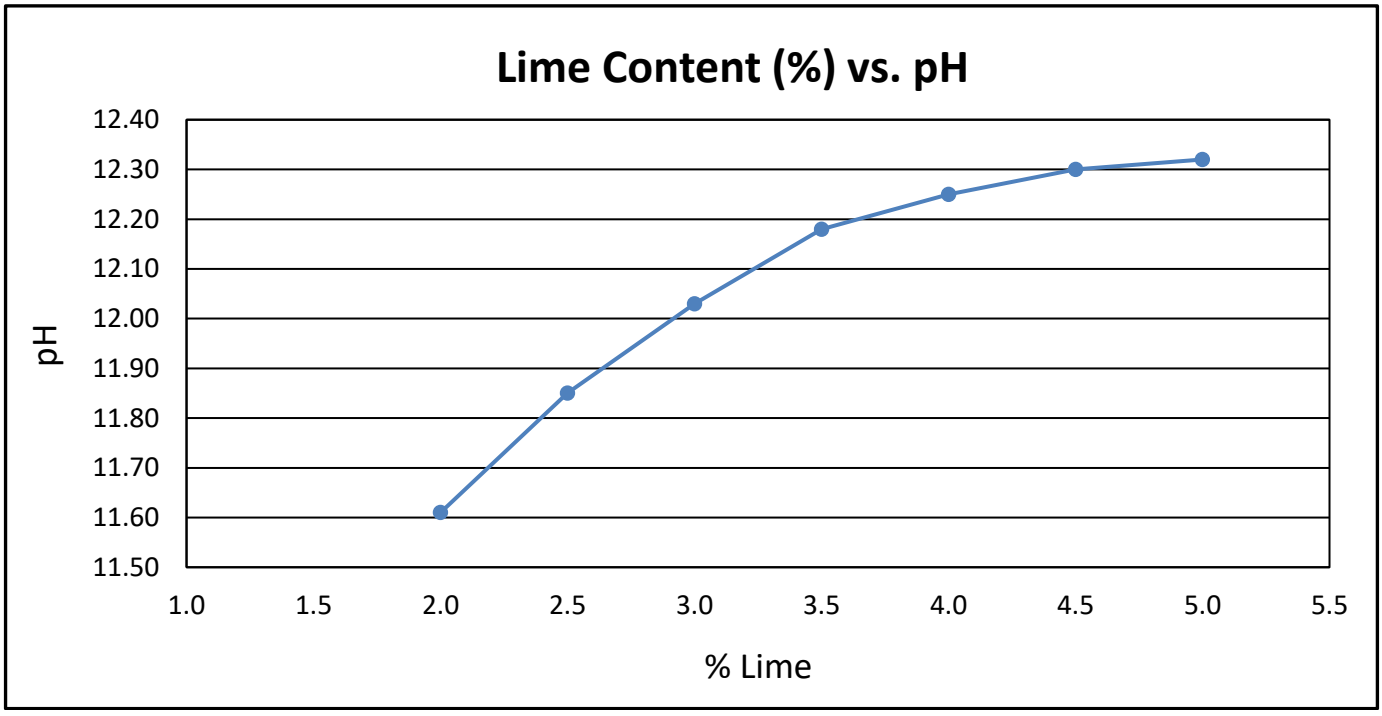
Sample Location or ID			Resistivity @ 15.5 °C (Ohm-cm)			Chloride	Sulfate-(water soluble)		pH	ORP	Sulfide	Moisture	Soil Visual Description
Boring	Sample, No.	Depth, ft.	As Rec.	Minimum	Saturated	mg/kg	mg/kg	%		(Redox)	Qualitative	%	
						Dry Wt.	Dry Wt.	Dry Wt.		mv	by Lead	At Test	
			ASTM G57	Cal 643	ASTM G57	Cal 422-mod.	Cal 417-mod.	Cal 417-mod.	ASTM G51	SM 2580B	Acetate Paper	ASTM D2216	
EB-2	1A	4.5	-	-	2,649	2	<5	<0.0005	6.6	-	-	8.8	Brown Clayey SAND w/ Gravel
EB-4	1B	5.0	-	-	1,669	6	8	0.0008	6.8	-	-	58.4	Gray Silty SAND w/ Gravel & pockets of Brown Clay

Lime Stability Test

Job Number:	996-2-1	Test Date:	10/20/2020
Project Name:	Darrel Road Tank	Tested By:	JG, FL
Source:	Native, EB-6 / 0-5'		
Soil Description:	Brown Lean Clay with Sand (CL)		
Date Sampled:	10/__/2020	Sampled By:	EA

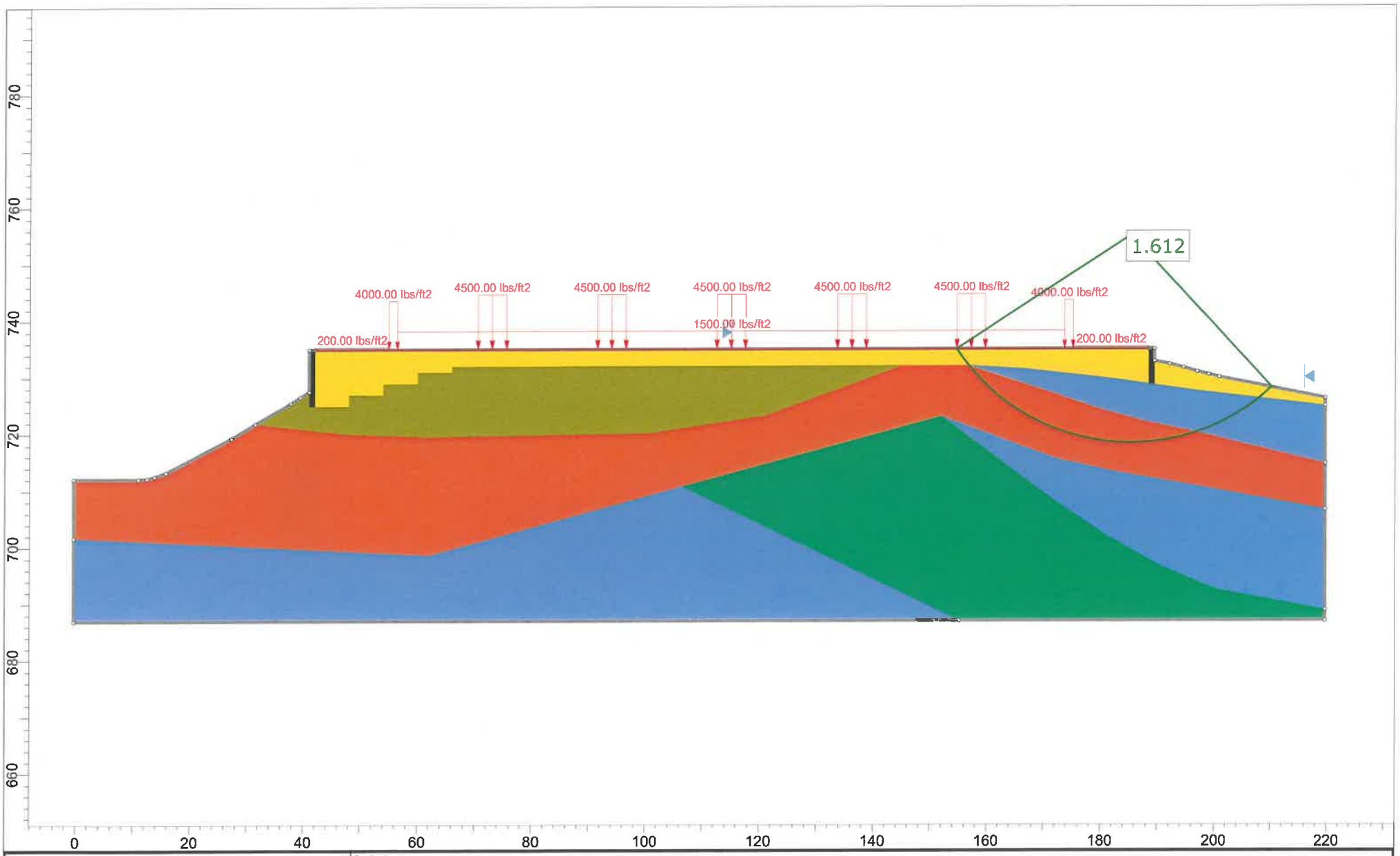
Lime Description:	Griffin Dolometic Quick Lime 10/16/2020	pH Meter:	HANNA HI99129
		Calibrated to:	7.00 & 10.00 pH
Water Source:	Distilled Water	Checked with:	7.00 pH
		pH of soil:	7.14

Test Start Time:	11:45AM							(Slurry)
Mass of Soil (g)		25.0	25.0	25.0	25.0	25.0	25.0	25.0
% Lime		**2.0**	**2.5**	**3.0**	**3.5**	**4.0**	**4.5**	**5.0**
Mass of Lime (g)		0.50	0.63	0.75	0.88	1.00	1.13	1.25
pH		11.61	11.85	12.03	12.18	12.25	12.30	12.32



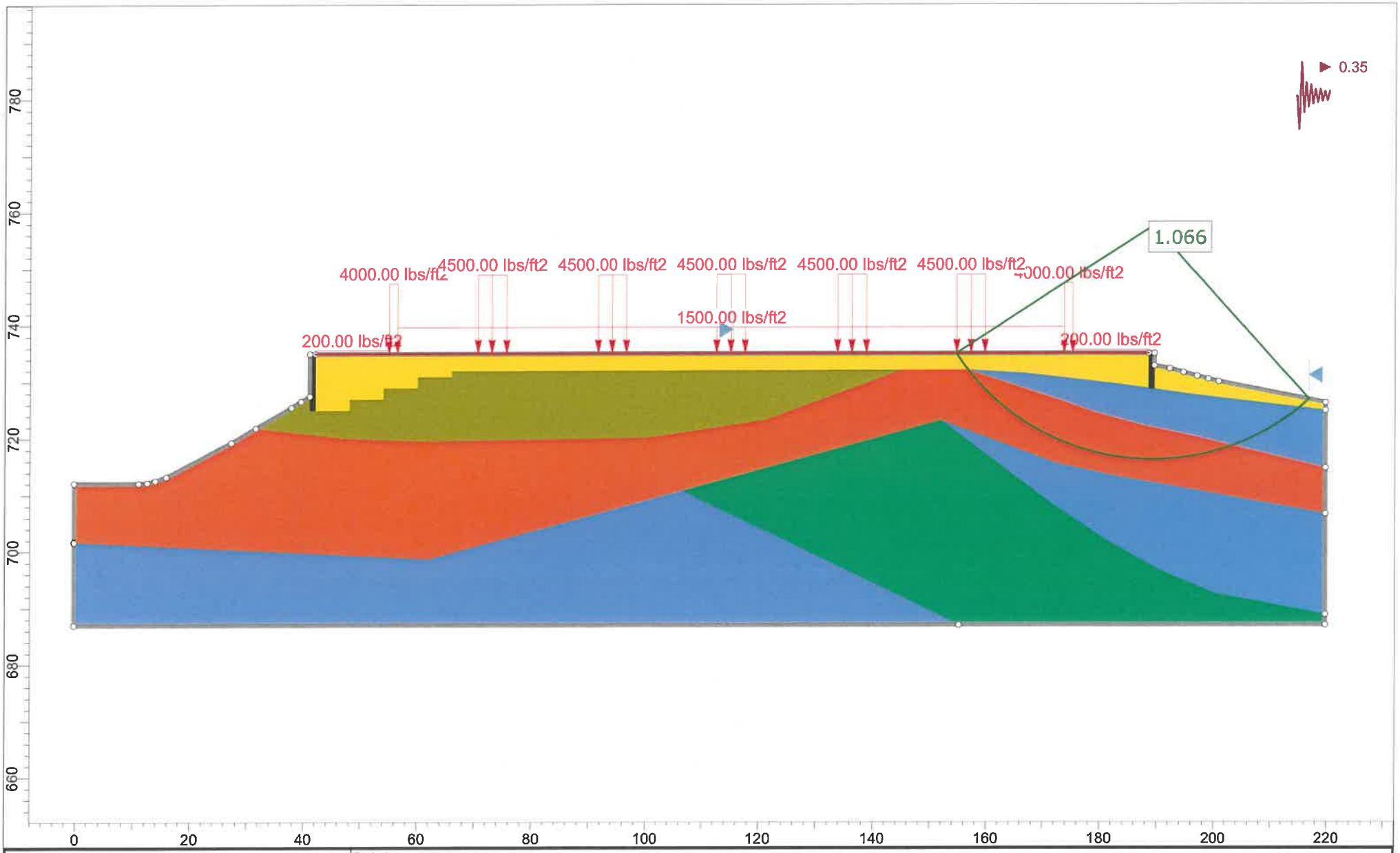
CORNERSTONE EARTH GROUP

APPENDIX C: SLOPE INSTABILITY ANALYSIS RESULTS



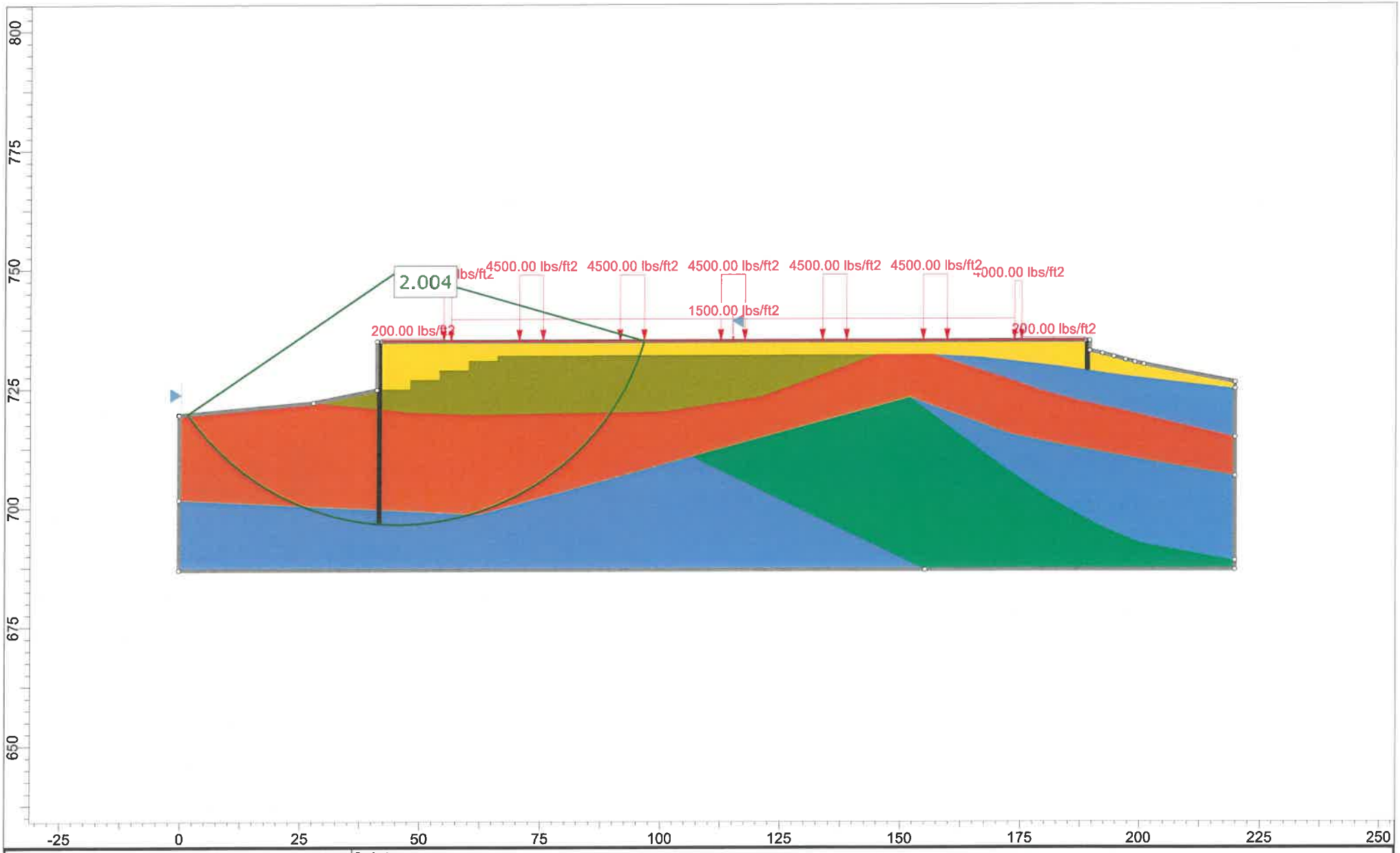
rocscience	Project	Darrell Road Water Tank	
	Group	Cross Section A-A'	Scenario: Static Analysis - East
	Drawn By	JLC	Company: Cornerstone Earth Group
	Date	January 7, 2020	File Name: 996-2-1 Cross Section A-A' Slope Stability.slmd

SLIDEINTERPRET 9.008



rocscience	Project	Darrell Road Water Tank	
	Group	Cross Section A-A'	Scenario: Seismic Analysis - East
	Drawn By	JLC	Company: Cornerstone Earth Group
	Date	January 7, 2020	File Name: 996-2-1 Cross Section A-A' Slope Stability.slmd

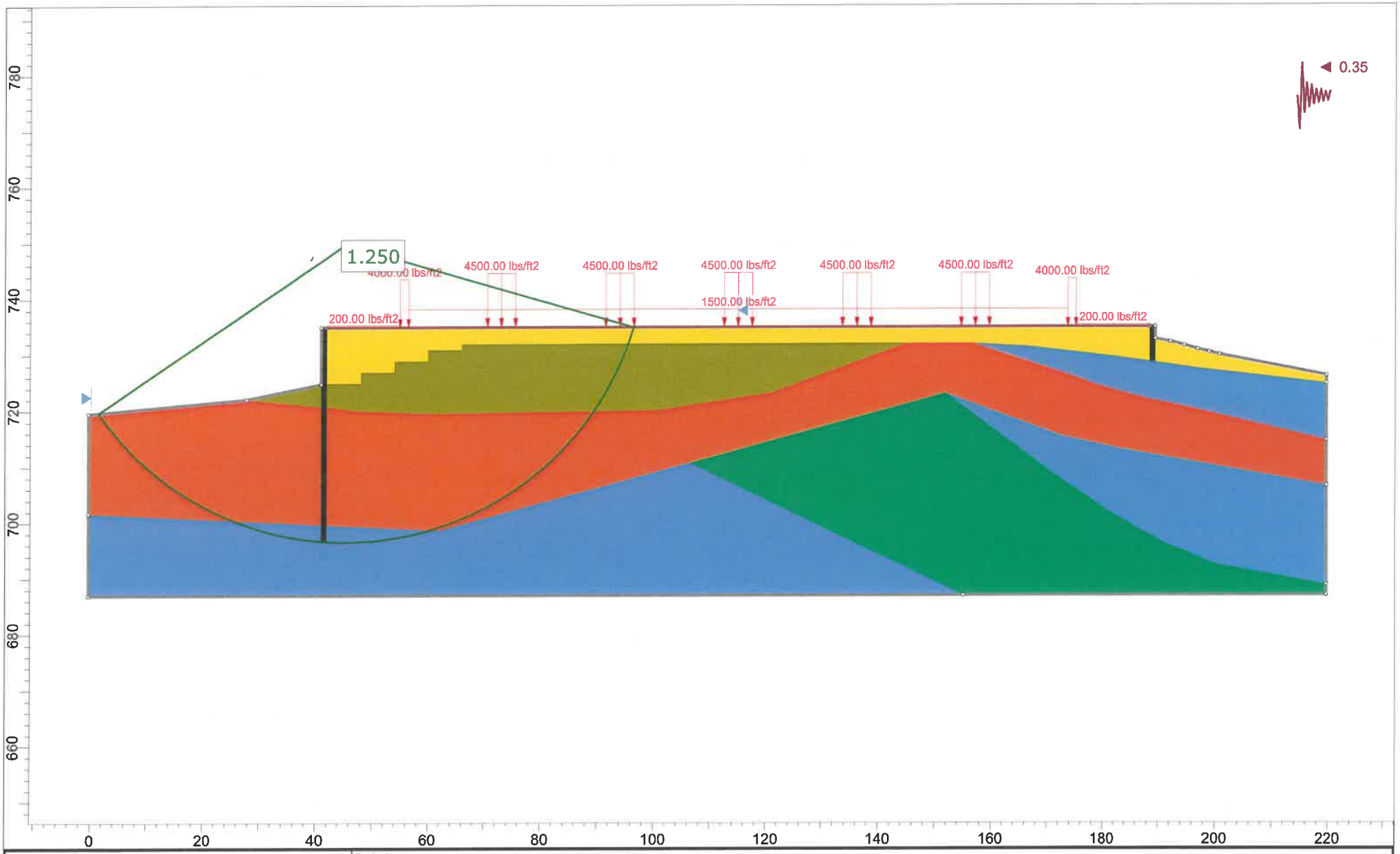
SLIDEINTERPRET 9.008



rocscience

SLIDEINTERPRET 9.008

Project	Darrell Road Water Tank		
Group	Cross Section A-A'	Scenario	Static Analysis - West
Drawn By	JLC	Company	Cornerstone Earth Group
Date	January 7, 2020	File Name	996-2-1 Cross Section A-A' Slope Stability.slmd



rocscience	Project	Darrell Road Water Tank	
	Group	Cross Section A-A'	Scenario: Seismic Analysis - West
	Drawn By	JLC	Company: Cornerstone Earth Group
	Date	January 7, 2020	File Name: 996-2-1 Cross Section A-A' Slope Stability.slmd

SLIDEINTERPRET 9.008

APPENDIX D: SEISMIC DESIGN PARAMETERS

Hazards by Location

Search Information

Address: 549 Darrell Rd, Hillsborough, CA 94010, USA

Coordinates: 37.5520031, -122.375001

Elevation: 720 ft

Timestamp: 2021-01-16T00:15:50.343Z

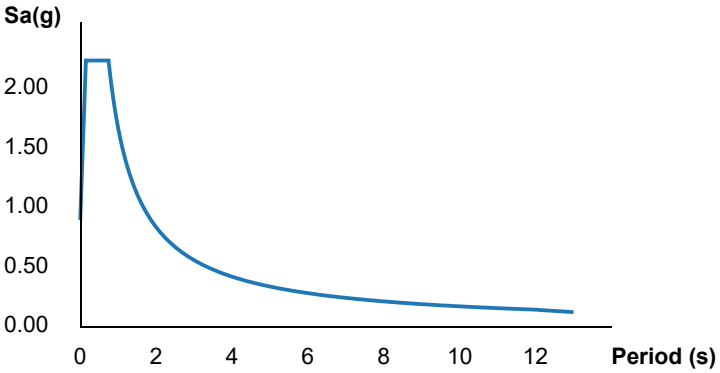
Hazard Type: Seismic

Reference Document: ASCE7-05

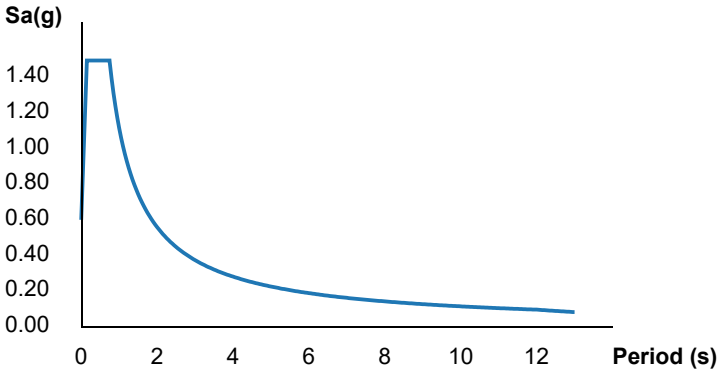
Risk Category: III

Site Class: C

MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	2.234	MCE_R ground motion (period=0.2s)
S_1	1.281	MCE_R ground motion (period=1.0s)
S_{MS}	2.234	Site-modified spectral acceleration value
S_{M1}	1.665	Site-modified spectral acceleration value
S_{DS}	1.489	Numeric seismic design value at 0.2s SA
S_{D1}	1.11	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	E	Seismic design category
F_a	1	Site amplification factor at 0.2s

F_v	1.3	Site amplification factor at 1.0s
T_L	12	Long-period transition period (s)

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

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Appendix E:

Phase I Environmental Assessment

CORNERSTONE EARTH GROUP

TYPE OF SERVICES	Phase I Environmental Site Assessment and Soil Quality Evaluation
LOCATION	549 Darrell Road Hillsborough, California
CLIENT	Infrastructure Engineering Corporation
PROJECT NUMBER	996-2-2
DATE	October 29, 2020

CORNERSTONE EARTH GROUP

Type of Services	**Phase I Environmental Site Assessment and Soil Quality Evaluation**
Location	**549 Darrell Road Hillsborough, California**
Client	**Infrastructure Engineering Corporation**
Client Address	**14271 Danielson Street Poway, California 92064**
Project Number	**996-2-2**
Date	**October 29, 2020**

Prepared by

Stason Foster, P.E.
Project Engineer

Prepared by

Christopher J. Heiny, P.G.
Principal Geologist

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FIGURE 1 – VICINITY MAP
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Type of Services	**Phase I Environmental Site Assessment and Soil Quality Evaluation**
Location	**549 Darrell Road** **Hillsborough, California**

SECTION 1: INTRODUCTION

This report presents the results of the Phase I Environmental Site Assessment (ESA) and Soil Quality Evaluation performed at 549 Darrell Road in Hillsborough, California (Site) as shown on Figures 1 and 2. This work was performed for Infrastructure Engineering Corporation in accordance with our February 17, 2020 Agreement (Agreement).

1.1 PURPOSE

The scope of work presented in the Agreement was prepared in general accordance with ASTM E 1527-13 titled, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM Standard). The ASTM Standard is in general compliance with the Environmental Protection Agency (EPA) rule titled, "Standards and Practices for All Appropriate Inquiries; Final Rule" (AAI Rule). The purpose of this Phase I ESA is to strive to identify, to the extent feasible pursuant to the scope of work presented in the Agreement, Recognized Environmental Conditions at the property.

As defined by ASTM E 1527-13, the term Recognized Environmental Condition means 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. De minimis conditions are not Recognized Environmental Conditions.

Cornerstone Earth Group, Inc. (Cornerstone) understands that the planned project will include replacing two existing 0.5MG steel water tanks (Tanks 1 and 2) with a new 2MG pre-stressed concrete water tank that will occupy the existing footprints of the existing tanks and additional site area and will have a diameter of about 120 feet with a 15 foot wide access road around the perimeter. Existing water Tank 3 will remain. We performed this Phase I ESA to support Infrastructure Engineering Corporation in evaluation of Recognized Environmental Conditions at the Site. This Phase I ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for Recognized Environmental Conditions at the Site.

1.2 SCOPE OF WORK

As presented in our Agreement, the scope of work performed for this Phase I ESA included the following:

- A reconnaissance of the Site to note readily observable indications of significant hazardous materials releases to structures, soil or groundwater.
- Drive-by observation of adjoining properties to note readily apparent hazardous materials activities that have or could significantly impact the Site.
- Acquisition and review of a regulatory agency database report of public records for the general area of the Site to evaluate potential impacts to the Site from reported contamination incidents at nearby facilities.
- Review of readily available information on file at selected governmental agencies to help evaluate past and current Site use and hazardous materials management practices.
- Review of readily available maps and aerial photographs to help evaluate past and current Site uses.
- Interviews with persons reportedly knowledgeable of existing and prior Site uses.
- Collection of near surface soil samples for laboratory analysis.
- Preparation of a written report summarizing our findings and recommendations.

The limitations for the Phase I ESA are presented in Section 11.

1.3 ASSUMPTIONS

In preparing this Phase I ESA, Cornerstone assumed that all information received from interviewed parties is true and accurate. In addition, we assumed that all records obtained by other parties, such as regulatory agency databases, maps, related documents and environmental reports prepared by others are accurate and complete. We also assumed that the boundaries of the Site, based on information provided by Infrastructure Engineering Corporation, are as shown on Figure 2. We have not independently verified the accuracy or completeness of any data received.

1.4 ENVIRONMENTAL PROFESSIONAL

This Phase I ESA was performed by Stason I. Foster, P.E. and Christopher J. Heiny, P.G., Environmental Professionals who meet the qualification requirements described in ASTM E 1527-13 and 40 CFR 312 § 312.10 based on professional licensing, education, training and experience to assess a property of the nature, history and setting of the Site.

SECTION 2: SITE DESCRIPTION

This section describes the Site as of the date of this Phase I ESA. The location of the Site is shown on Figures 1 and 2. Tables 1 through 3 summarize general characteristics of the Site and adjoining properties. The Site is described in more detail in Section 7, based on our on-Site observations.

2.1 LOCATION AND OWNERSHIP

Table 1 describes the physical location, and ownership of the property, based on information provided by Infrastructure Engineering Corporation.

Table 1. Location and Ownership

Assessor's Parcel No. (APN)	030-041-100
Reported Address/Location	549 Darrell Road, Hillsborough, California*
Owner	Town of Hillsborough
Approximate Lot Size	1.34 acres

* No address is assigned to the Site per San Mateo County Assessor's office records. The listed addresses have been used for the Site based on information obtained from Hillsborough Building Department.

2.2 CURRENT/PROPOSED USE OF THE PROPERTY

The current and proposed uses of the property are summarized in Table 2.

Table 2. Current and Proposed Uses

Current Use	Water supply storage tank facility
Proposed Use	Water supply storage tank facility

2.3 SITE SETTING AND ADJOINING PROPERTY USE

Land use in the general Site vicinity appears to be primarily residential. Based on our Site vicinity reconnaissance, adjoining Site uses are summarized below in Table 3.

Table 3. Adjoining Property Uses

North	PG&E electrical substation and residences
South	Residential
East	Residential
West	Public right-of-ways for Skyline Boulevard and Highway 280

SECTION 3: USER PROVIDED INFORMATION

The ASTM standard defines the User as the party seeking to use a Phase I ESA to evaluate the presence of Recognized Environmental Conditions associated with a property. For the purpose of this Phase I ESA, the User is Infrastructure Engineering Corporation. The "All Appropriate Inquiries" Final Rule (40 CFR Part 312) requires specific tasks be performed by or on behalf of the party seeking to qualify for Landowner Liability Protection under CERCLA (*i.e.*, the User).

Per the ASTM standard, if the User has information that is material to Recognized Environmental Conditions, such information should be provided to the Environmental Professional. This information includes: 1) specialized knowledge or experience of the User, 2) commonly known or reasonably ascertainable information within the local community, and 3) knowledge that the purchase price of the Site is lower than the fair market value due to contamination. A search of title records for environmental liens and activity and use limitations also is required.

3.1 ENVIRONMENTAL LIENS OR ACTIVITY AND USE LIMITATIONS

An environmental lien is a financial instrument that may be used to recover past environmental cleanup costs. Activity and use limitations (AULs) include other environmental encumbrances, such as institutional and engineering controls. Institutional controls (ICs) are legal or regulatory restrictions on a property's use, while engineering controls (ECs) are physical mechanisms that restrict property access or use.

The regulatory agency database report described in Section 4.1 did not identify the Site as being in 1) US EPA databases that list properties subject to land use restrictions (*i.e.*, engineering and institutional controls) or Federal Superfund Liens or 2) lists maintained by the California Department of Toxic Substances Control (DTSC) of properties that are subject to AULs or environmental liens where the DTSC is a lien holder.

ASTM E 1527-13 categorizes the requirement to conduct a search for Environmental Liens and AULs as a User responsibility. A search of land title records for environmental liens and AULs was not within the scope of the current Phase I ESA.

3.2 SPECIALIZED KNOWLEDGE AND/OR COMMONLY KNOWN OR REASONABLY ASCERTAINABLE INFORMATION

Based on information provided by or discussions with Infrastructure Engineering Corporation, we understand that Infrastructure Engineering Corporation does not have specialized knowledge or experience, commonly known or reasonably ascertainable information regarding the Site, or other information that is material to Recognized Environmental Conditions.

3.3 DOCUMENTS PROVIDED BY INFRASTRUCTURE ENGINEERING CORPORATION

To help evaluate the presence of Recognized Environmental Conditions at the Site, Cornerstone reviewed and relied upon the documents provided by Infrastructure Engineering Corporation listed in Table 4. Please note that Cornerstone cannot be liable for the accuracy of the information presented in these documents. ASTM E1527-13 does not require the Environmental Professional to verify independently the information provided; the Environmental Professional may rely on the information unless they have actual knowledge that certain information is incorrect. A summary of the provided documents is provided below; please refer to the original reports for complete details.

Table 4. Documents Provided by Infrastructure Engineering Corporation

Date	Author	Title/Description
February 8, 2008	McCampbell Analytical	Laboratory analytical report

Based on the information reviewed, three paint chip samples were collected from the existing on-Site water tanks by the Town of Hillsborough in 2008. The samples were submitted to McCampbell Analytical and analyzed for lead. Lead was detected at concentrations of 4,600 mg/kg, 2,600 mg/kg and 200,000 mg/kg; thus, confirming that existing paint on the exterior surface of water tanks contains lead.

SECTION 4: RECORDS REVIEW

4.1 STANDARD ENVIRONMENTAL RECORD SOURCES

Cornerstone conducted a review of federal, state and local regulatory agency databases provided by Environmental Data Resources (EDR) to evaluate the likelihood of contamination incidents at and near the Site. The database sources and the search distances are in general accordance with the requirements of ASTM E 1527-13. A list of the database sources reviewed, a description of the sources, and a radius map showing the location of reported facilities relative to the project Site are attached in Appendix A.

The purpose of the records review was to obtain reasonably available information to help identify Recognized Environmental Conditions. Accuracy and completeness of record information varies among information sources, including government sources. Record information is often inaccurate or incomplete. The Environmental Professional is not obligated to identify mistakes or insufficiencies or review every possible record that might exist with the Site. The customary practice is to review information from standard sources that is reasonably available within reasonable time and cost constraints.

4.1.1 On-Site Database Listings

Cingular Wireless, AT&T, Nextel and Verizon were listed at addresses of 547 and 549 Darrell Road on a County database of facilities with permits for storage of hazardous materials. These listings suggest that hazardous materials (typically lead-acid batteries) are contained within the on-Site cellular telephone equipment installations.

4.1.2 Nearby Spill Incidents

Based on the information presented in the agency database report, no off-Site spill incidents were reported that appear likely to significantly impact soil, soil vapor or groundwater beneath the Site. The potential for impact was based on our interpretation of the types of incidents, the locations of the reported incidents in relation to the Site and the assumed groundwater flow direction.

4.2 ADDITIONAL ENVIRONMENTAL RECORD SOURCES

The following additional sources of readily ascertainable public information for the Site also were reviewed during this Phase I ESA.

4.2.1 City and County Agency File Review

Cornerstone requested available files pertaining to the Site at the Hillsborough Building Department and the San Mateo County Department of Environmental Health (DEH).

DEH files contained permits and inspection reports and chemical inventory information pertaining to cellular telephone equipment installations at the Site by Cingular Wireless, AT&T and Verizon. Lead-acid batteries were noted be stored. No spills were reported.

Building Department records contained records of electrical, public works, grading and encroachment permits dated between 2009 and 2020 for various wireless communication

facilities and utility company projects. These records were listed under the address of 549 Darrell Road.

SECTION 5: PHYSICAL SETTING

We reviewed readily available geologic and hydrogeologic information to evaluate the likelihood that chemicals of concern released on a nearby property could pose a significant threat to the Site and/or its intended use.

5.1 RECENT USGS TOPOGRAPHIC MAP

A 2012 USGS 7.5 minute topographic map was reviewed to evaluate the physical setting of the Site. The Site's elevation ranges from approximately 725 to 750 feet above mean sea level. The Site is located on a hilltop. Topography in the vicinity of the Site slopes downward from the Site, mainly towards Crystal Springs Reservoir to the southwest and towards the San Francisco Bay to the northeast.

5.2 HYDROGEOLOGY

Based on information presented in the prior geotechnical investigation report (Cornerstone, 2008), the Site is located on a ridge top separating the upper San Mateo Creek drainage from the San Francisco Bay Plain. This area is underlain by Franciscan Complex and associated basement rock. Pampeyan (1994) shows these rocks to be gently southwest-dipping layers. Here greenstone is the uppermost unit that crops out north and west of the site, serpentinite underlies the tank Site, which is itself underlain by sheared rock of the Franciscan melange. Younger Merced Formation sediments cap the bedrock locally, including at the tank Site area. Recent colluvium, landslide debris, and ravine fill commonly develop along the ridges and within the ravines that drain the area. Ground water is expected to be deep at the Site, at depths greater than 50 feet. Fluctuations in ground water levels occur due to many factors including seasonal water fluctuations, underground drainage patterns, and regional variations in ground water levels, as well as other factors.

SECTION 6: HISTORICAL USE INFORMATION

The objective of the review of historical use information is to develop a history of the previous uses of the Site and surrounding area in order to help identify the likelihood of past uses having led to Recognized Environmental Conditions at the property. The ASTM standard requires the identification of all obvious uses of the property from the present back to the property's first developed use, or back to 1940, whichever is earlier, using reasonably ascertainable standard historical sources.

6.1 HISTORICAL SUMMARY OF SITE

The historical sources reviewed are summarized below. The results of our review of these sources are summarized in Table 5.

- **Historical Aerial Photographs:** We reviewed aerial photographs dated between 1943 and 2016 obtained from EDR of Shelton, Connecticut; copies of aerial photographs reviewed are presented in Appendix B.

- **Historical Topographic Maps:** We reviewed USGS 15-minute and 7.5-minute historical topographic maps dated 1896, 1899, 1915, 1939, 1947, 1949, 1956, 1973, 1980, 1996 and 2012; copies of historical topographic maps reviewed are presented in Appendix B.

- **Historical Fire Insurance Maps:** EDR reported that the Site was not within the coverage area of fire insurance maps.

- **Local Street Directories:** We reviewed city directories obtained from EDR that were researched at approximately 5 year intervals between 1956 and 2017 to obtain information pertaining to past Site occupants. The city directory summary is presented in Appendix C. The Site addresses were not identified in the researched directories.

Table 5. Summary of Historical Source Information for Site

Date	Source	Comment
1896 to 1949	Topographic maps	No structures are shown on-Site.
1943 and 1946	Aerial photograph	The Site appears to be undeveloped
1956	Aerial photograph	The Site is shown to be developed with two of the existing water tanks.
1956, 1968, 1973 and 1980	Topographic maps	The Site is shown to be occupied by water tanks.
1963 to 2016	Aerial photograph	The Site is shown to be developed with the three existing water tanks.
1996 to 2012	Topographic map	The Site is shown within the urban developed area of Hillsborough.

6.2 HISTORICAL SUMMARY OF SITE VICINITY

Based on our review of the information described in Section 6.1, the general Site vicinity historically consisted mainly of undeveloped land until the late 1940s or early 1950s when an increase in residential development is apparent in the general vicinity. Highway 280 was constructed to the west of the Site during the late 1960s. The Site vicinity has subsequently remained similar to the existing conditions.

SECTION 7: SITE RECONNAISSANCE

We performed a Site reconnaissance to evaluate current Site conditions and to attempt to identify Site Recognized Environmental Conditions. The results of the reconnaissance are discussed below. Additional Site observations are summarized in Table 6. Photographs of the Site are presented in Section 7.2.1.

7.1 METHODOLOGY AND LIMITING CONDITIONS

To observe current Site conditions (readily observable environmental conditions indicative of a significant release of hazardous materials), Cornerstone staff Stason I. Foster, P.E. visited the Site on September 29, 2020. The Site reconnaissance was conducted by walking representative areas of the Site, including the interiors of the on-Site structures, the periphery of

the structures and the Site periphery. Cornerstone staff only observed those areas that were reasonably accessible, safe, and did not require movement of equipment, materials or other objects. The existing cellular telephone equipment enclosures were not accessible at the time of our visit.

7.2 OBSERVATIONS

At the time of our visit, the Site was developed with three aboveground water storage tanks on concrete foundations. Two small sheds used by the Town of Hillsborough were present on concrete pads. These structures were observed to be used for storage of miscellaneous equipment; one contained electronic control and data acquisition equipment for the water storage facility. Three other small structures were observed to contain cellular telephone equipment. These equipment enclosures were not accessible; signage indicated that lead-acid batteries were present. No other hazardous materials were observed at the Site.

Table 6. Summary of Readily Observable Site Features

General Observation	Comments
Aboveground Storage Tanks	Observed as described above
Agricultural Wells	Not Observed
Air Emission Control Systems	Not Observed
Boilers	Not Observed
Burning Areas	Not Observed
Chemical Mixing Areas	Not Observed
Chemical Storage Areas	Lead-acid batteries associated with cellular telephone equipment
Clean Rooms	Not Observed
Drainage Ditches	Not Observed
Elevators	Not Observed
Emergency Generators	Not Observed
Equipment Maintenance Areas	Not Observed
Fill Placement	Not Observed
Groundwater Monitoring Wells	Not Observed
High Power Transmission Lines	Not Observed
Hoods and Ducting	Not Observed
Hydraulic Lifts	Not Observed
Incinerator	Not Observed
Petroleum Pipelines	Not Observed
Petroleum Wells	Not Observed
Ponds or Streams	Not Observed
Railroad Lines	Not Observed
Row Crops or Orchards	Not Observed
Stockpiles of Soil or Debris	Not Observed
Sumps or Clarifiers	Not Observed
Transformers	Not Observed
Underground Storage Tanks	Not Observed
Vehicle Maintenance Areas	Not Observed
Vehicle Wash Areas	Not Observed
Wastewater Neutralization Systems	Not Observed

The comment “Not Observed” does not warrant that these features are not present on-Site; it only indicates that these features were not readily observed during the Site visit.

7.2.1 Site Photographs

Photograph 1. Two of the three on-Site water storage tanks.

Photograph 2. Storage shed (Town of Hillsborough)

Photograph 3. Storage shed (Town of Hillsborough)

Photograph 4. Cellular telephone equipment enclosures.

Photograph 5. Cellular telephone equipment enclosure.

Photograph 6. Site entrance from Darrell Road.

SECTION 8: ENVIRONMENTAL QUESTIONNAIRE AND INTERVIEWS

8.1 ENVIRONMENTAL QUESTIONNAIRE / OWNER INTERVIEW

To help obtain information on current and historical Site use and use/storage of hazardous materials on-Site, we provided an environmental questionnaire for completion by the Town of Hillsborough (the Site owner). The completed questionnaire was completed by Mark Harris with the Town of Hillsborough and is attached in Appendix D. The information provided by Mr. Harris is generally consistent with our on-Site observations and information obtained from other data sources. No information indicative of Recognized Environmental Conditions was reported on the questionnaire. The on-Site water tanks were noted to have been constructed in 1950 and 1958.

8.2 INTERVIEWS WITH PREVIOUS OWNERS AND OCCUPANTS

Contact information for previous Site owners and occupants was not provided to us. Therefore, interviews with previous Site owners and occupants could not be performed.

SECTION 9: PRELIMINARY SOIL QUALITY EVALUATION

On September 29, 2020, Cornerstone performed a soil quality evaluation to determine the previous Site uses impacted the subsurface and to supplement the findings of this Phase I ESA. The following samples were collected as part of this evaluation:

- Collection of soil samples from the upper approximately 2 feet of soil at six locations (HA-1 through HA-6) around the existing tanks (three locations per tank) using our standard hand sampling equipment.

- Collection of soil samples from depths of up to approximately 10 feet from two geotechnical exploratory borings (EB-7 and EB-8). Note that these borings were advanced to deeper depths as part of the geotechnical investigation presented under separate cover. Environmental soil samples were not collected from depths below 10 feet.

9.1 SOIL SAMPLE COLLECTION AND LABORATORY ANALYSES

On September 29 and 30, 2020, Cornerstone collected discrete soil samples from two exploratory borings (EB-7 and EB-8) advanced in conjunction with our geotechnical investigation. Samples were retained from each boring from the upper approximately 1 foot of soil and from depth intervals of approximately 3 to 4 feet and 9 to 10 feet. During the same mobilization, our field engineer used our standard hand sampling protocols to collect soil samples from the upper approximately 2 feet of soil at six locations (HA-1 through HA-6). The borings were located adjacent to the existing water tanks (within approximately 5 feet of the base). The soil samples were collected in steel liners, fitted with plastic end caps, taped, and labeled with a unique sample identification number. Core-N-One capsules (in triplicate) were used to sample and transport approximately 5 grams of undisturbed soil per capsule for Volatile Organic Compounds (VOC) analyses. Samples for laboratory analyses were placed in an ice-chilled cooler and transported to a state-certified laboratory with chain of custody documentation.

The six samples collected from the upper approximately ½ foot of soil around the water tanks were analyzed for lead (EPA Test Method 6010B). Selected samples collected from the geotechnical borings were analyzed for 17 California Assessment Manual (CAM) metals (EPA Test Method 6010B/7471A), total petroleum hydrocarbons in the diesel range (TPHd) and motor oil range (TPHo) (EPA Test Method 8015M), organochlorine pesticides (OCPs) (EPA Test Method 8081), polychlorinated biphenyls (EPA Test Method 8082), polynuclear aromatic hydrocarbons (PAHs) (EPA Test Method 8270SIM), VOCs and total petroleum hydrocarbons in the gasoline range (TPHg) (EPA Test Method 8260B), and asbestos (CARB Preparation Method 435; quantified using polarized light microscopy and a 400 point counting grid).

9.2 SUBSURFACE MATERIALS

The upper approximately ½ to 1 foot of material in both EB-7 and EB-8 consisted of clayey sand fill. Weathered serpentinite was encountered in EB-7 at depths between approximately ½ foot and 13 feet. The serpentinite layer was underlain by sandy claystone. In EB-8, the overlying fill was underlain by approximately 2 feet of sandy lean clay soil and then by an approximately 2 ½ foot thick silty sandstone unit. Serpentinite was not encountered in EB-8. Serpentinite appears to be present near the surface in the area of EB-7 due to local faulting. Please refer to Cornerstone's geotechnical investigation that is being prepared under separate cover.

Groundwater was not encountered in the geotechnical borings advanced to depths of approximately 40 feet. No signs of apparent contamination were observed in these borings.

9.3 SOIL ANALYTICAL RESULTS

The detected concentrations were compared to commercial and residential DTSC-SLs[1]. Where DTSC-SLs are not established in HHRA Note 3, the detected concentrations were compared to commercial and residential RSLs[2] using a Hazard Quotient = 1.0. Petroleum hydrocarbons and parameters without established RSLs or DTSC-SLs were compared to Tier 1 ESLs[3]. The detected concentrations for arsenic were compared to natural background/ambient concentrations (Duverge, 2011)[4]. Where applicable, the soluble metal concentrations were compared to the Soluble Threshold Limit Concentration (STLC) values for determining a California (non-RCRA) hazardous waste and the Toxicity Leaching Characteristic Procedure (TCLP) values for determining a federal (RCRA) hazardous waste. Nickel concentrations also were compared to the Total Threshold Limit Concentration (TTLC) value for determining a non-RCRA waste. Naturally occurring asbestos (NOA) concentration results were compared to CARB Asbestos Toxic Control Measure (ATCM) regulatory threshold of 0.25 percent for construction and grading projects.

The sample locations from this event are presented in Figure 2, and the results are presented in Table 1 (Metals and Asbestos) and Table 2 (Petroleum hydrocarbons, VOCs, SVOCs, PCBs and OCPs). Chain of custody documentation and laboratory analytical reports are included in Appendix E. A summary of the analytical results is provided below:

---

[1] California Department of Toxic Substances Control Screening Level (DTSC-SL); DTSC Human and Ecological Health Risk Office (HERO) *Human Health Risk Assessment (HHRA) Note Number 3: DTSC-Modified Screening Levels, June 2020.*

[2] Regional Screening Levels (RSL), United States Environmental Protection Agency, Region 9, May 2020.

[3] Environmental Screening Level (ESL), San Francisco Bay, Regional Water Quality Control Board, January 2019.

[4] Duverge, 2011. Establishing Background Arsenic in Soil of the Urbanized San Francisco Bay Region.

- Lead was detected at concentrations up to 48 milligrams per kilogram (mg/kg), which is below the residential DTSC-SL of 80 mg/kg.

- Nickel was detected at concentrations between 2,400 mg/kg and 2,800 mg/kg in the three samples collected from EB-7. These concentrations exceeded the TTLC value of 2,000 mg/kg, which indicates that this material may be considered a non-RCRA hazardous waste. The nickel concentrations detected in samples collected from EB-8 were below the residential DTSC-SL.

- Chromium was detected at concentrations between 1,300 mg/kg and 1,500 mg/kg in the three samples collected from EB-7. Soluble analysis using the TCLP method detected concentrations below the TCLP threshold of 5 milligrams per liter (mg/L) for determining a RCRA hazardous waste. Chromium was detected at concentrations up to 140 mg/kg in the samples collected from EB-8. Soluble chromium concentrations using STLC and TCLP extraction methods were below their respective non-RCRA and RCRA hazardous waste limits.

- Asbestos was not detected in the samples analyzed from the two exploratory borings.

- All other metal concentrations detected were below their respective residential (unrestricted) screening levels or within published background ranges.

- The TPHd, TPHo, and TPHg concentration detected were below their Tier 1 ESLs.

- The VOC 4-isopropyltoluene was detected in the near surface sample collected from EB-7. A screening level has not been established for this VOC. No other VOCs were detected in the samples analyzed.

- The PCB compound Aroclor 1260 was detected in the upper approximately ½ foot sample from EB-7, but at a concentration below its residential DTSC-SL. No other PCB compounds were detected in the samples analyzed.

- No OCP compounds were detected in the samples analyzed.

- The PAH compound benzo(a)pyrene was detected at a concentration of 0.41 mg/kg, which is above the residential DTSC-SL of 0.11 mg/kg, but below the commercial DTSC-SL of 1.3 mg/kg. All other PAH compounds detected were below their respective residential screening criteria.

The more significant concentrations consisted of nickel and chromium detected in the samples collected from EB-7. This boring encountered serpentinite up to a depth of approximately 13 feet. Serpentinite is an ultramafic rock that can contain elevated chromium and nickel concentrations and can contain asbestos, although no asbestos was detected in the samples analyzed from this boring. Significantly lower metal concentrations were detected in the samples collected from EB-8 where serpentinite was not encountered.

The Site lies within a mapped serpentinite unit and, therefore, is subject to the requirements of the Asbestos Airborne Toxic Control Measure (ATCM) codified in 17 California Code of Regulations (CCR) section 93105. According to 93105(b)(1 and 2), this regulation applies to any “construction, grading, quarrying, or surface mining operation on any property” where “any

portion of the area to be disturbed is located in a geographic ultramafic rock unit" or "any portion of the area to be disturbed has naturally-occurring asbestos, serpentinite, or ultramafic rock as determined by the owner/operator, or the Air Pollution Control Officer". The ATCM requires protocols to prevent airborne asbestos dust emissions. These protocols are communicated through an Asbestos Dust Mitigation Plan (ADMP). Project sites that are greater than an acre are required to submit the ADMP to the Bay Area Air Quality Management District (BAAQMD) for review and approval, and are required to perform and submit additional monitoring records per the ATCM.

The existing water tanks reportedly were painted with lead-based paints in the past. The samples collected from soil adjacent to these tanks did not detect elevated concentrations of lead. As such, the weathering and/or flaking of lead-based paints on these water tanks does not appear to have significantly impacted the adjacent soil quality.

SECTION 10: FINDINGS, OPINIONS AND CONCLUSIONS (WITH RECOMMENDATIONS)

Cornerstone performed this Phase I ESA in general accordance with ASTM E1527-13 to support Infrastructure Engineering Corporation in evaluation of Recognized Environmental Conditions. Our findings, opinions and conclusions are summarized below.

10.1 HISTORICAL SITE USAGE

Based on the information obtained during this study, the Site was undeveloped land until approximately 1950 when two of the existing water storage tanks were constructed. The third tank reportedly was constructed in 1958. Two small sheds used by the Town of Hillsborough also are present at the Site. These structures are used for storage of miscellaneous equipment; one contains electronic control and data acquisition equipment for the water storage facility. Three other small structures contain cellular telephone equipment.

10.2 CHEMICAL STORAGE AND USE

Lead-acid batteries are contained in the on-Site cellular telephone equipment enclosures. No spills have been reported and no other hazardous materials were observed on-Site during our visit.

10.3 SOIL QUALITY

Soil sampling was performed to evaluate general soil quality and potential impacts from lead-containing paint on the steel water tanks and from naturally occurring asbestos associated with serpentinite that has been reported on Site and in the Site vicinity. Results from these samples did not detect elevated lead concentrations in near surface soil at locations adjacent to the existing water tanks. Samples collected from a serpentinite unit encountered in one boring (EB-7) did not detect asbestos, but did detect elevated chromium and nickel concentrations. The total nickel concentrations exceeded the state hazardous waste threshold indicating that excess soil from this area may require disposal as a non-RCRA hazardous waste.

As discussed further below, Cornerstone recommends preparing a Soil Management Plan and ADMP.

10.4 NATURALLY OCCURRING ASBESTOS

Serpentinite rock was observed by Cornerstone while on-Site and was encountered up to a depth of approximately 10 feet in one of our borings. Varying concentrations of asbestos occurs naturally in ultramafic rock (such as serpentine). When this material is disturbed in connection with construction, grading, quarrying or surface mining operations, asbestos-containing dust can be generated. Exposure to asbestos can result in health ailments.

The ATCM (17CCR §93105) requires protocols to minimize dust emissions for construction, grading, quarrying, and surface mining operations on any site that is within an ultramafic unit. Although asbestos was not detected in the samples analyzed, these requirements still apply since serpentinite bedrock is present on-Site. The ATCM requires preparation and submittal of an ADMP to the BAAQMD for projects that will disturb 1 acre or more. Projects that disturb less than 1 acre are still required to implement dust control measures, but are not required to submit an ADMP to the BAAQMD. The project Site appears to consist of less than 1 acre of disturbed area. Cornerstone recommends preparing a ADMP regardless of project size, and we recommend determining if the disturbed area will be less than 1 acre to determine if this ADMP is required to be submitted to the BAAQMD.

10.5 SOIL MANAGEMENT PLAN

We recommend preparing a Soil Management Plan (SMP) and Health and Safety Plan (HSP). The purpose of these documents will be to establish appropriate management practices for handling impacted soil that may be encountered during construction activities. These documents should include the following:

- Site control procedures to control the flow of personnel, vehicles and materials in and out of the Site.
- Measures to minimize dust generation, storm water runoff and tracking of soil off-Site.
- Protocols for conducting earthwork activities in areas where impacted soil is present or suspected. Worker training requirements, health and safety measures and soil handing procedures should be described.
- Protocols to be implemented if buried structures, wells, debris, or unidentified areas of impacted soil are encountered during construction activities.
- Protocols to evaluate the quality of soil suspected of being contaminated so that appropriate mitigation, disposal or reuse alternatives, if necessary, can be determined.
- Procedures to evaluate and document the quality of any soil imported to the Site. Soil containing chemicals exceeding residential (unrestricted use) screening levels or typical background concentrations of metals should not be accepted.

10.6 POTENTIAL ENVIRONMENTAL CONCERNS WITHIN THE SITE VICINITY

Based on the information obtained during this study, no hazardous material spill incidents have been reported in the Site vicinity that would be likely to significantly impact the Site.

10.7 DATA GAPS

ASTM Standard Designation E 1527-13 requires the Environmental Professional to comment on significant data gaps that affect our ability to identify Recognized Environmental Conditions. A data gap is a lack of or inability to obtain information required by ASTM Standard Designation E 1527-13 despite good faith efforts by the Environmental Professional to gather such information. A data gap by itself is not inherently significant; it only becomes significant if it raises reasonable concerns. No significant data gaps were identified during this Phase I ESA.

10.8 DATA FAILURES

As described by ASTM Standard Designation E 1527-13, a data failure occurs when all of the standard historical sources that are reasonably ascertainable and likely to be useful have been reviewed and yet the historical research objectives have not been met. Data failures are not uncommon when attempting to identify the use of a Site at five year intervals back to the first use or to 1940 (whichever is earlier). ASTM Standard Designation E 1527-13 requires the Environmental Professional to comment on the significance of data failures and whether the data failure affects our ability to identify Recognized Environmental Conditions. A data failure by itself is not inherently significant; it only becomes significant if it raises reasonable concerns. No significant data failures were identified during this Phase I ESA.

10.9 RECOGNIZED ENVIRONMENTAL CONDITIONS

Cornerstone has performed a Phase I ESA in general conformance with the scope and limitations of ASTM E 1527-13 of 549 Darrell Road, Hillsborough, California. This assessment identified the following Recognized Environmental Conditions[5].

- The Site is within a mapped ultramafic unit, which triggers the dust mitigation requirements under the ATCM (17CCR §93105). Samples collected from this unit indicated elevated chromium and nickel concentration, which may require disposal as a non-RCRA hazardous waste if excess material is generated. We recommend preparing a SMP and ADMP that will provide protocols for contractors working in this material.

SECTION 11: LIMITATIONS

Cornerstone performed this Phase I ESA to support Infrastructure Engineering Corporation in evaluation of Recognized Environmental Conditions associated with the Site. Infrastructure Engineering Corporation understands that no Phase I ESA can wholly eliminate uncertainty regarding the potential for Recognized Environmental Conditions to be present at the Site. This Phase I ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for Recognized Environmental Conditions. Infrastructure Engineering Corporation understands that

[5] The presence or likely presence of hazardous substances or petroleum products on the Site: 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.

the extent of information obtained is based on the reasonable limits of time and budgetary constraints.

Findings, opinions, conclusions and recommendations presented in this report are based on readily available information, conditions readily observed at the time of the Site visit, and/or information readily identified by the interviews and/or the records review process. Phase I ESAs are inherently limited because findings are developed based on information obtained from a non-intrusive Site evaluation. Cornerstone does not accept liability for deficiencies, errors, or misstatements that have resulted from inaccuracies in the publicly available information or from interviews of persons knowledgeable of Site use. In addition, publicly available information and field observations often cannot affirm the presence of Recognized Environmental Conditions; there is a possibility that such conditions exist. If a greater degree of confidence is desired, soil, groundwater, soil vapor and/or air samples should be collected by Cornerstone and analyzed by a state-certified laboratory to establish a more reliable assessment of environmental conditions.

Cornerstone acquired an environmental database of selected publicly available information for the general area of the Site. Cornerstone cannot verify the accuracy or completeness of the database report, nor is Cornerstone obligated to identify mistakes or insufficiencies in the information provided (ASTM E 1527-13, Section 8.1.3). Due to inadequate address information, the environmental database may have mapped several facilities inaccurately or could not map the facilities. Releases from these facilities, if nearby, could impact the Site.

Infrastructure Engineering Corporation may have provided Cornerstone environmental documents prepared by others. Infrastructure Engineering Corporation understands that Cornerstone reviewed and relied on the information presented in these reports and cannot be responsible for their accuracy.

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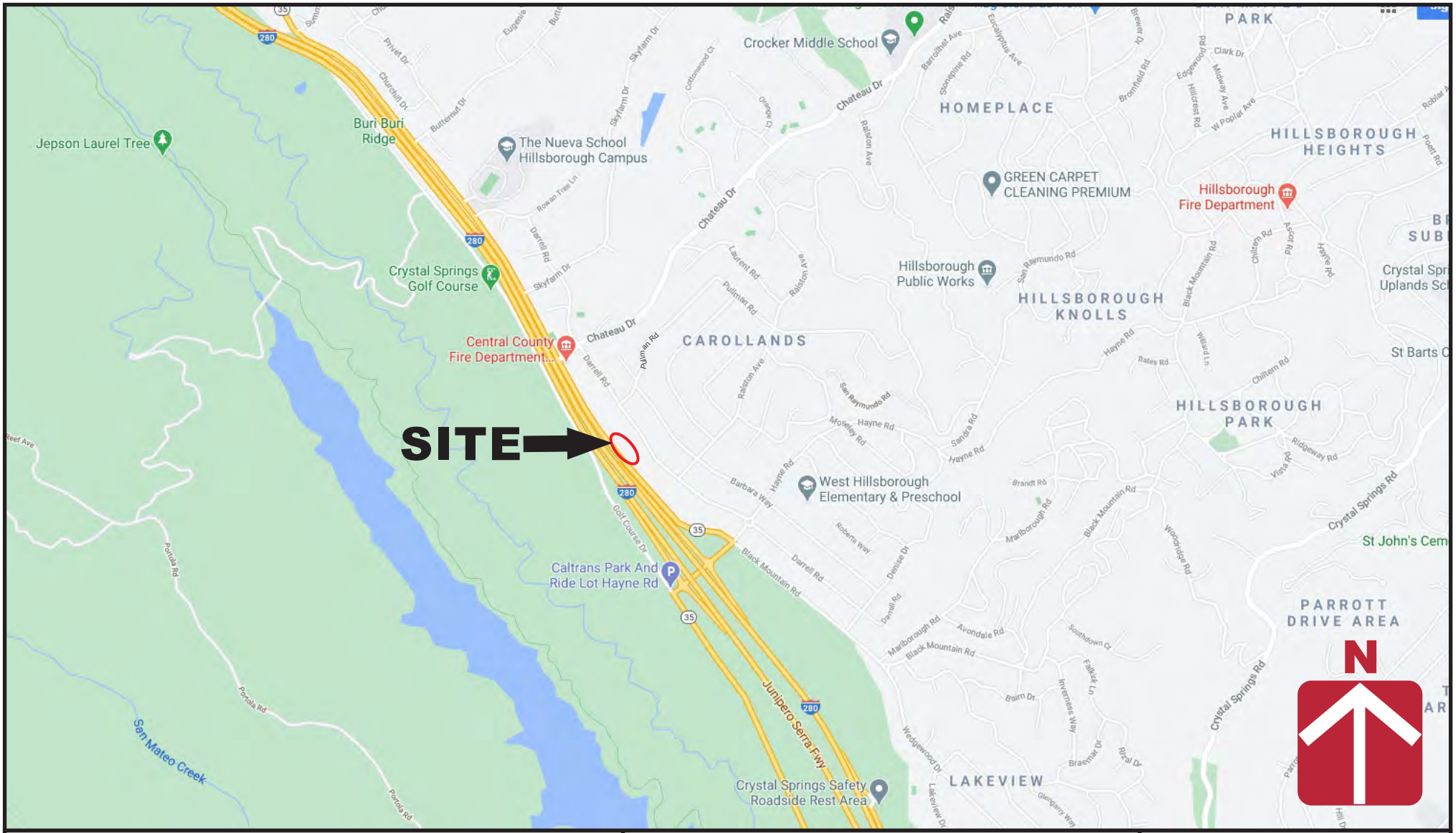

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Vicinity Map

Darrel Road Water Tank
Hillsborough, CA

Project Number	996-2-1
Figure Number	Figure 1
Date	October 2020
Drawn By	RRN

Base by Google Earth, dated 05/10/2018

Site Plan

Darrel Road Water Tank
Hillsborough, CA

Project Number	Figure Number	Drawn By
996-2-1	Figure 2	RRN
Date: October 2020		

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Table 1. Analytical Results of Selected Soil Samples - Metals and Asbestos
(Concentrations in mg/kg, unless otherwise noted)

Sample ID	Date	Depth (feet)	Antimony	Arsenic	Barium	Beryllium	Chromium	STLC Chromium	TCLP Chromium	Cobalt	Copper	Lead	Mercury	Nickel	STLC Nickel	Vanadium	Zinc	Asbestos (%)
EB-7 (0'-0.5')	9/29/2020	0-½	5.8	9.5	43	<0.24	1,300	---	0.14	130	20	26	0.082	2,800	---	50	63	<0.25
EB-7 (3'-3.5')	9/29/2020	3-3½	6.5	9.8	8.2	<0.28	1,500	---	0.10	110	12	4.3	0.099	2,800	---	50	54	<0.25*
EB-7 (9.5'-10')	9/29/2020	9½-10	7.0	9.6	2.4	<0.26	1,500	---	0.12	110	18	1.9	0.09	2,400	---	61	25	---
EB-8 (0'-0.5')	9/30/2020	0-½	2.0	1.8	66	0.43	140	<0.50	<0.50	20	23	15	<0.099	330	3.8	29	55	<0.25
EB-8 (3'-3.5')	9/30/2020	3-3½	<0.84	<0.84	28	0.37	34	---	---	7.0	11	1.5	0.10	74	---	10	15	---
EB-8 (9'-9.5')	9/30/2020	9-9½	4.4	1.8	63	0.68	100	<0.50	<0.50	20	24	2.2	<0.099	130	---	52	53	<0.25
HA-1 (0'-0.5')	9/29/2020	0-½	---	---	---	---	---	---	---	---	---	12	---	---	---	---	---	---
HA-2 (0'-0.5')	9/29/2020	0-½	---	---	---	---	---	---	---	---	---	48	---	---	---	---	---	---
HA-3 (0'-0.5')	9/29/2020	0-½	---	---	---	---	---	---	---	---	---	41	---	---	---	---	---	---
HA-4 (0'-0.5')	9/29/2020	0-½	---	---	---	---	---	---	---	---	---	22	---	---	---	---	---	---
HA-5 (0'-0.5')	9/29/2020	0-½	---	---	---	---	---	---	---	---	---	28	---	---	---	---	---	---
HA-6 (0'-0.5')	9/29/2020	0-½	---	---	---	---	---	---	---	---	---	20	---	---	---	---	---	---
Environmental Screening Level - Residential			31	11	15,000	16	NE	5 mg/L	5 mg/L	23	3,100	320	1.0	820 / 2,000	5 mg/L	390	23,000	0.25
Environmental Screening Level - Commercial			470		220,000	230	NE			350	47,000	80	4.4	11,000		5,800	350,000	
Screening Criteria Basis			RSL[1]	Duverge[2]	RSL[1]	DTSC-SL[3]	NE	STLC[4]	TCLP[5]	RSL[1]	RSL[1]	DTSC-SL[3]	DTSC-SL[3]	DTSC-SL[3] / TTLC[6]	STLC[4]	RSL[1]	RSL[1]	ATCM[7]

1 Regional Screening Level (RSL), USEPA Region 9 - May 2020.
2 Duverge, 2011. Establishing Backround Arsenic in Soil of the Urbanized San Francisco Bay Region.
3 Recommended Screening Level (SL), HERO HHRA Note 3 - June 2020
4 Soluble Threshold Limit Concentration (STLC) - California Code of Regulations, Title 22.
5 Toxicity Characteristic Leaching Procedure (TCLP) - 40 Code of Federal Regulations (CFR) Section 261.24
6 Total Threshold Limit Concentration - California Code of Regulations, Title 22.
7 California Air Resources Board (CARB) - Asbestos Toxic Control Measure (ATCM) Regulatory Threshold Screening Level (SL)
< Not detected at or above laboratory reporting limit
NE Not Established
--- Not Analyzed
BOLD Concentration exceeds selected Environmental Screening Criteria or hazardous waste threshold
* Sample was labeled from an approximate depth of 3 to 4 feet on the chain of custody

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Table 2. Analytical Results of Selected Soil Samples - Petroleum Hydrocarbojns, VOCs, SVOCs, PCBs and OCPs
(Concentrations in mg/kg)

Sample ID	Date	Depth (feet)	TPHd	TPHo	TPHg	4-Isopropyltoluene	Other VOCs	Arocior 1260	OCPs	Acenaphthene	Anthracene	Benz(a)anthracene	Benzo(g,h,i)perylene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd) pyrene	Phenanthrene	Pyrene
EB-7 (0'-0.5')	9/29/2020	0-½	55	110	1.4	0.01	ND	0.013	ND	0.038	0.083	0.37	0.29	0.41*	0.42	0.16	0.41	0.063	0.6	0.02	0.25	0.36	0.93
EB-7 (3'-3.5')	9/29/2020	3-3½	16	42	<1.6	<0.016	ND	---	ND	0.012	0.018	0.096	0.072	0.094	0.1	0.036	0.099	0.015	0.15	<0.0072	0.057	0.11	0.25
EB-8 (0'-0.5')	9/30/2020	0-½	<6.1	<6.1	<0.90	<0.0079	ND	<0.012	ND	<0.012	<0.012	0.015	<0.012	0.016	0.012	0.014	0.017	<0.012	0.023	<0.012	<0.012	0.016	0.036
EB-8 (9'-9.5')	9/30/2020	9-9½	<5.8	<5.8	<0.68	<0.0068	ND	---	ND	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Environmental Screening Level - Residential			260	1,600	100	NE	Variable	0.24	Varies	3,300	17,000	1.1	2.5	0.11	1.1	11	110	0.028	2,400	2,300	1.1	7.8	1,800
Environmental Screening Level - Commercial			1,200	180,000	2,000		Variable	0.60	Varies	23,000	130,000	12	2.5	1.3	13	130	2,100	0.31	18,000	17,000	13	7.8	13,000
Basis			ESL[1]	ESL[1]	ESL[1]		n/a	DTSC-SL[2]	Varies	DTSC-SL[2]	DTSC-SL[2]	DTSC-SL[2]	ESL[1]	DTSC-SL[2]	DTSC-SL[2]	DTSC-SL[2]	RSL[3]	DTSC-SL[2]	DTSC-SL[2]	DTSC-SL[2]	DTSC-SL[2]	ESL[1]	DTSC-SL[2]

1 Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019.
2 Recommended Screening Level (SL), HERO HHRA Note 3 - June 2020
3 Regional Screening Level (RSL), USEPA Region 9 - May 2020.
< Not detected at or above laboratory reporting limit
NE Not Established
--- Not Analyzed
Bold Concentration exceeds screeing criteria (* indicates concentration exceeds residential but is below commercial screening levels).

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APPENDIX A – DATABASE SEARCH REPORT

Phase I ESA
549 & 553 Darrell Road
Burlingame, CA 94010

Inquiry Number: 6199204.2s
September 22, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), 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

549 & 553 DARRELL ROAD
BURLINGAME, CA 94010

COORDINATES

Latitude (North):	37.5521840 - 37° 33' 7.86''
Longitude (West):	122.3757290 - 122° 22' 32.62''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	555142.6
UTM Y (Meters):	4156109.2
Elevation:	742 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641104 MONTARA MOUNTAIN, CA
Version Date:	2012
East Map:	5640626 SAN MATEO, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140608
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
549 & 553 DARRELL ROAD
BURLINGAME, CA 94010

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	CINGULAR WIRELESS-HI	549 DARRELL	San Mateo Co. BI		TP
A2	AT & T MOBILITY-HILL	549 DARRELL	San Mateo Co. BI		TP
A3	NEXTEL-SITE ID CA-08	547 DARRELL	San Mateo Co. BI	Lower	58, 0.011, ENE
A4	VERIZON WIRELESS HIL	555 DARRALL	San Mateo Co. BI	Lower	76, 0.014, NNE
B5	NSHEN, ANTHONY	665 DARRELL ROAD	RCRA NonGen / NLR	Lower	872, 0.165, NNW
B6	FIRE STATION #3	835 CHATEAU	San Mateo Co. BI	Lower	1076, 0.204, NNW
B7	HILLSBOROUGH FIRE DE	835 CHATEAU	LUST, SWEEPS UST, San Mateo Co. BI, Cortese, CERS	Lower	1076, 0.204, NNW
B8	STATION 33	835 CHATEAU	San Mateo Co. BI	Lower	1076, 0.204, NNW
C9	DONALD KOPPEL	3755 RALSTON AVE	RCRA NonGen / NLR	Lower	1232, 0.233, East
C10	KEVIN MEINERS	3755 RALSTON AVE.	RCRA NonGen / NLR	Lower	1232, 0.233, East
C11	KEVIN MEINERS	3755 RALSTON AVE	RCRA NonGen / NLR	Lower	1232, 0.233, East
D12	PRIVATE RESIDENCE	PRIVATE RESIDENCE	LUST	Lower	1384, 0.262, NE
D13	EVI RESIDENCE	565 REMILLARD	HIST CORTESE	Lower	1422, 0.269, NE
D14	EVI RESIDENCE	565 REMILLARD	LUST	Lower	1422, 0.269, NE

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
CINGULAR WIRELESS-HI 549 DARRELL HILLSBOROUGH, CA 94010	San Mateo Co. BI Facility Id: FA0033676	N/A
AT & T MOBILITY-HILL 549 DARRELL HILLSBOROUGH, CA 94010	San Mateo Co. BI Facility Id: FA0028616	N/A

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

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

EXECUTIVE SUMMARY

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small 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 - equivalent CERCLIS

ENVIROSTOR ..... EnviroStor Database

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
CPS-SLIC ..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP ..... Voluntary Cleanup Program Properties
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

EXECUTIVE SUMMARY

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
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
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
CERS HAZ WASTE	CERS HAZ WASTE
US CDL	National Clandestine Laboratory Register
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

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

EXECUTIVE SUMMARY

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
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
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
HAZNET	Facility and Manifest Data
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
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)

EXECUTIVE SUMMARY

SAMPLING POINT ---------- SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ ---------- Well Stimulation Project (GEOTRACKER)
MINES MRDS ---------- Mineral Resources Data System
HWTS ---------- Hazardous Waste Tracking 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
RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

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 3 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HILLSBOROUGH FIRE DE	***835 CHATEAU***	***NNW 1/8 - 1/4 (0.204 mi.)***	***B7***	***14***

Database: SAN MATEO CO. LUST, Date of Government Version: 03/29/2019
Database: LUST REG 2, Date of Government Version: 09/30/2004
Database: LUST, Date of Government Version: 06/08/2020
Status: Completed - Case Closed

Facility Status: Case Closed
Facility Id: 870007
Facility Status: 9- Case Closed
Global Id: T0608159255
Global ID: T0608159255
date9: 4/1/1997

PRIVATE RESIDENCE | PRIVATE RESIDENCE | NE 1/4 - 1/2 (0.262 mi.) | D12 | 24
Database: LUST, Date of Government Version: 06/08/2020
Status: Completed - Case Closed
Global Id: T10000003500
Global Id: T0608100744

EVI RESIDENCE | 565 REMILLARD | NE 1/4 - 1/2 (0.269 mi.) | D14 | 27
Database: SAN MATEO CO. LUST, Date of Government Version: 03/29/2019
Facility Id: 878009
Facility Status: 9- Case Closed
Global ID: T0608100744

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HILLSBOROUGH FIRE DE	***835 CHATEAU***	***NNW 1/8 - 1/4 (0.204 mi.)***	***B7***	***14***
Status: A Tank Status: A Comp Number: 870008				

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 06/15/2020 has revealed that there are 4 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
NSHEN, ANTHONY	665 DARRELL ROAD	NNW 1/8 - 1/4 (0.165 mi.)	B5	11

EPA ID:: CAC002991098				
DONALD KOPPEL EPA ID:: CAC003034385	3755 RALSTON AVE	E 1/8 - 1/4 (0.233 mi.)	C9	17
KEVIN MEINERS EPA ID:: CAC003060450	3755 RALSTON AVE.	E 1/8 - 1/4 (0.233 mi.)	C10	19
KEVIN MEINERS EPA ID:: CAC003060627	3755 RALSTON AVE	E 1/8 - 1/4 (0.233 mi.)	C11	22

Hazardous Materials Business Plan, Hazardous Waste Generator, Underground Storage tanks

A review of the San Mateo Co. BI list, as provided by EDR, and dated 02/20/2020 has revealed that there are 5 San Mateo Co. BI sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
NEXTEL-SITE ID CA-08 Facility Id: FA0027321	547 DARRELL	ENE 0 - 1/8 (0.011 mi.)	A3	10
VERIZON WIRELESS HIL Facility Id: FA0027918	555 DARRALL	NNE 0 - 1/8 (0.014 mi.)	A4	10
FIRE STATION #3 Facility Id: FA0010330	835 CHATEAU	NNW 1/8 - 1/4 (0.204 mi.)	B6	13
HILLSBOROUGH FIRE DE Facility Id: FA0059863	***835 CHATEAU***	***NNW 1/8 - 1/4 (0.204 mi.)***	***B7***	***14***
STATION 33 Facility Id: FA0029265	835 CHATEAU	NNW 1/8 - 1/4 (0.204 mi.)	B8	17

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
HILLSBOROUGH FIRE DE Cleanup Status: COMPLETED - CASE CLOSED	***835 CHATEAU***	***NNW 1/8 - 1/4 (0.204 mi.)***	***B7***	***14***

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.

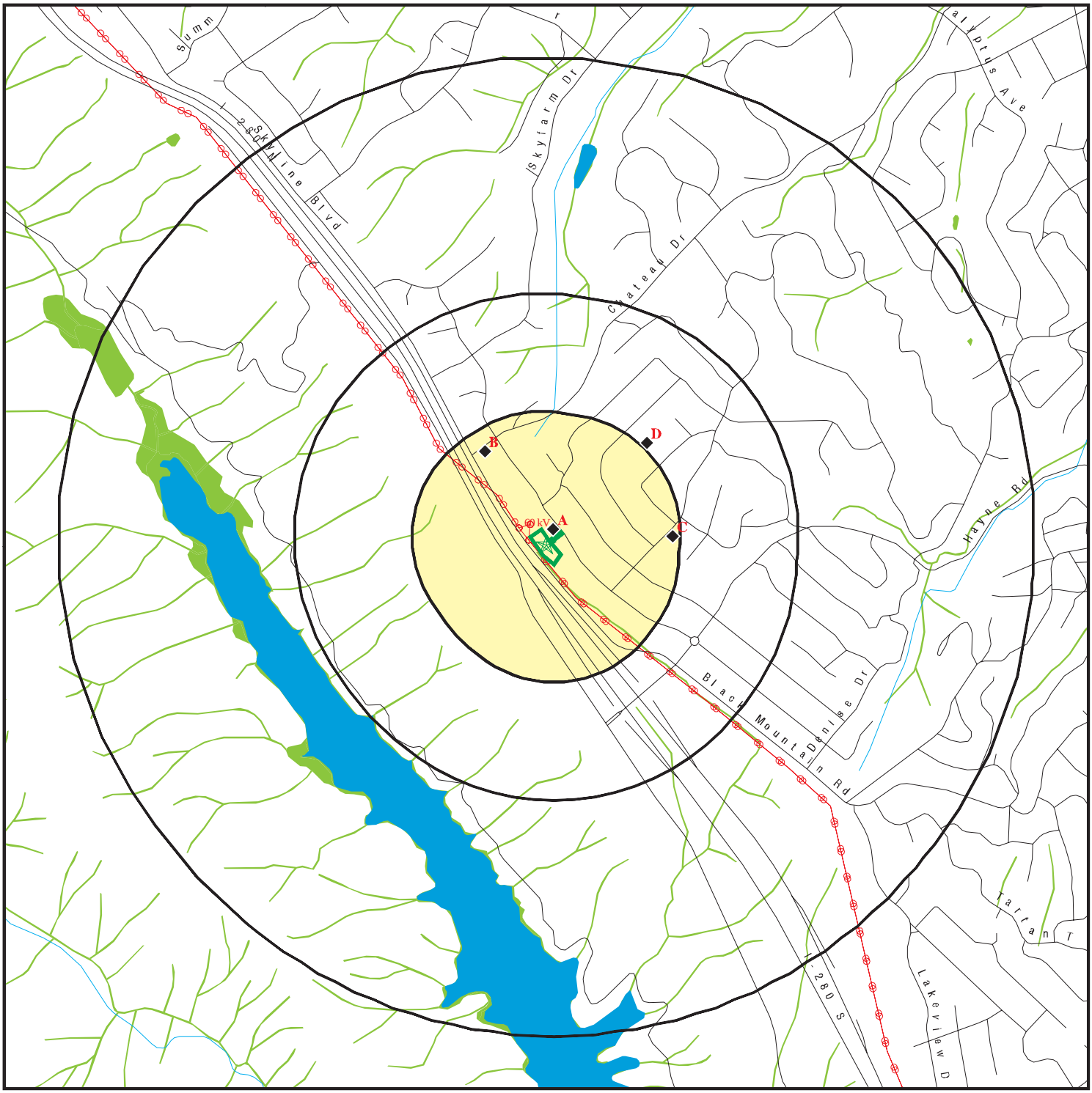
A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EVI RESIDENCE Reg Id: 41-0788	565 REMILLARD	NE 1/4 - 1/2 (0.269 mi.)	D13	26

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 6199204.2S



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Phase I ESA	CLIENT:	Cornerstone Earth Group
ADDRESS:	549 & 553 Darrell Road Burlingame CA 94010	CONTACT:	Stason Foster
LAT/LONG:	37.552184 / 122.375729	INQUIRY #:	6199204.2s
		DATE:	September 22, 2020 9:00 am

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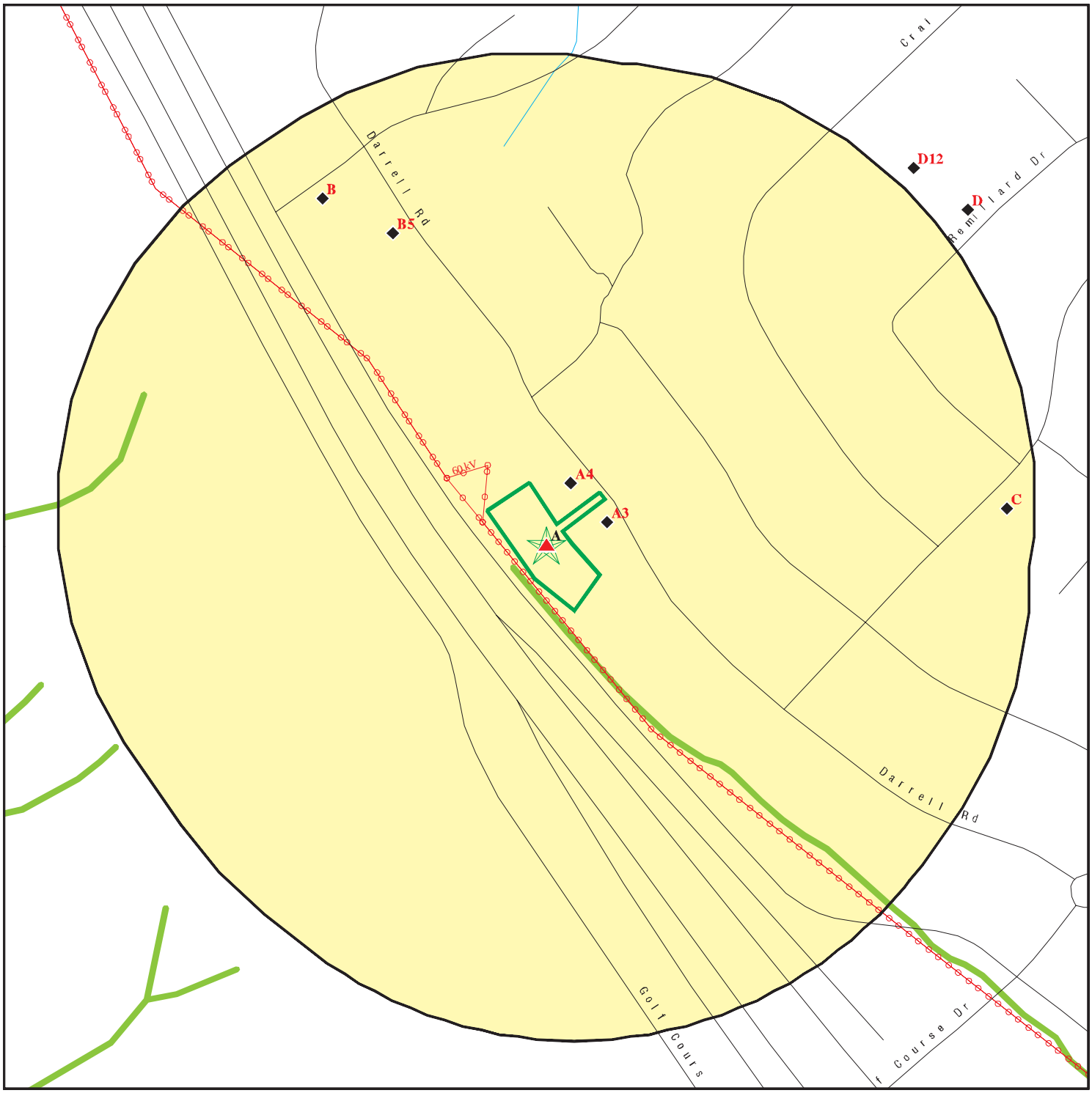
DETAIL MAP - 6199204.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- 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:	Phase I ESA	CLIENT:	Cornerstone Earth Group
ADDRESS:	549 & 553 Darrell Road Burlingame CA 94010	CONTACT:	Stason Foster
LAT/LONG:	37.552184 / 122.375729	INQUIRY #:	6199204.2s
		DATE:	September 22, 2020 9:01 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	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		0	0	NR	NR	NR	0
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	0.001		0	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	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	1	2	NR	NR	3

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
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	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	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	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	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	1	NR	NR	NR	1
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		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	4	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	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
San Mateo Co. BI	0.250	2	2	3	NR	NR	NR	7
Cortese	0.500		0	1	0	NR	NR	1

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
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	1	NR	NR	1
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	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	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	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	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	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		2	2	10	3	0	0	17

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 **CINGULAR WIRELESS-HILLSBROUGH 14871** **San Mateo Co. BI** **S113758307**
Target **549 DARRELL** **N/A**
Property **HILLSBOROUGH, CA 94010**

Site 1 of 4 in cluster A

Actual: **742 ft.**

San Mateo Co. BI:

Name:	CINGULAR WIRELESS-HILLSBROUGH 14871
Address:	549 DARRELL
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0033676
Prog Element Code:	STORMWATER ANNUAL INSPECTION FEE
Record Id:	PR0052479
Description:	STORMWATER ANNUAL FEE - INSP FREQ EVERY 2 YRS
Facility Status:	Inactive, non-billable
Program Category:	STORMWATER

Name:	CINGULAR WIRELESS-HILLSBROUGH 14871
Address:	549 DARRELL
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0033676
Prog Element Code:	STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id:	PR0052478
Description:	STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status:	Inactive, non-billable
Program Category:	BUSINESS PLAN PROGRAM

A2 **AT & T MOBILITY-HILLSBOROUGH 13230** **San Mateo Co. BI** **S113758017**
Target **549 DARRELL** **N/A**
Property **HILLSBOROUGH, CA 94010**

Site 2 of 4 in cluster A

Actual: **742 ft.**

San Mateo Co. BI:

Name:	AT & T MOBILITY-HILLSBOROUGH 13230
Address:	549 DARRELL
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0028616
Prog Element Code:	STORMWATER ANNUAL INSPECTION FEE
Record Id:	PR0047830
Description:	STORMWATER ANNUAL FEE - INSP FREQ EVERY 2 YRS
Facility Status:	Inactive, non-billable
Program Category:	STORMWATER

Name:	AT & T MOBILITY-HILLSBOROUGH 13230
Address:	549 DARRELL
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0028616
Prog Element Code:	STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id:	PR0047828
Description:	STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status:	Inactive, non-billable
Program Category:	BUSINESS PLAN PROGRAM

A3 **NEXTEL-SITE ID CA-0866** **San Mateo Co. BI** **S113757711**
ENE **547 DARRELL** **N/A**
< 1/8 **HILLSBOROUGH, CA 94010**
0.011 mi.
58 ft. **Site 3 of 4 in cluster A**

Relative: San Mateo Co. BI:
Lower

Actual: Name: NEXTEL-SITE ID CA-0866
721 ft. Address: 547 DARRELL
City,State,Zip: HILLSBOROUGH, CA 94010
Region: SAN MATEO
Facility ID: FA0027321
Prog Element Code: STORMWATER ANNUAL INSPECTION FEE
Record Id: PR0043566
Description: STORMWATER ANNUAL FEE - INSP FREQ EVERY 2 YRS
Facility Status: Inactive, non-billable
Program Category: STORMWATER

Name: NEXTEL-SITE ID CA-0866
Address: 547 DARRELL
City,State,Zip: HILLSBOROUGH, CA 94010
Region: SAN MATEO
Facility ID: FA0027321
Prog Element Code: STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id: PR0043220
Description: STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status: Inactive, non-billable
Program Category: BUSINESS PLAN PROGRAM

A4 **VERIZON WIRELESS HILLSBORO** **San Mateo Co. BI** **S113757883**
NNE **555 DARRALL** **N/A**
< 1/8 **HILLSBOROUGH, CA 94010**
0.014 mi.
76 ft. **Site 4 of 4 in cluster A**

Relative: San Mateo Co. BI:
Lower

Actual: Name: VERIZON WIRELESS HILLSBORO
718 ft. Address: 555 DARRALL
City,State,Zip: HILLSBOROUGH, CA 94010
Region: SAN MATEO
Facility ID: FA0027918
Prog Element Code: STORMWATER ANNUAL INSPECTION FEE
Record Id: PR0045834
Description: STORMWATER ANNUAL FEE - INSP FREQ EVERY 2 YRS
Facility Status: Inactive, non-billable
Program Category: STORMWATER

Name: VERIZON WIRELESS HILLSBORO
Address: 555 DARRALL
City,State,Zip: HILLSBOROUGH, CA 94010
Region: SAN MATEO
Facility ID: FA0027918
Prog Element Code: STORES HAZ MAT <219GAL,1,999LB, 879FT3
Record Id: PR0045832
Description: STORES HAZ MAT <219GAL,1,999LB, 879CF
Facility Status: Active, billable
Program Category: BUSINESS PLAN PROGRAM

B5 **NSHEN, ANTHONY** **RCRA NonGen / NLR** **1024771187**
NNW **665 DARRELL ROAD** **CAC002991098**
1/8-1/4 **HILLSBOROUGH, CA 94010**
0.165 mi.
872 ft. **Site 1 of 4 in cluster B**

Relative: **Lower**

Actual: **675 ft.**

RCRA-LQG:

Date Form Received by Agency:	2018-11-29 00:00:00.0
Handler Name:	NSHEN, ANTHONY
Handler Address:	665 DARRELL ROAD
Handler City,State,Zip:	HILLSBOROUGH, CA 94010
EPA ID:	CAC002991098
Contact Name:	NSHEN, ANTHONY
Contact Address:	665 DARRELL ROAD
Contact City,State,Zip:	HILLSBOROUGH, CA 94010
Contact Telephone:	408-452-8700
Contact Fax:	510-651-7702
Contact Email:	MICKIEL@PWSEI.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	665 DARRELL ROAD
Mailing City,State,Zip:	HILLSBOROUGH, CA 94010
Owner Name:	NSHEN, ANTHONY
Owner Type:	Other
Operator Name:	NSHEN, ANTHONY
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

NSHEN, ANTHONY (Continued) **1024771187**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-12-20 13:51:44.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	NSHEN, ANTHONY
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	665 DARRELL ROAD
Owner/Operator City,State,Zip:	HILLSBOROUGH, CA 94010
Owner/Operator Telephone:	408-452-8700
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	NSHEN, ANTHONY
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	665 DARRELL ROAD
Owner/Operator City,State,Zip:	HILLSBOROUGH, CA 94010
Owner/Operator Telephone:	408-452-8700
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

NSHEN, ANTHONY (Continued) **1024771187**

Receive Date:	2018-11-29 00:00:00.0
Handler Name:	NSHEN, ANTHONY
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	56299
NAICS Description:	ALL OTHER WASTE MANAGEMENT SERVICES

B6 **FIRE STATION #3** **San Mateo Co. BI** **S113755542**
NNW **835 CHATEAU** **N/A**
1/8-1/4 **HILLSBOROUGH, CA 94010**
0.204 mi.
1076 ft. **Site 2 of 4 in cluster B**

Relative: **Lower**

Actual: **669 ft.**

San Mateo Co. BI:

Name:	FIRE STATION #3
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0010330
Prog Element Code:	UNDERGROUND TANK - GENERAL
Record Id:	PR0022914
Description:	UNDERGROUND TANK - GENERAL
Facility Status:	Inactive, non-billable
Program Category:	UNDERGROUND TANK PROGRAM

Name:	FIRE STATION #3
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0010330
Prog Element Code:	STORES MV FUELS OR WASTE ONLY
Record Id:	PR0023372
Description:	STORES MV FUELS OR WASTE ONLY
Facility Status:	Inactive, non-billable
Program Category:	BUSINESS PLAN PROGRAM

B7 **HILLSBOROUGH FIRE DEPT** **LUST** **1000590299**
NNW **835 CHATEAU** **SWEEPS UST** **N/A**
1/8-1/4 **HILLSBOROUGH, CA 94010** **San Mateo Co. BI**
0.204 mi. **Cortese**
1076 ft. **Site 3 of 4 in cluster B** **CERS**

Relative:
Lower

Actual:
669 ft.

LUST:

Name:	HILLSBOROUGH FIRE DEPT
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Lead Agency:	SAN MATEO COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0608159255
Global Id:	T0608159255
Latitude:	37.555257
Longitude:	-122.378122
Status:	Completed - Case Closed
Status Date:	04/01/1997
Case Worker:	Not reported
RB Case Number:	41-1254
Local Agency:	Not reported
File Location:	Local Agency
Local Case Number:	870007
Potential Media Affect:	Other Groundwater (uses other than drinking water)
Potential Contaminants of Concern:	Not reported
Site History:	Not reported

LUST:

Global Id:	T0608159255
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

LUST:

Global Id:	T0608159255
Action Type:	ENFORCEMENT
Date:	12/01/1995
Action:	Notice of Responsibility - #1

LUST:

Global Id:	T0608159255
Status:	Open - Case Begin Date
Status Date:	12/01/1995

Global Id:	T0608159255
Status:	Completed - Case Closed
Status Date:	04/01/1997

SAN MATEO CO. LUST:

Name:	HILLSBOROUGH FIRE DEPT
Address:	835 CHATEAU DR
City,State,Zip:	HILLSBOROUGH, CA
Region:	SAN MATEO

HILLSBOROUGH FIRE DEPT (Continued) **1000590299**

Facility ID: 870007
Facility Status: 9- Case Closed
Global ID: T0608159255
APN Number: 030012110
Case Type: HILLSBOROUGH, CA
EDR Link ID: HILLSBOROUGH, CA

LUST REG 2:
Region: 2
Facility Id: Not reported
Facility Status: Case Closed
Case Number: 870007
How Discovered: OM
Leak Cause: Unknown
Leak Source: Unknown
Date Leak Confirmed: Not reported
Oversight Program: LUST
Prelim. Site Assesment Wokplan Submitted: Not reported
Preliminary Site Assesment Began: Not reported
Pollution Characterization Began: Not reported
Pollution Remediation Plan Submitted: Not reported
Date Remediation Action Underway: Not reported
Date Post Remedial Action Monitoring Began: Not reported

SWEEPS UST:
Name: HILLSBOROUGH FIRE STATION #3
Address: 835 CHATEAU DR
City: HILLSBOROUGH
Status: Active
Comp Number: 870008
Number: 4
Board Of Equalization: Not reported
Referral Date: 05-13-94
Action Date: 05-13-94
Created Date: 05-13-94
Owner Tank Id: UNK
SWRCB Tank Id: 41-000-870008-000001
Tank Status: A
Capacity: 1000
Active Date: 05-13-94
Tank Use: M.V. FUEL
STG: P
Content: DIESEL
Number Of Tanks: 1

San Mateo Co. BI:
Name: FIRE STATION #33
Address: 835 CHATEAU
City,State,Zip: HILLSBOROUGH, CA 94010
Region: SAN MATEO
Facility ID: FA0059863
Prog Element Code: STORMWATER ANNUAL INSPECTION FEE
Record Id: PR0082279
Description: STORMWATER ANNUAL FEE - INSP FREQ EVERY 2 YRS
Facility Status: Inactive, non-billable
Program Category: STORMWATER

HILLSBOROUGH FIRE DEPT (Continued) **1000590299**

Name:	FIRE STATION #33
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0059863
Prog Element Code:	STORES HAZ MAT <1,199GAL,9,999LB,4,799FT3
Record Id:	PR0082278
Description:	STORES HAZ MAT <1,199GAL,9,999LB,4,799CF
Facility Status:	Active, billable
Program Category:	BUSINESS PLAN PROGRAM

CORTESE:

Name:	HILLSBOROUGH FIRE DEPT
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0608159255
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

CERS:

Name:	HILLSBOROUGH FIRE DEPT
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Site ID:	207262
CERS ID:	T0608159255
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	Regional Water Board - SAN FRANCISCO BAY RWQCB (REGION 2)
Entity Title:	Not reported
Affiliation Address:	1515 CLAY ST SUITE 1400
Affiliation City:	OAKLAND
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

B8 **STATION 33** **San Mateo Co. BI** **S123182006**
NNW **835 CHATEAU** **N/A**
1/8-1/4 **HILLSBOROUGH, CA 94010**
0.204 mi.
1076 ft. **Site 4 of 4 in cluster B**

Relative: **Lower**
Actual: **669 ft.**

San Mateo Co. BI:

Name:	STATION 33
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0029265
Prog Element Code:	SML QUANTITY GENERATOR(1-199lbs/Mo) OFF-SITE
Record Id:	PR0049647
Description:	SQG OFF-SITE TREATMENT (1-199 LB/MO)
Facility Status:	Inactive, non-billable
Program Category:	MEDICAL WASTE

Name:	STATION 33
Address:	835 CHATEAU
City,State,Zip:	HILLSBOROUGH, CA 94010
Region:	SAN MATEO
Facility ID:	FA0029265
Prog Element Code:	LIMITED MEDICAL WASTE HAULER EXEMPTION
Record Id:	PR0049648
Description:	SQG WITH TRANSPORT
Facility Status:	Inactive, non-billable
Program Category:	MEDICAL WASTE

C9 **DONALD KOPPEL** **RCRA NonGen / NLR** **1025854158**
East **3755 RALSTON AVE** **CAC003034385**
1/8-1/4 **HILLSBOROUGH, CA 94010**
0.233 mi.
1232 ft. **Site 1 of 3 in cluster C**

Relative: **Lower**
Actual: **630 ft.**

RCRA-LQG:

Date Form Received by Agency:	2019-09-18 00:00:00.0
Handler Name:	DONALD KOPPEL
Handler Address:	3755 RALSTON AVE
Handler City,State,Zip:	HILLSBOROUGH, CA 94010-6735
EPA ID:	CAC003034385
Contact Name:	DONALD KOPPEL
Contact Address:	3755 RALSTON AVE
Contact City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Contact Telephone:	650-347-8726
Contact Fax:	Not reported
Contact Email:	LIZDUENAS@ALLIANCE-ENVIRO.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	3755 RALSTON AVE
Mailing City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Owner Name:	DONALD KOPPEL

DONALD KOPPEL (Continued) **1025854158**

Owner Type:	Other
Operator Name:	DONALD KOPPEL
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2019-09-27 16:23:14.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No

DONALD KOPPEL (Continued) **1025854158**

Sub-Part P Indicator: No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	DONALD KOPPEL
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3755 RALSTON AVE
Owner/Operator City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Owner/Operator Telephone:	650-347-8726
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	DONALD KOPPEL
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3755 RALSTON AVE
Owner/Operator City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Owner/Operator Telephone:	650-347-8726
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2019-09-18 00:00:00.0
Handler Name:	DONALD KOPPEL
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	56299
NAICS Description:	ALL OTHER WASTE MANAGEMENT SERVICES

C10 **KEVIN MEINERS** **RCRA NonGen / NLR** **1026053551**
East **3755 RALSTON AVE.** **CAC003060450**
1/8-1/4 **BURLINGAME, CA 94010**
0.233 mi.
1232 ft. **Site 2 of 3 in cluster C**

Relative: **Lower**

Actual: **630 ft.**

RCRA-LQG:

Date Form Received by Agency:	2020-03-18 00:00:00.0
Handler Name:	KEVIN MEINERS
Handler Address:	3755 RALSTON AVE.
Handler City,State,Zip:	BURLINGAME, CA 94010

KEVIN MEINERS (Continued) **1026053551**

EPA ID:	CAC003060450
Contact Name:	KEVIN MEINERS
Contact Address:	3755 RALSTON AVE.
Contact City,State,Zip:	BURLINGAME, CA 94010
Contact Telephone:	415-481-5261
Contact Fax:	Not reported
Contact Email:	LILIAN.RAMOS@SYNERGYCOMPANIES.ORG
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	3755 RALSTON AVE.
Mailing City,State,Zip:	BURLINGAME, CA 94010
Owner Name:	KEVIN MEINERS
Owner Type:	Other
Operator Name:	KEVIN MEINERS
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No

KEVIN MEINERS (Continued) **1026053551**

TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2020-03-20 19:21:30.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	KEVIN MEINERS
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3755 RALSTON AVE.
Owner/Operator City,State,Zip:	BURLINGAME, CA 94010
Owner/Operator Telephone:	415-481-5261
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	KEVIN MEINERS
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3755 RALSTON AVE.
Owner/Operator City,State,Zip:	BURLINGAME, CA 94010
Owner/Operator Telephone:	415-481-5261
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2020-03-18 00:00:00.0
Handler Name:	KEVIN MEINERS
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No

KEVIN MEINERS (Continued) **1026053551**

Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 56299
NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

C11 **KEVIN MEINERS** **RCRA NonGen / NLR** **1026053726**
East **3755 RALSTON AVE** **CAC003060627**
1/8-1/4 **HILLSBOROUGH, CA 94010**
0.233 mi.
1232 ft. **Site 3 of 3 in cluster C**

Relative: **Lower**
Actual: **630 ft.**

RCRA-LQG:

Date Form Received by Agency:	2020-03-19 00:00:00.0
Handler Name:	KEVIN MEINERS
Handler Address:	3755 RALSTON AVE
Handler City,State,Zip:	HILLSBOROUGH, CA 94010-6735
EPA ID:	CAC003060627
Contact Name:	KEVIN MEINERS
Contact Address:	3755 RALSTON AVE
Contact City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Contact Telephone:	415-481-5261
Contact Fax:	Not reported
Contact Email:	LILIAN.RAMOS@SYNERGYCOMPANIES.ORG
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	3755 RALSTON AVE
Mailing City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Owner Name:	KEVIN MEINERS
Owner Type:	Other
Operator Name:	KEVIN MEINERS
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported

KEVIN MEINERS (Continued) **1026053726**

Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2020-03-20 19:21:34.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	KEVIN MEINERS
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3755 RALSTON AVE
Owner/Operator City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Owner/Operator Telephone:	415-481-5261
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name:	KEVIN MEINERS
Legal Status:	Other

KEVIN MEINERS (Continued) **1026053726**

Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3755 RALSTON AVE
Owner/Operator City,State,Zip:	HILLSBOROUGH, CA 94010-6735
Owner/Operator Telephone:	415-481-5261
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2020-03-19 00:00:00.0
Handler Name:	KEVIN MEINERS
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	56299
NAICS Description:	ALL OTHER WASTE MANAGEMENT SERVICES

D12 **PRIVATE RESIDENCE** **LUST S110655230**
NE **PRIVATE RESIDENCE** **N/A**
1/4-1/2 **HILLSBOROUGH, CA 94010**
0.262 mi.
1384 ft. **Site 1 of 3 in cluster D**

Relative:
Lower

Actual:
648 ft.

LUST:

Name:	PRIVATE RESIDENCE
Address:	PRIVATE RESIDENCE
City,State,Zip:	HILLSBOROUGH, CA 94010-6328
Lead Agency:	SAN MATEO COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000003500
Global Id:	T10000003500
Latitude:	37.576927559
Longitude:	-122.36503333
Status:	Completed - Case Closed
Status Date:	01/23/2012
Case Worker:	Not reported
RB Case Number:	Not reported
Local Agency:	Not reported
File Location:	All Files are on GeoTracker or in the Local Agency Database
Local Case Number:	878024
Potential Media Affect:	Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern:	Diesel
Site History:	Not reported

LUST:

Global Id:	T10000003500

PRIVATE RESIDENCE (Continued) **S110655230**

Contact Type: Regional Board Caseworker
Contact Name: Regional Water Board
Organization Name: SAN FRANCISCO BAY RWQCB (REGION 2)
Address: 1515 CLAY ST SUITE 1400
City: OAKLAND
Email: Not reported
Phone Number: Not reported

LUST:
Global Id: T10000003500
Action Type: ENFORCEMENT
Date: 01/24/2012
Action: Notice of Responsibility - #20120124

Global Id: T10000003500
Action Type: ENFORCEMENT
Date: 01/25/2012
Action: Notice of Responsibility - #20120125

Global Id: T10000003500
Action Type: Other
Date: 12/01/2011
Action: Leak Discovery

Global Id: T10000003500
Action Type: ENFORCEMENT
Date: 08/10/2012
Action: Closure/No Further Action Letter - #20120810

Global Id: T10000003500
Action Type: RESPONSE
Date: 12/21/2011
Action: Tank Removal Workplan

Global Id: T10000003500
Action Type: Other
Date: 01/19/2012
Action: Leak Reported

LUST:
Global Id: T10000003500
Status: Completed - Case Closed
Status Date: 01/23/2012

Global Id: T10000003500
Status: Open - Case Begin Date
Status Date: 01/23/2012

Global Id: T10000003500
Status: Open - Site Assessment
Status Date: 01/23/2012

Name: PRIVATE RESIDENCE
Address: PRIVATE RESIDENCE
City,State,Zip: HILLSBOROUGH, CA 94010

PRIVATE RESIDENCE (Continued) **S110655230**

Lead Agency:	SAN MATEO COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0608100744
Global Id:	T0608100744
Latitude:	37.5553529
Longitude:	-122.371844
Status:	Completed - Case Closed
Status Date:	01/01/1996
Case Worker:	Not reported
RB Case Number:	41-0788
Local Agency:	Not reported
File Location:	Local Agency
Local Case Number:	878009
Potential Media Affect:	Soil
Potential Contaminants of Concern:	Not reported
Site History:	Not reported

LUST:

Global Id:	T0608100744
Contact Type:	Regional Board Caseworker
Contact Name:	Regional Water Board
Organization Name:	SAN FRANCISCO BAY RWQCB (REGION 2)
Address:	1515 CLAY ST SUITE 1400
City:	OAKLAND
Email:	Not reported
Phone Number:	Not reported

LUST:

Global Id:	T0608100744
Action Type:	ENFORCEMENT
Date:	01/01/1996
Action:	Notice of Responsibility - #1

LUST:

Global Id:	T0608100744
Status:	Completed - Case Closed
Status Date:	01/01/1996

Global Id:	T0608100744
Status:	Open - Case Begin Date
Status Date:	01/01/1996

D13 **EVI RESIDENCE** **HIST CORTESE** **S103472747**
NE **565 REMILLARD** **N/A**
1/4-1/2 **HILSBOUROUGH, CA 94010**
0.269 mi.
1422 ft. **Site 2 of 3 in cluster D**

Relative:
Lower

Actual:
625 ft.

HIST CORTESE:

edr_fname:	EVI RESIDENCE
edr_fadd1:	565 REMILLARD
City,State,Zip:	HILSBOUROUGH, CA 94010
Region:	CORTESE
Facility County Code:	41
Reg By:	LTNKA
Reg Id:	41-0788

D14 **EVI RESIDENCE** **LUST** **S104493754**
NE **565 REMILLARD** **N/A**
1/4-1/2 **HILLSBOROUGH, CA**
0.269 mi.
1422 ft. **Site 3 of 3 in cluster D**

Relative:
Lower

Actual:
625 ft.

SAN MATEO CO. LUST:

Name:	EVI RESIDENCE
Address:	565 REMILLARD
City,State,Zip:	HILLSBOROUGH, CA
Region:	SAN MATEO
Facility ID:	878009
Facility Status:	9- Case Closed
Global ID:	T0608100744
APN Number:	030051010
Case Type:	HILLSBOROUGH, CA
EDR Link ID:	HILLSBOROUGH, CA

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 87

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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
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: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
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: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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

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

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 06/22/2020
Date Data Arrived at EDR: 06/23/2020
Date Made Active in Reports: 09/17/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/18/2020
Number of Days to Update: 88

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: 06/15/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80

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: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
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

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

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

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: 09/10/2020
Next Scheduled EDR Contact: 12/14/2020
Data Release Frequency: Quarterly

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: 06/22/2020
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 80

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/16/2020
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: 09/15/2020
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: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

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

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

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

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

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: 09/18/2020
Next Scheduled EDR Contact: 12/28/2020
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: 07/06/2020
Date Data Arrived at EDR: 07/07/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 72

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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 12/28/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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 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

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: 09/11/2020
Next Scheduled EDR Contact: 12/21/2020
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: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
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: 06/30/2020
Date Data Arrived at EDR: 07/01/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 78

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: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
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

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: 09/15/2020
Next Scheduled EDR Contact: 12/28/2020
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: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
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: 09/10/2020
Next Scheduled EDR Contact: 12/28/2020
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: 09/11/2020
Next Scheduled EDR Contact: 12/21/2020
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: 08/25/2020
Date Data Arrived at EDR: 08/26/2020
Date Made Active in Reports: 09/16/2020
Number of Days to Update: 21

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: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
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: 07/01/2020
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/16/2020
Next Scheduled EDR Contact: 01/04/2021
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: 09/08/2020
Next Scheduled EDR Contact: 12/21/2020
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: 06/23/2020
Date Data Arrived at EDR: 06/29/2020
Date Made Active in Reports: 09/15/2020
Number of Days to Update: 78

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
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

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

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

PHASE I ESA
549 & 553 DARRELL ROAD
BURLINGAME, CA 94010

TARGET PROPERTY COORDINATES

Latitude (North):	37.552184 - 37° 33' 7.86''
Longitude (West):	122.375729 - 122° 22' 32.62''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	555142.6
UTM Y (Meters):	4156109.2
Elevation:	742 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5641104 MONTARA MOUNTAIN, CA
Version Date:	2012
East Map:	5640626 SAN MATEO, 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).

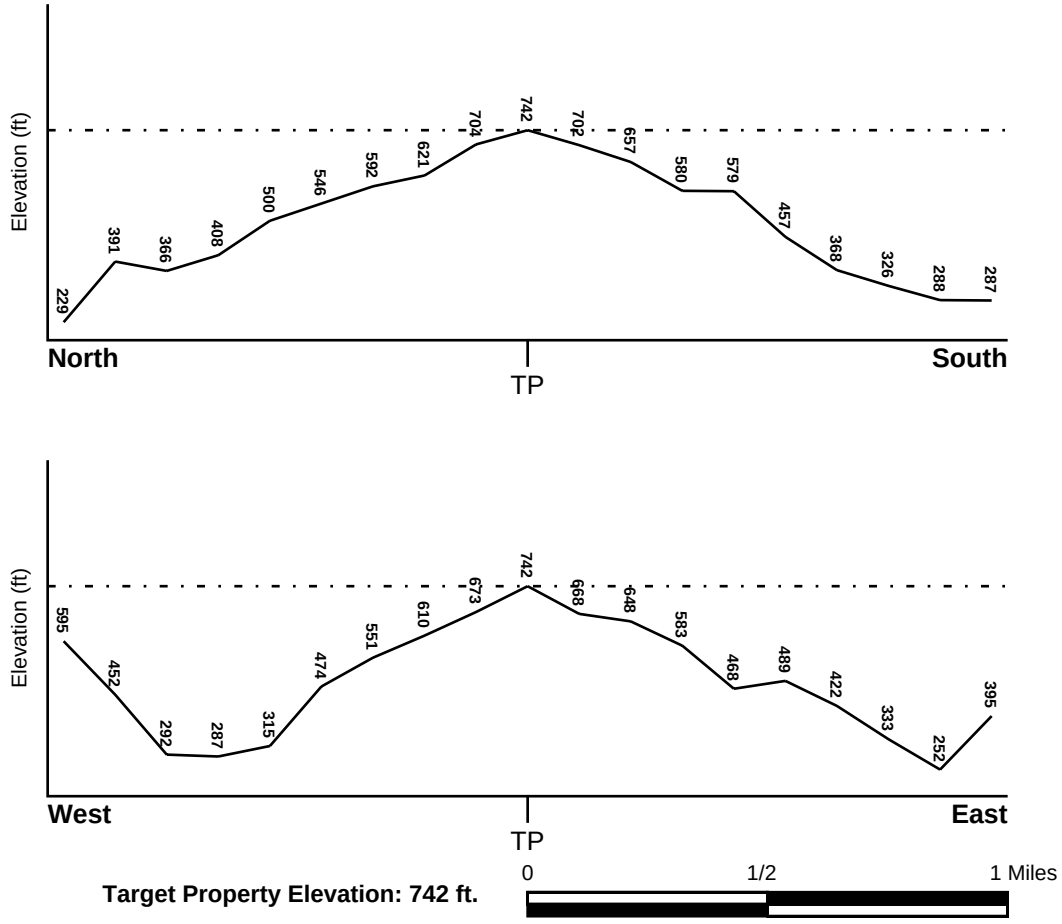
TOPOGRAPHIC INFORMATION

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 NNW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 742 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
0603110140B	FEMA Q3 Flood data

Additional Panels in search area:	FEMA Source Type
06081C0134E	FEMA FIRM Flood data
06081C0153E	FEMA FIRM Flood data
0603110109B	FEMA Q3 Flood data
0603200000B	FEMA Q3 Flood data
0603110120B	FEMA Q3 Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
SAN MATEO	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

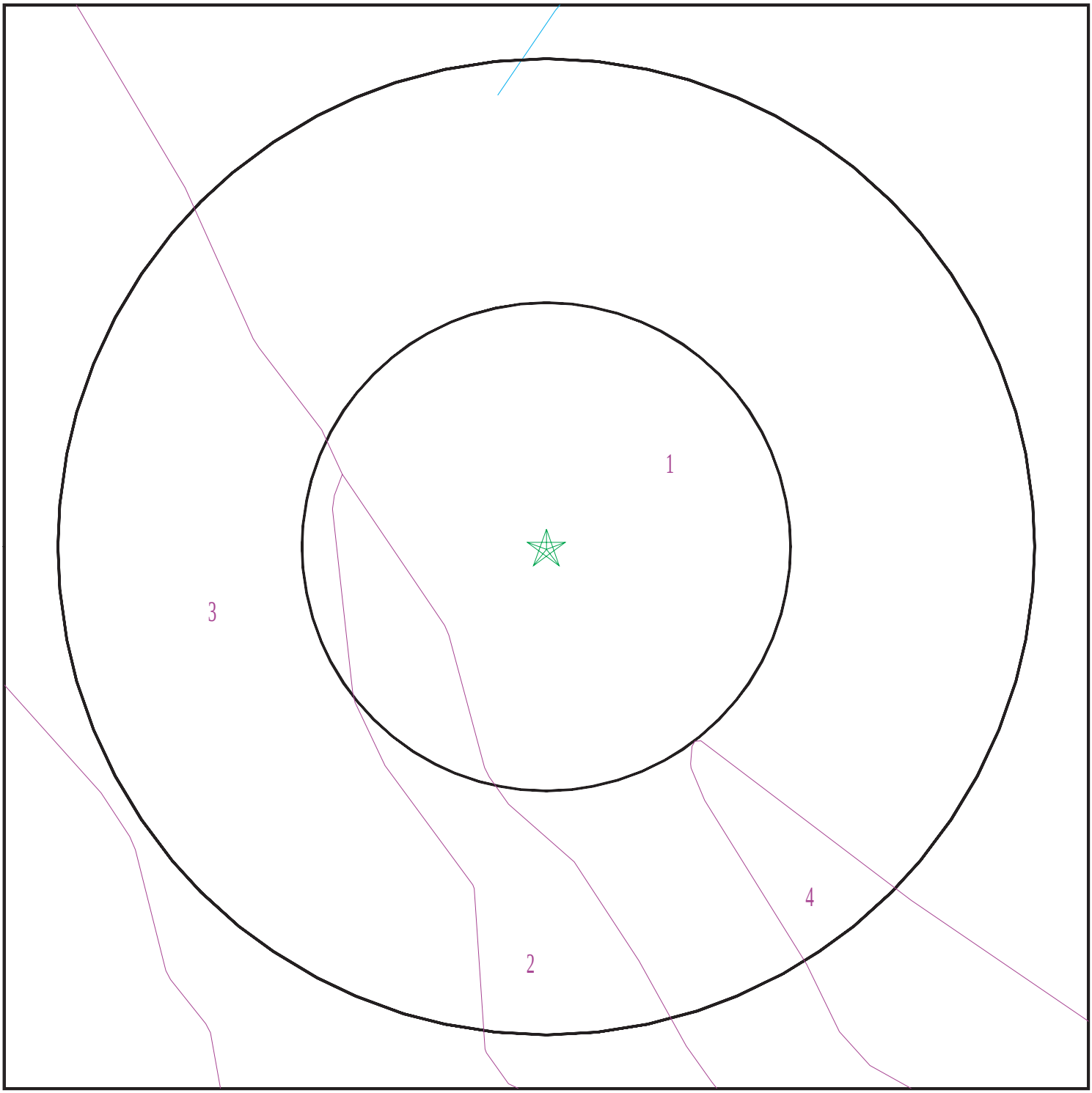
Era:	Mesozoic
System:	Cretaceous
Series:	Upper Mesozoic
Code:	uMze*(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Eugeosynclinal Deposits

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 - 6199204.2s



Target Property
SSURGO Soil
Water

SITE NAME:	Phase I ESA	CLIENT:	Cornerstone Earth Group
ADDRESS:	549 & 553 Darrell Road Burlingame CA 94010	CONTACT:	Stason Foster
LAT/LONG:	37.552184 / 122.375729	INQUIRY #:	6199204.2s
		DATE:	September 22, 2020 9:01 am

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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: Orthents

Soil Surface Texture:

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: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

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	59 inches		Not reported	Not reported	Max: Min:	Max: Min:

Soil Map ID: 2

Soil Component Name: Obispo

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: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 30 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	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: Min:	Max: Min:
2	11 inches	16 inches	unweathered 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: Orthents

Soil Surface Texture: variable

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

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	59 inches	variable	Not reported	Not reported	Max: Min:	Max: Min:

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 4

Soil Component Name: Fagan

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: Moderate

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	5 inches	loam	Not reported	Not reported	Max: Min:	Max: Min:
2	5 inches	25 inches	clay loam	Not reported	Not reported	Max: Min:	Max: Min:
3	25 inches	42 inches	clay	Not reported	Not reported	Max: Min:	Max: Min:
4	42 inches	46 inches		Not reported	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.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

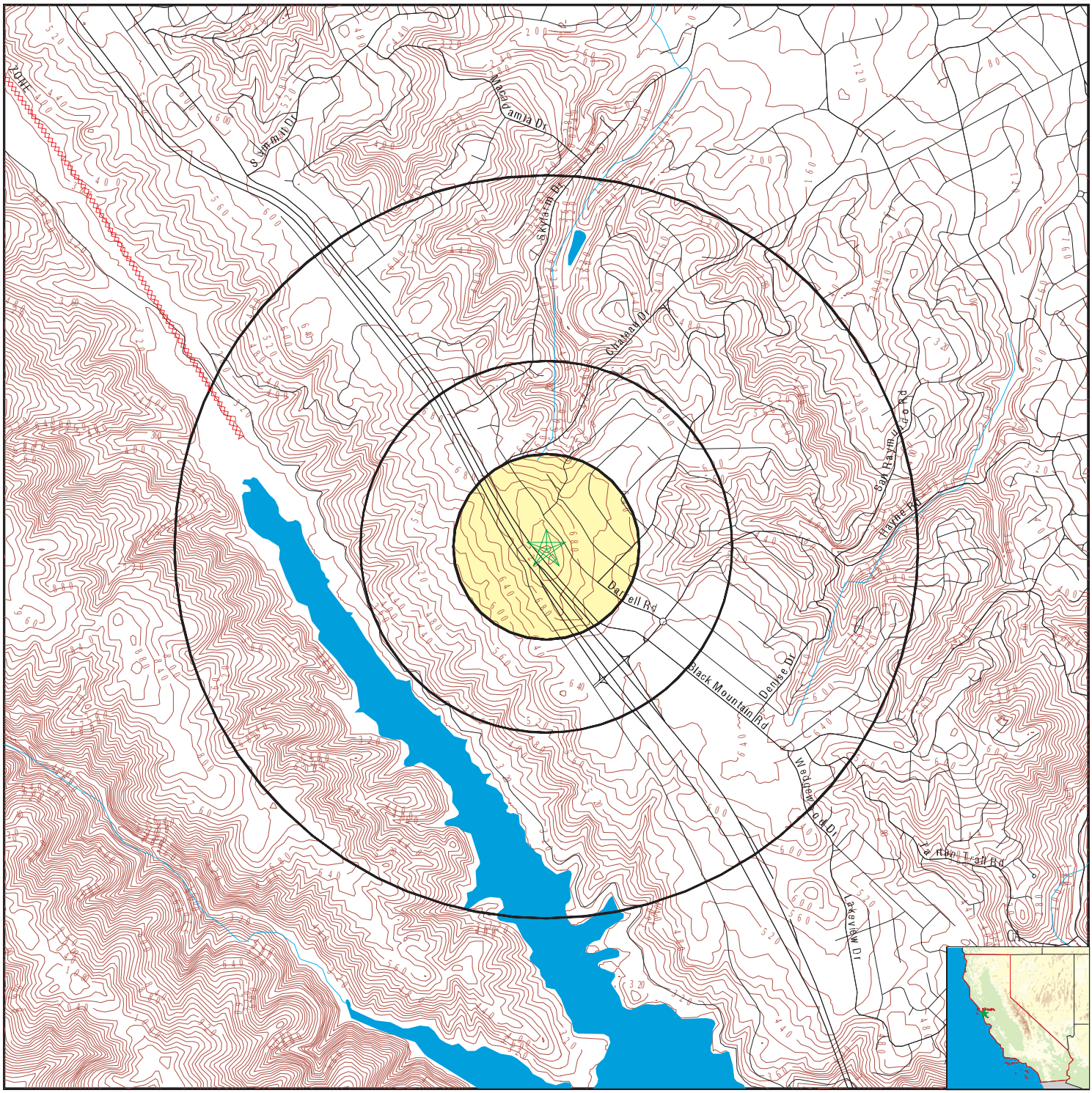
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

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 - 6199204.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Phase I ESA	CLIENT:	Cornerstone Earth Group
ADDRESS:	549 & 553 Darrell Road Burlingame CA 94010	CONTACT:	Stason Foster
LAT/LONG:	37.552184 / 122.375729	INQUIRY #:	6199204.2s
		DATE:	September 22, 2020 9:01 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
94010	88	2

Federal EPA Radon Zone for SAN MATEO County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 94010

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.350 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.200 pCi/L	100%	0%	0%
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

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CORNERSTONE EARTH GROUP

APPENDIX B – HISTORICAL AERIAL PHOTOGRAPHS AND MAPS

Phase I ESA

549 & 553 Darrell Road

Burlingame, CA 94010

Inquiry Number: 6199204.8

September 22, 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

09/22/20

Site Name:

Phase I ESA
549 & 553 Darrell Road
Burlingame, CA 94010
EDR Inquiry # 6199204.8

Client Name:

Cornerstone Earth Group
1259 Oakmead Parkway
Sunnyvale, CA 94085
Contact: Stason Foster

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
1998	1"=500'	Flight Date: September 06, 1998	USDA
1993	1"=500'	Acquisition Date: July 10, 1993	USGS/DOQQ
1982	1"=500'	Flight Date: August 16, 1982	USDA
1970	1"=500'	Flight Date: May 08, 1970	USGS
1968	1"=500'	Flight Date: June 14, 1968	USGS
1963	1"=500'	Flight Date: June 24, 1963	EDR Proprietary Aerial Viewpoint
1956	1"=500'	Flight Date: September 08, 1956	USGS
1946	1"=500'	Flight Date: July 29, 1946	USGS
1943	1"=500'	Flight Date: October 11, 1943	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.

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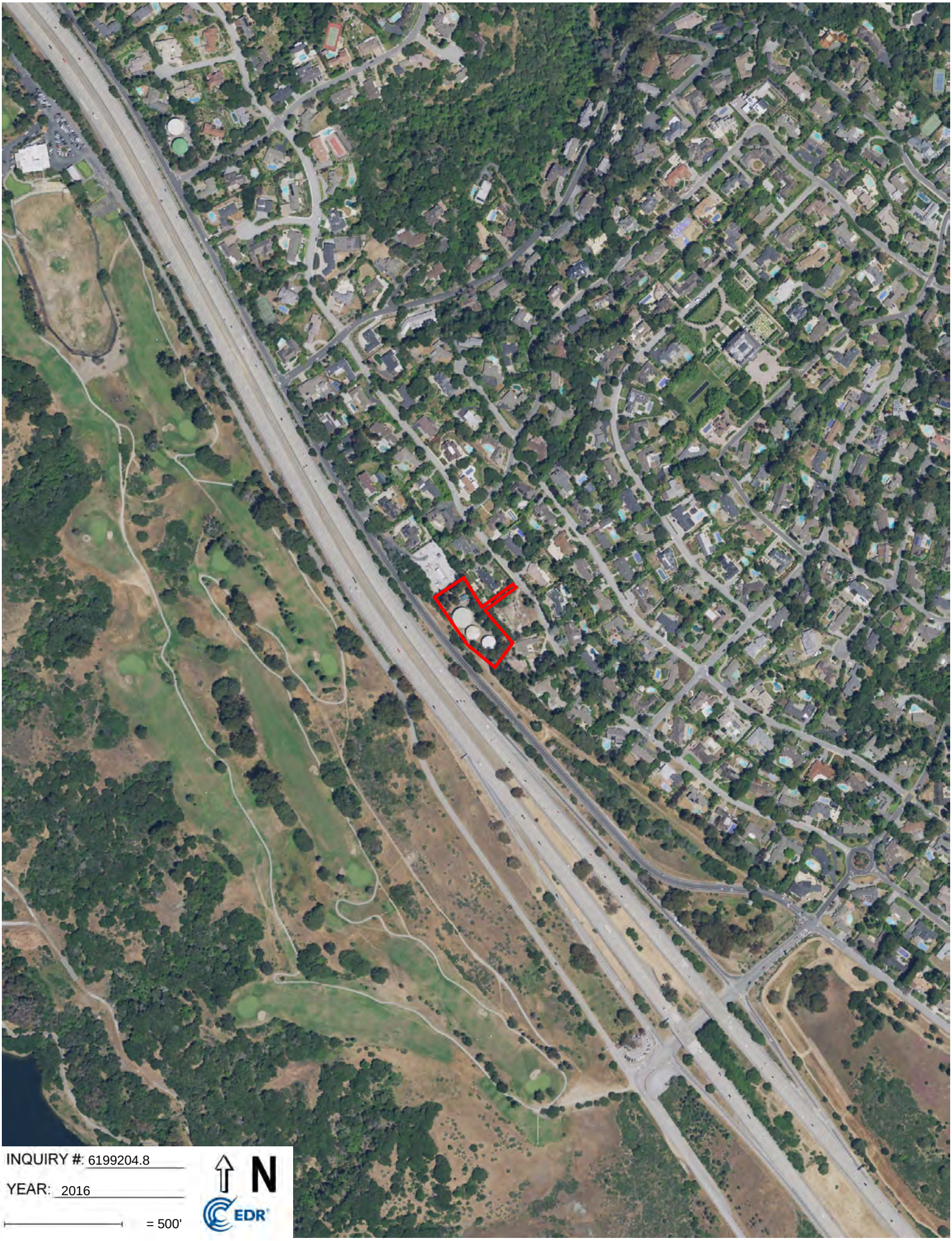
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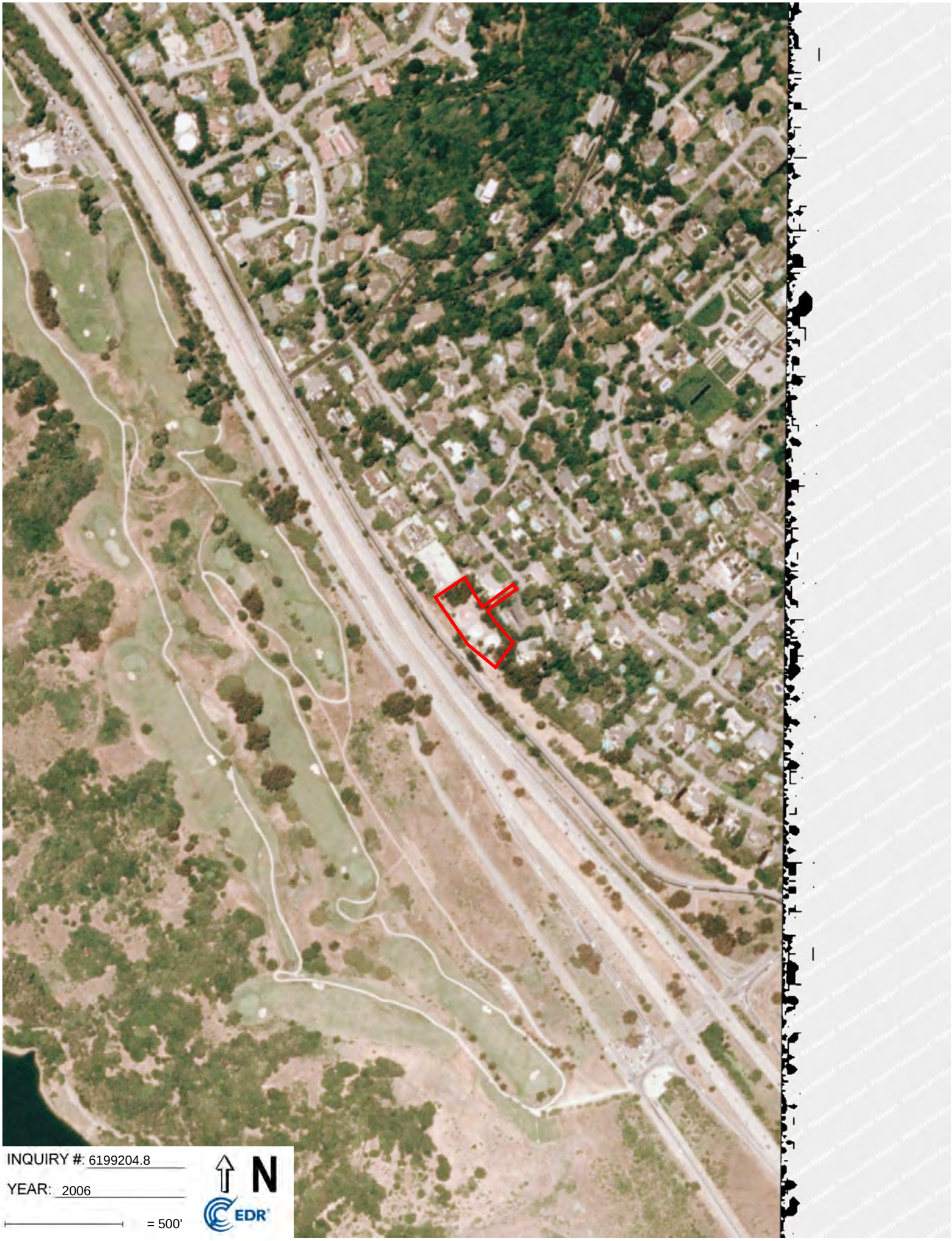
YEAR: 2016
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 2012
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 6199204.8
YEAR: 2006
= 500'
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EDR

INQUIRY #: 6199204.8
YEAR: 1998
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 1993
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 1982
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 1970
= 500'
N
EDR
Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 6199204.8
YEAR: 1968
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 1963
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 1956
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 1946
= 500'
N
EDR

INQUIRY #: 6199204.8
YEAR: 1943
= 500'
N
EDR

Phase I ESA

549 & 553 Darrell Road

Burlingame, CA 94010

Inquiry Number: 6199204.3

September 21, 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

09/21/20

Site Name:

Phase I ESA
549 & 553 Darrell Road
Burlingame, CA 94010
EDR Inquiry # 6199204.3

Client Name:

Cornerstone Earth Group
1259 Oakmead Parkway
Sunnyvale, CA 94085
Contact: Stason Foster

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Cornerstone Earth Group 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 # 9556-4C07-9F01

PO # 996-2-2

Project Darrell Rd Water Tanks

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 #: 9556-4C07-9F01

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

Cornerstone Earth Group (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.

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Phase I ESA

549 & 553 Darrell Road

Burlingame, CA 94010

Inquiry Number: 6199204.4

September 21, 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

09/21/20

Site Name:

Phase I ESA
549 & 553 Darrell Road
Burlingame, CA 94010
EDR Inquiry # 6199204.4

Client Name:

Cornerstone Earth Group
1259 Oakmead Parkway
Sunnyvale, CA 94085
Contact: Stason Foster

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Cornerstone Earth Group 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.# 996-2-2

Project: Darrell Rd Water Tanks

Coordinates:

Latitude:	37.552184 37° 33' 8" North
Longitude:	-122.375729 -122° 22' 33" West
UTM Zone:	Zone 10 North
UTM X Meters:	555141.22
UTM Y Meters:	4156313.89
Elevation:	739.89' above sea level

Maps Provided:

2012	1947
1997	1939
1993, 1996	1915
1980	1899
1973	1896
1968	
1956	
1949	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

Montara Mountain
2012
7.5-minute, 24000

San Mateo
2012
7.5-minute, 24000

1997 Source Sheets

Montara Mountain
1997
7.5-minute, 24000
Aerial Photo Revised 1993

San Mateo
1997
7.5-minute, 24000
Aerial Photo Revised 1997

1993, 1996 Source Sheets

San Mateo
1993
7.5-minute, 24000
Aerial Photo Revised 1993

Montara Mountain
1996
7.5-minute, 24000
Aerial Photo Revised 1993

1980 Source Sheets

San Mateo
1980
7.5-minute, 24000
Aerial Photo Revised 1956

Montara Mountain
1980
7.5-minute, 24000
Aerial Photo Revised 1979

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1973 Source Sheets

San Mateo
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1968 Source Sheets

San Mateo
1968
7.5-minute, 24000
Aerial Photo Revised 1968

Montara Mountain
1968
7.5-minute, 24000
Aerial Photo Revised 1968

1956 Source Sheets

San Mateo
1956
7.5-minute, 24000
Aerial Photo Revised 1946

Montara Mountain
1956
7.5-minute, 24000
Aerial Photo Revised 1955

1949 Source Sheets

Montara Mountain
1949
7.5-minute, 24000
Aerial Photo Revised 1946

San Mateo
1949
7.5-minute, 24000
Aerial Photo Revised 1946

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1947 Source Sheets

San Mateo
1947
7.5-minute, 24000
Aerial Photo Revised 1946

1939 Source Sheets

San Mateo
1939
15-minute, 62500
Aerial Photo Revised 1939

1915 Source Sheets

San Mateo
1915
15-minute, 62500

1899 Source Sheets

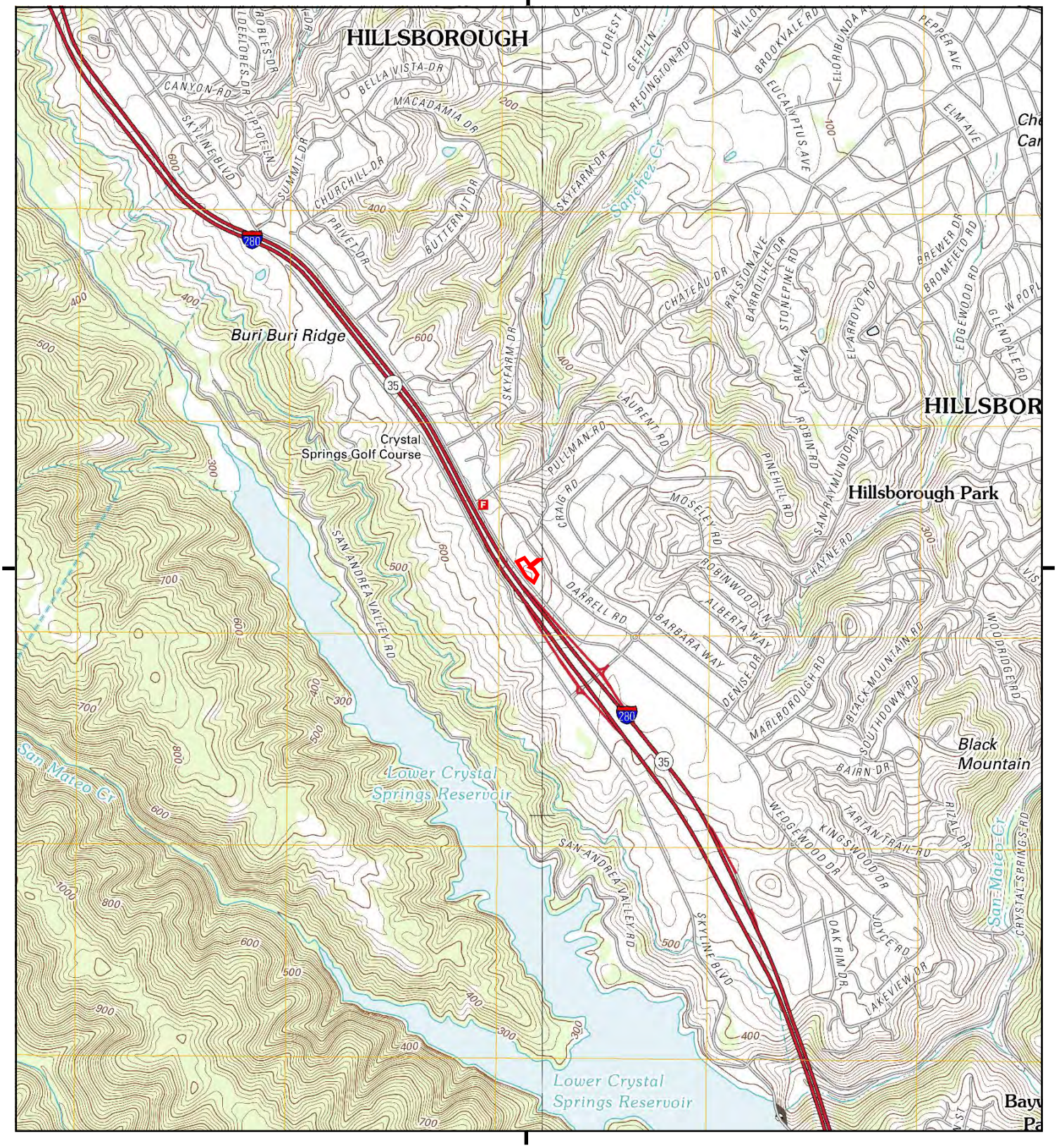
San Mateo
1899
15-minute, 62500

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1896 Source Sheets

San Mateo
1896
15-minute, 62500



This report includes information from the following map sheet(s).

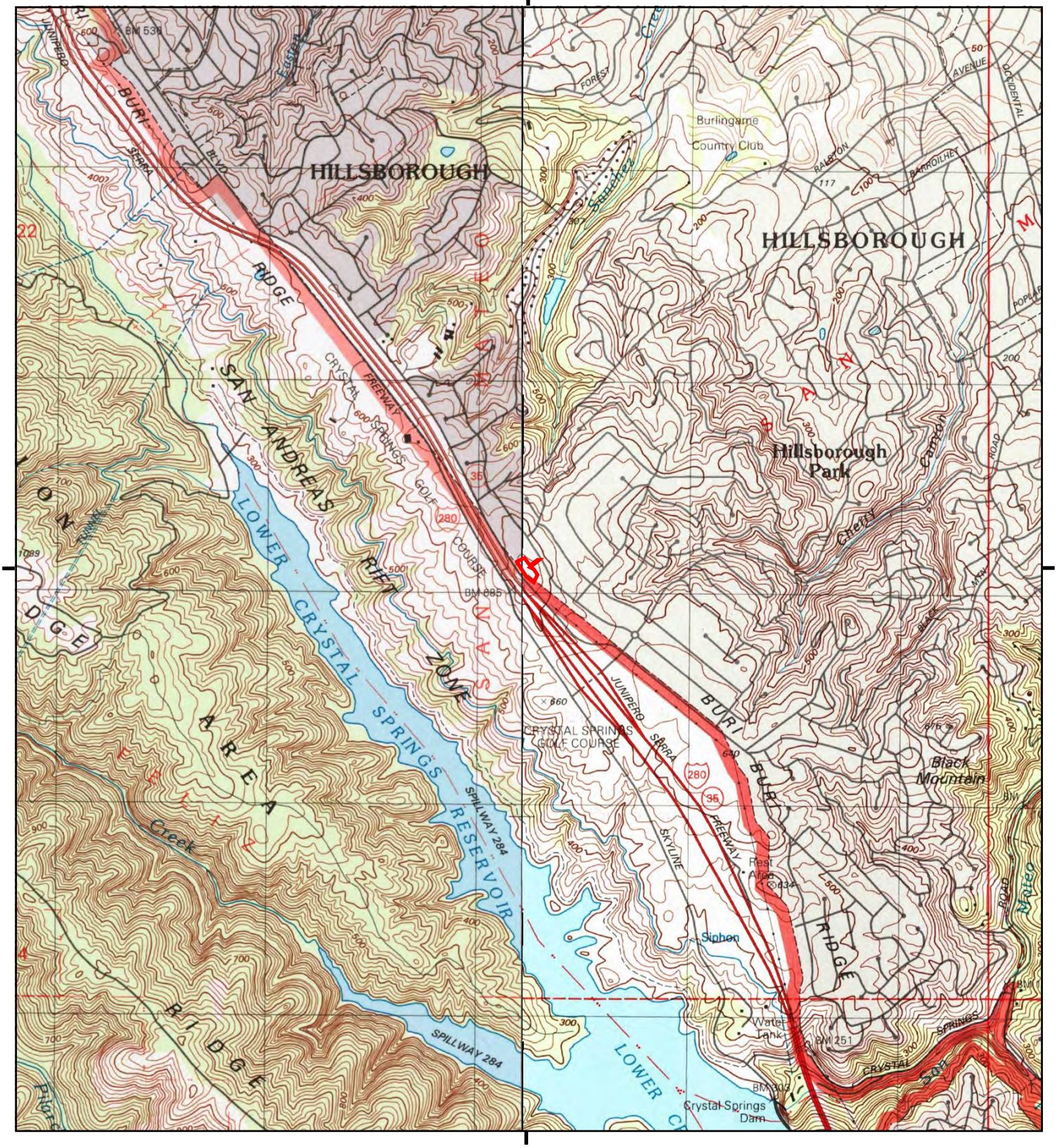
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Montara Mountain, 2012, 7.5-minute
E, San Mateo, 2012, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N



This report includes information from the following map sheet(s).

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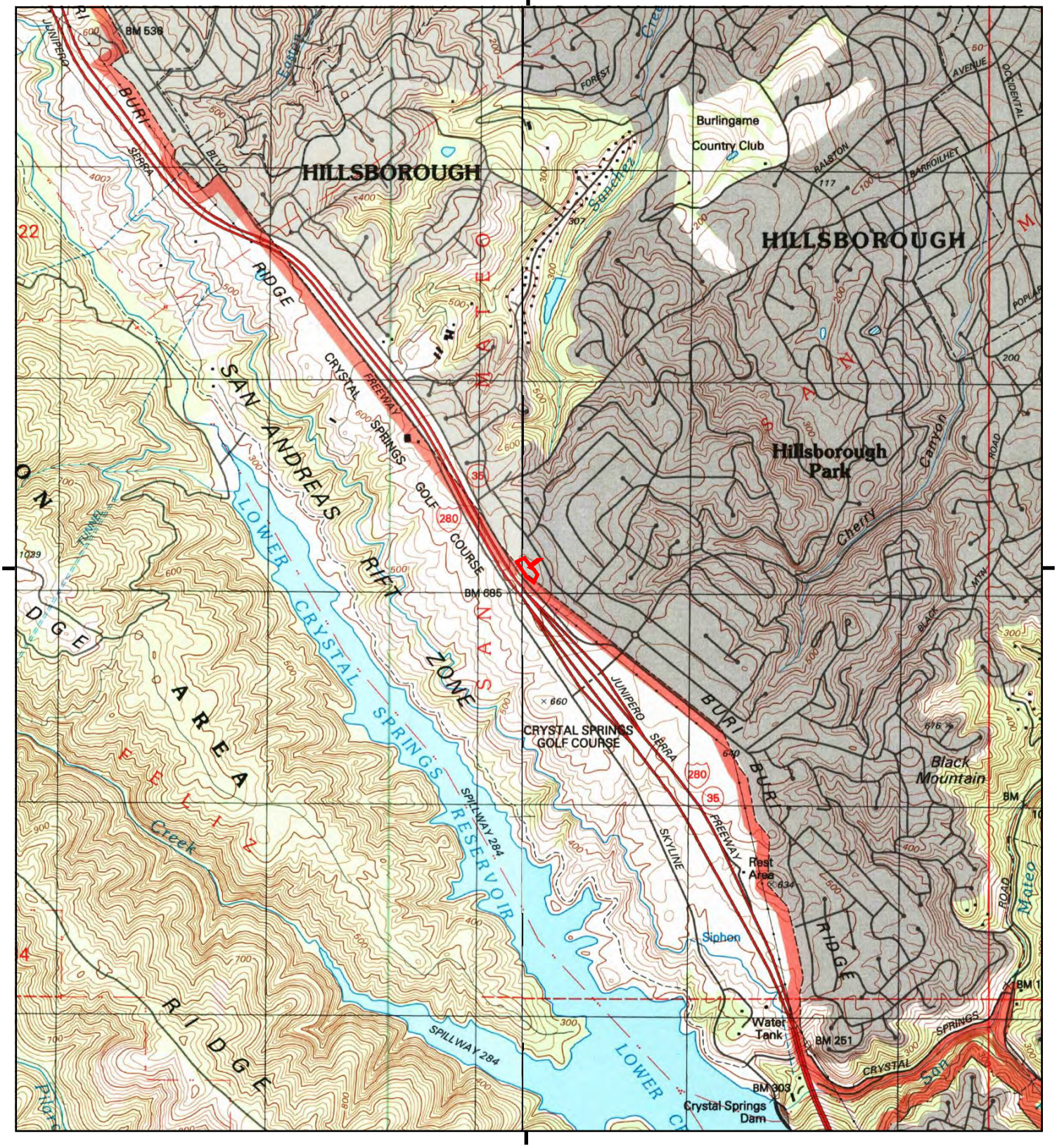
NW N NE
W E
SW S SE

TP, Montara Mountain, 1997, 7.5-minute
E, San Mateo, 1997, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N



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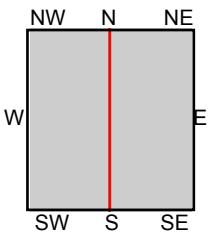
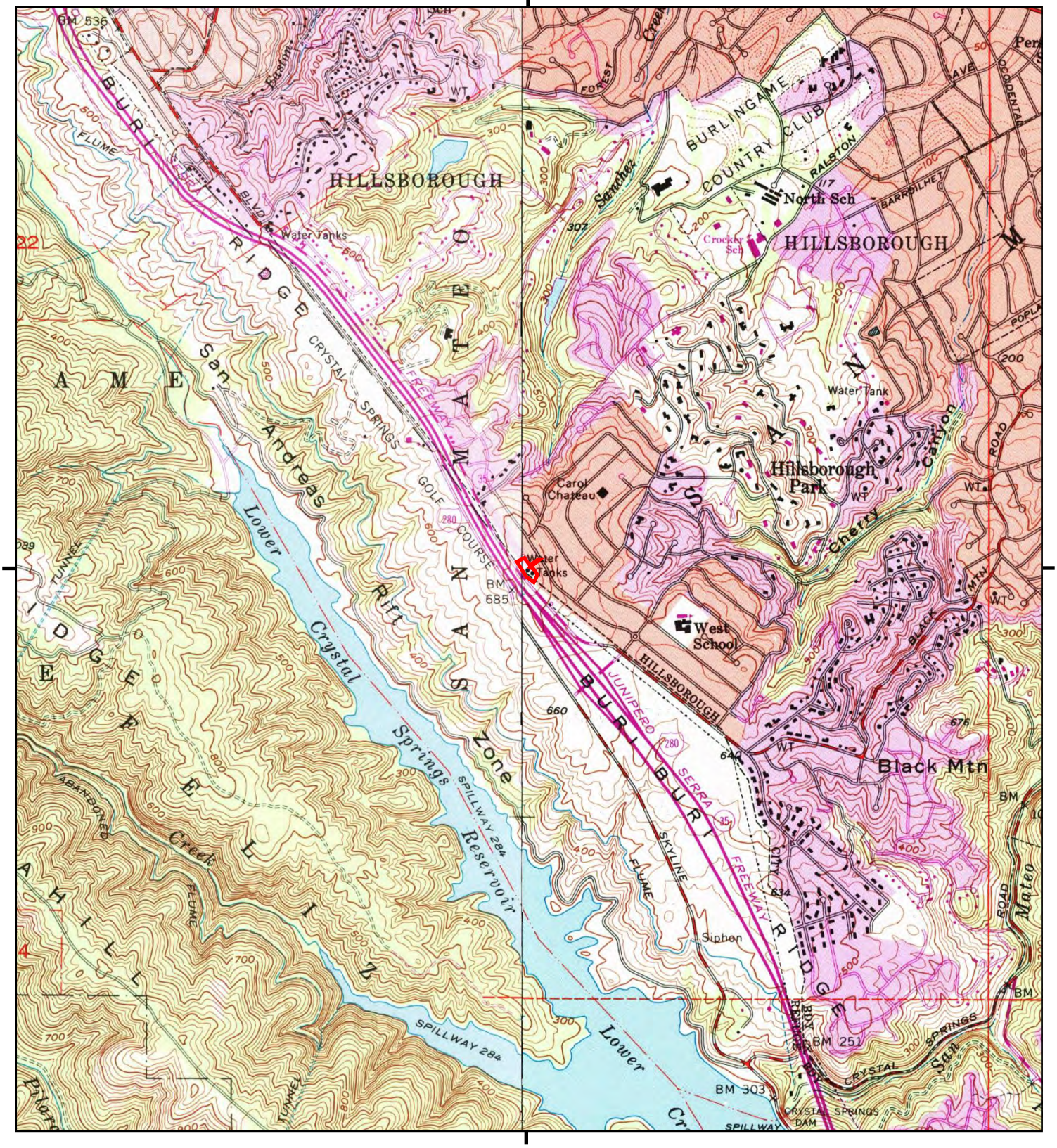
0 Miles 0.25 0.5 1 1.5



TP, Montara Mountain, 1996, 7.5-minute
E, San Mateo, 1993, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N



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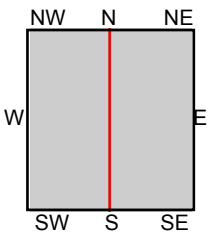
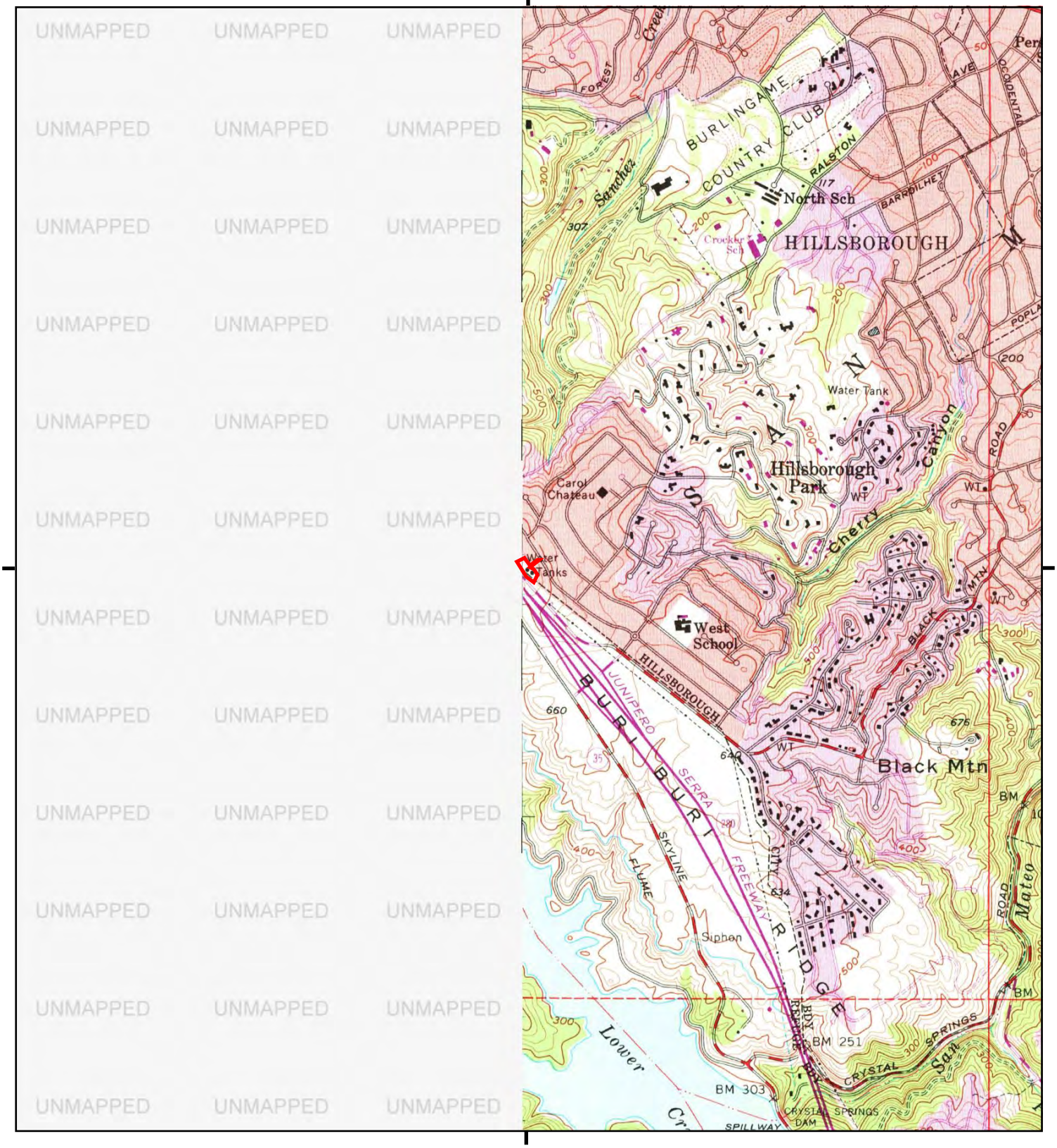
0 Miles 0.25 0.5 1 1.5



TP, Montara Mountain, 1980, 7.5-minute
E, San Mateo, 1980, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N



This report includes information from the following map sheet(s).

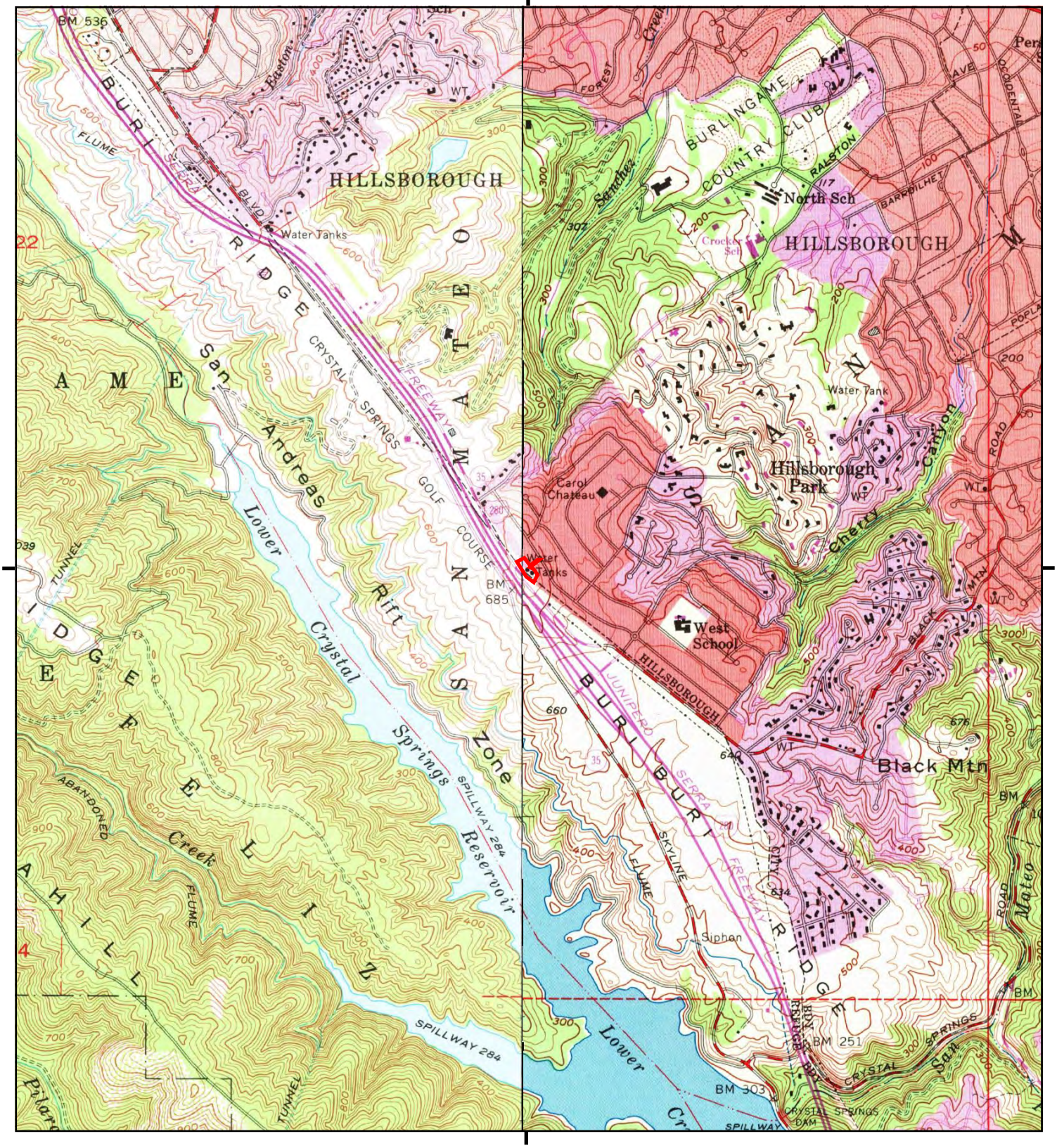
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

E, San Mateo, 1973, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N



This report includes information from the following map sheet(s).

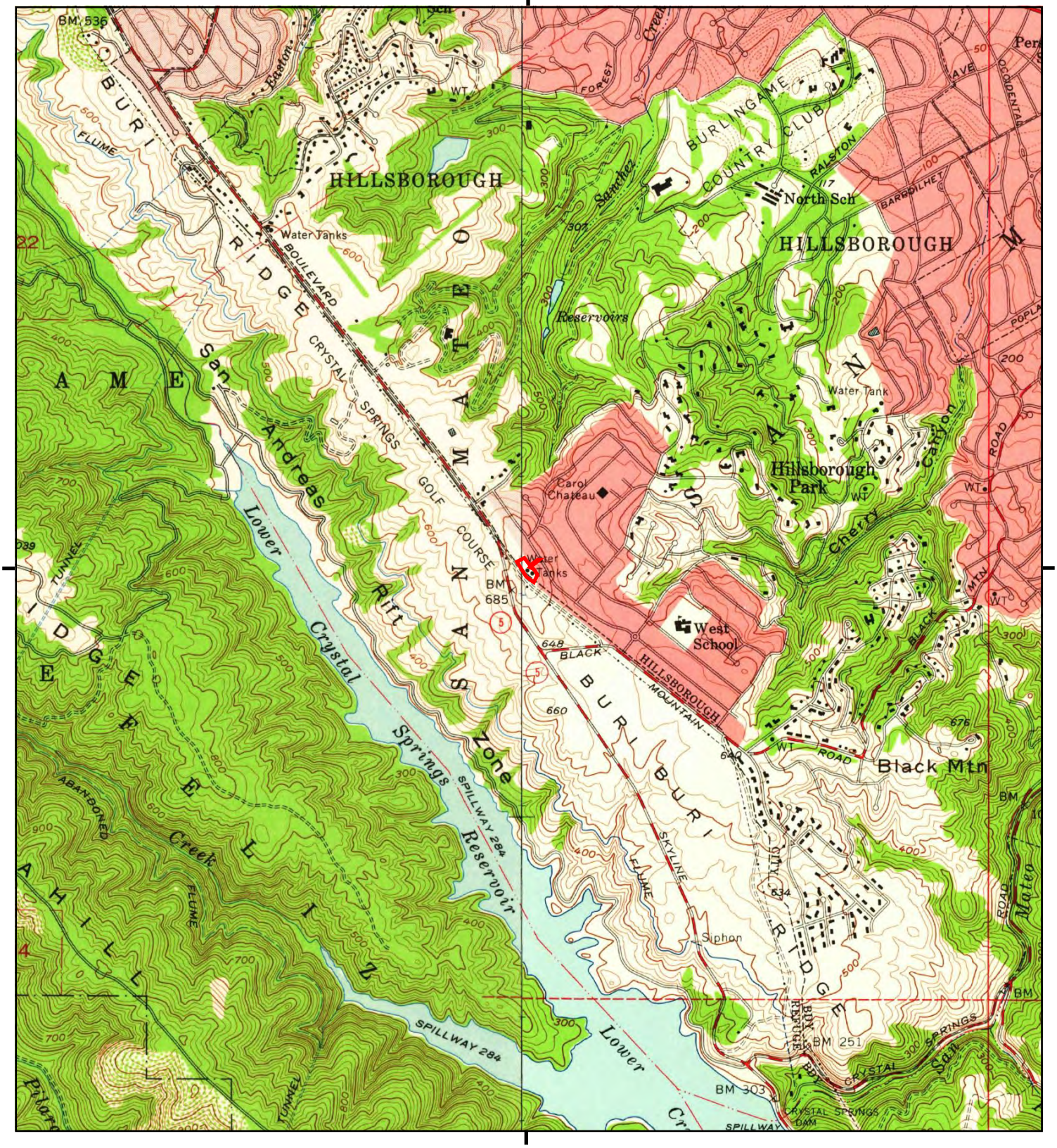
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Montara Mountain, 1968, 7.5-minute
E, San Mateo, 1968, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N



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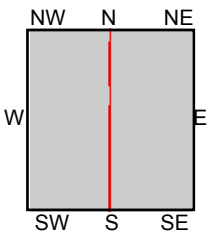
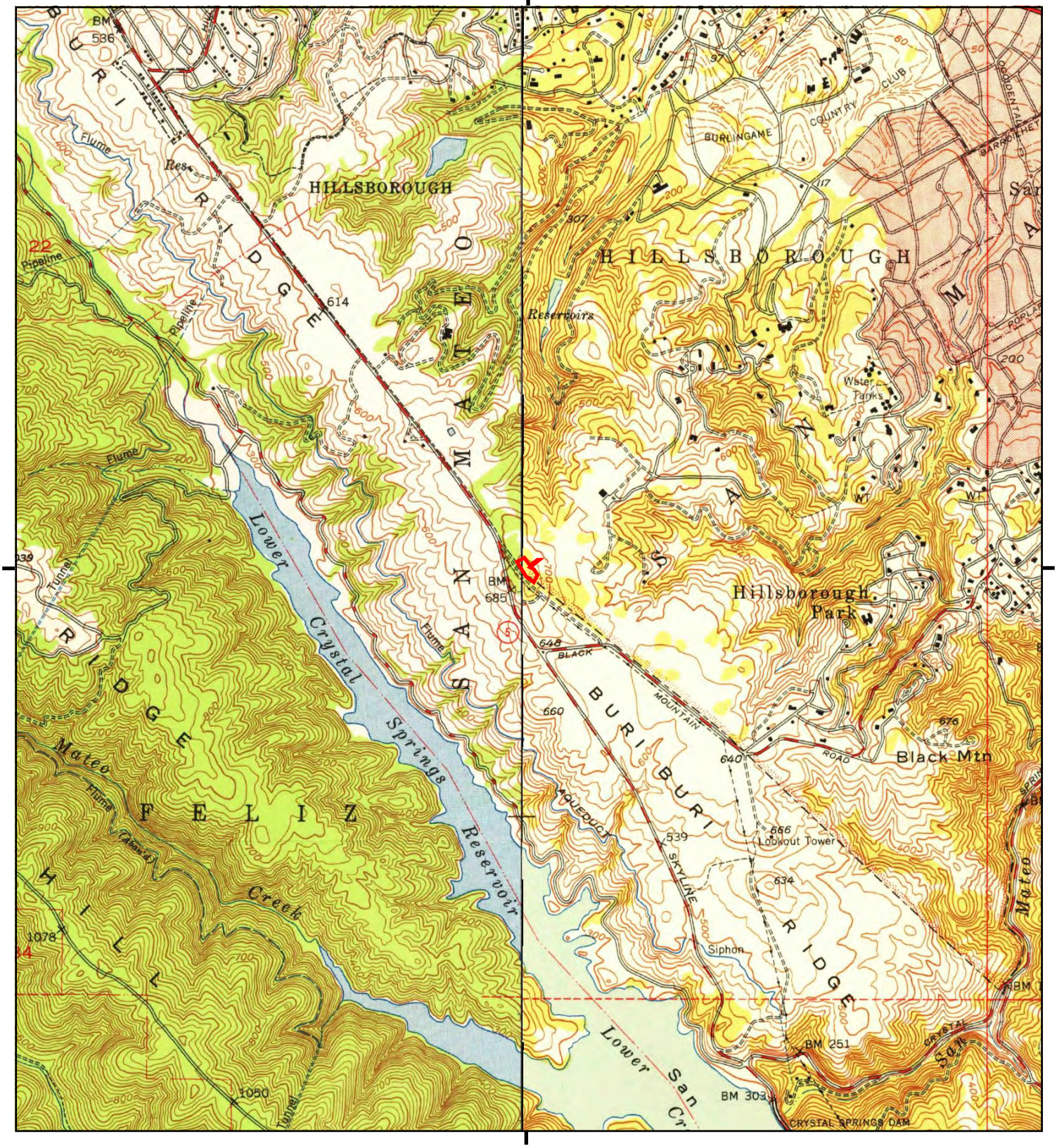


TP, Montara Mountain, 1956, 7.5-minute
E, San Mateo, 1956, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N



This report includes information from the following map sheet(s).

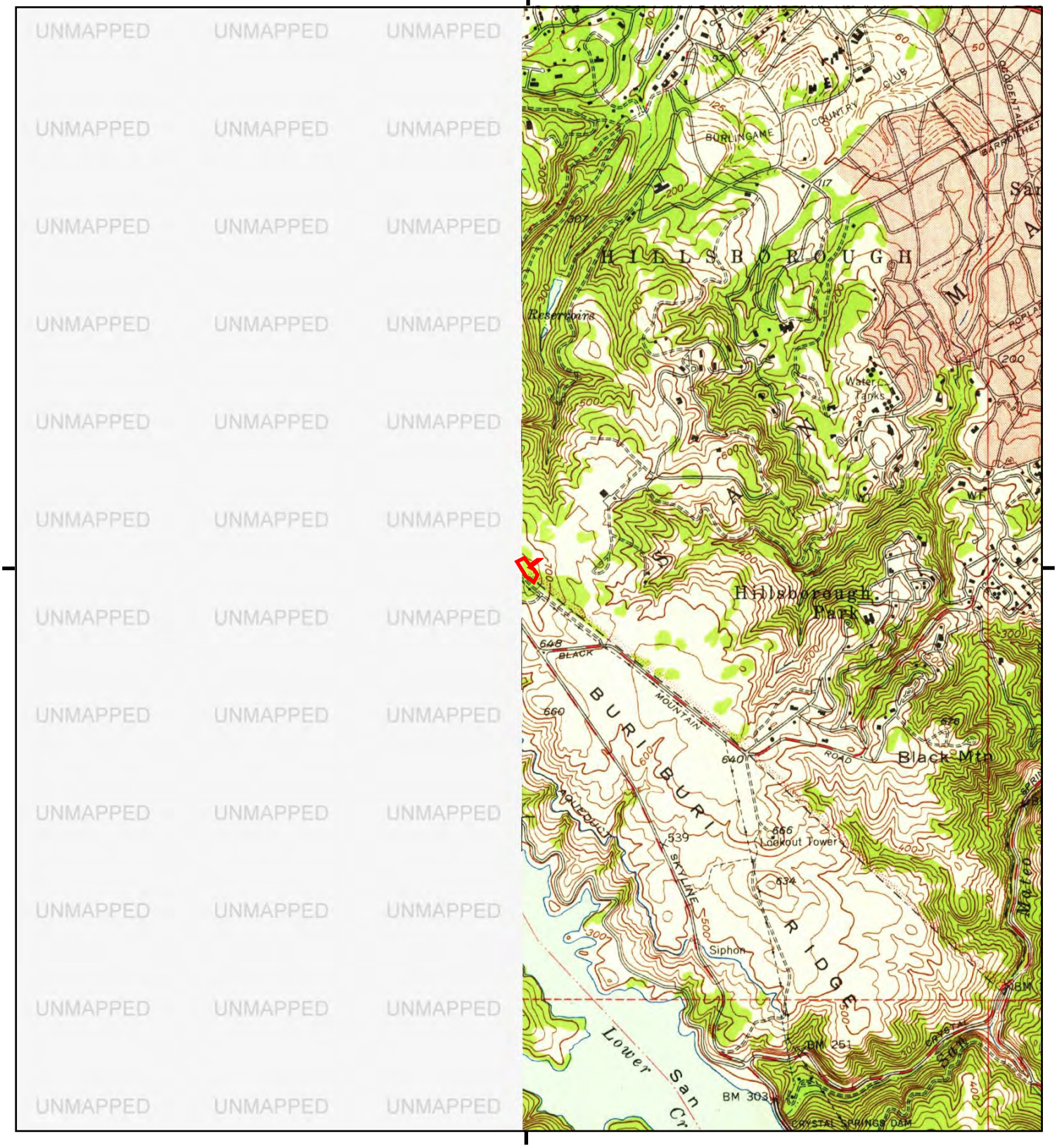
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Montara Mountain, 1949, 7.5-minute
E, San Mateo, 1949, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

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

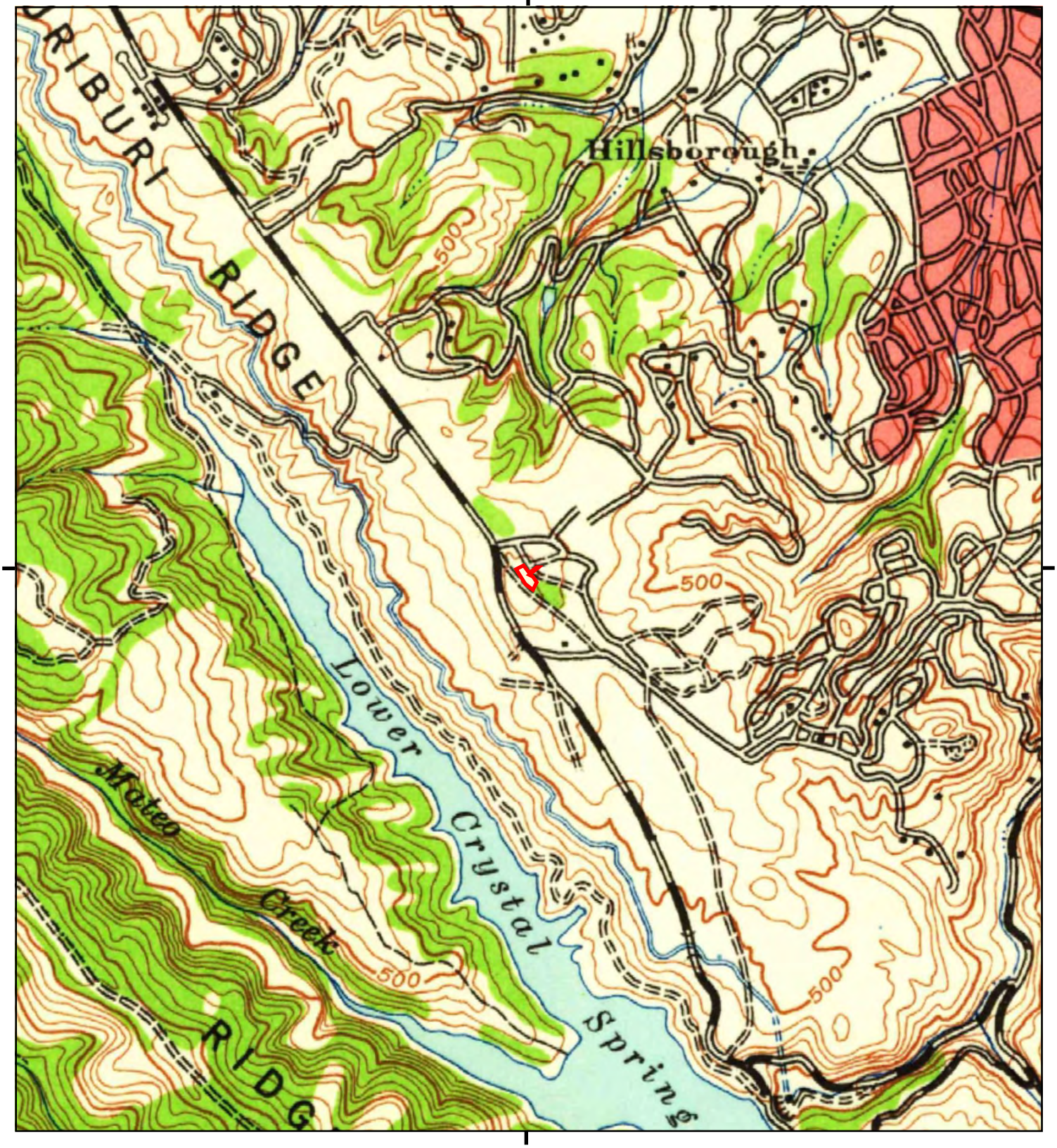
E, San Mateo, 1947, 7.5-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N

Historical Topo Map

1939



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, San Mateo, 1939, 15-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

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, San Mateo, 1915, 15-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

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, San Mateo, 1899, 15-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

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, San Mateo, 1896, 15-minute

SITE NAME: Phase I ESA
ADDRESS: 549 & 553 Darrell Road
Burlingame, CA 94010
CLIENT: Cornerstone Earth Group

N

CORNERSTONE EARTH GROUP

APPENDIX C – LOCAL STREET DIRECTORY SEARCH RESULTS

Phase I ESA
549 & 553 Darrell Road
Burlingame, CA 94010

Inquiry Number: 6199204.5
September 24, 2020

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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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.

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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.

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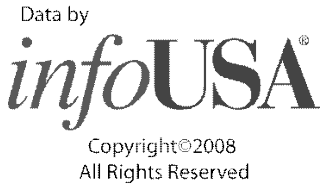


RESEARCH SUMMARY

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 AND COMPANY
1981	☑	☐	HAINES AND COMPANY
1976	☑	☐	POLK DIRECTORY CO
1973	☑	☐	POLK DIRECTORY CO
1967	☐	☐	POLK DIRECTORY CO
1963	☐	☐	POLK DIRECTORY CO
1956	☐	☐	POLK DIRECTORY CO

EXECUTIVE SUMMARY

Year	***Target Street***	***Cross Street***	***Source***

FINDINGS

TARGET PROPERTY STREET

549 & 553 Darrell Road
Burlingame, CA 94010

Year	*CD Image*	*Source*	
DARRELL RD			
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 AND COMPANY	
1981	pg A9	HAINES AND COMPANY	
1976	pg A10	POLK DIRECTORY CO	
1976	pg A11	POLK DIRECTORY CO	
1973	pg A12	POLK DIRECTORY CO	
1973	pg A13	POLK DIRECTORY CO	
1967	-	POLK DIRECTORY CO	Street not listed in Source
1963	-	POLK DIRECTORY CO	Street not listed in Source
1956	-	POLK DIRECTORY CO	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DARRELL RD 2017

505	KUAN, ROLANDO
515	VERIDIANO, DON
520	SARVER, JENNIFER L
525	CAPLICE, SEAN M
530	QUETNICK, JULIUS
535	LAM, JEFF Q
540	YEO, CHRISTOPHER F
545	CAL STATE HVAC & APPLIANCE REPAIR
	CAL STATE HVAC INSTALLATION & REPA
550	LU, JUSTIN
555	DUBA, CHRIS
560	EGBERT, JAMES E
575	LAROSA, STACY
595	PARIANI, HARRY M
625	NAZARIAN, PAUL S
645	TAO, JIANG
650	OME, TIMOTHY S

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DARRELL RD 2014

485	TENENBLAT, LEO
495	ALBIN, MARIANA
505	KUAN, ROLANDO
510	SHAPIRO, BENJAMIN D
515	VERIDIANO, DON
520	ARAGON, RICHARD P
525	CAPLICE, SEAN M
530	QUETNICK, JULIUS
535	LAM, KINH H
540	YEO, CHRISTOPHER F
550	LU, JUSTIN
560	WHITE, ANDREW C
575	BADHWAR, NIPA
595	PARIANI, HARRY M
615	KLEIN, EUGENE A
625	SCHWARTZ, ALEXIS
630	DIMON, STEWART J
645	TAO, JIANG
650	OME, TIMOTHY S

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DARRELL RD 2010

485	CHIRICO, LOUISE T
495	TANG, JOHN
505	KUAN, ROLANDO
510	SHAPIRO, BENJAMIN
515	VERIDIANO, DON
520	ARAGON, RICHARD P
525	ZIPKIN, CHARLES R
535	LAM, KINH H
550	LU, JUSTIN
555	DUBA, JOHN C
560	WHITE, ANDREW C
575	CHAN, RICKY T
595	PARIANI, KATHLEEN M
615	YU, GREGORY J
630	DIMON, STEWART J
645	TAO, JIANG
650	OSHIMA, GAYLE T

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DARRELL RD 2005

485	CHIRICO, LOUISE T
495	HARJANI, JESSIE M
505	KUAN, ROLANDO
510	SHAPIRO, DOLPH D
515	TAMBOT, ROSEMARIE
520	HUGHES, KERRY A
535	DESUASIDO, RITCHE C
545	GUIDI, BETTY P
550	CHENG, CHARLES W
555	DUBA, JOHN C
560	TICKNER CAPITAL GROUP
	TICKNER, GEOFFREY L
575	ARORA, SUNIL K
595	PARIANI, KATHY M
615	HO, HENRY C
620	CARR, WILLIAM C
625	NAZARIAN, PAUL S
	VIKING INVESTMENTS
630	DIMON, STEWART
645	BRENNER, CHARLES J
650	OSHIMA, GAYLE T

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DARRELL RD 2000

485	OCCUPANT UNKNOWN,
495	KOCSIS, FRANK J
505	OCCUPANT UNKNOWN,
515	HOFFMAN, EVERETT K
520	HARNESS, JOHN T
525	ZIPSER, ESTHER
530	QUETNICK, JAY
535	WANG, JIMMY Y
540	OCCUPANT UNKNOWN,
545	OCCUPANT UNKNOWN,
550	CHENG, CHARLES
555	OCCUPANT UNKNOWN,
560	HEIMSOTH, KAREN
575	ERGUN, SABRI
595	PARIANI, H M
615	HO, HENRY
620	OCCUPANT UNKNOWN,
625	NAZARIAN, PAUL S
630	DIMON, STEWART
645	OCCUPANT UNKNOWN,
650	OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DARRELL RD 1995

485	OCCUPANT UNKNOWNN
495	KOCSIS, FRANK J
502	HARNESS, SANDRA
505	FARNOW, DALE F
510	SHAPIRO, DOLPH D
515	HOFFMAN, EVERETT K
520	FIELDING, IRA M
	HARNESS, JOHN T
525	ZIPKIN, JANET Z
530	QUETNICK, JAY
535	KOENIG, PAUL M
540	ADLER, ADELE
545	OCCUPANT UNKNOWNN
550	CHENG, CHARLES
555	PEBLEY, CAROL
575	ERGUN, SABRI
595	OCCUPANT UNKNOWNN
615	OCCUPANT UNKNOWNN
620	CARR, WILLIAM C
625	LOMMORI, PETER
630	DIMON, STEWART
645	HASSETT, AL
650	OME, TIMOTHY S

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

DARRELL RD 1992

485	CHIRICO, LOUISE T
505	FARNOW, DALE F
515	HOFFMAN, EVERETT K
520	BELSON, P
	FIELDING, IRA M
525	ZIPKIN, JANET Z
530	QUETNICK, JAY
540	ADLER, ADELE
545	GUIDI, HAROLD V
550	SWEITZER, STEVE
555	STEPHENS, ALBERT L
575	ERGUN, SABRI
625	LOMMORI, PETER
650	LEGETTE, C P

Target Street	Cross Street	Source
✓	-	HAINES AND COMPANY

DARRELL RD 1986

505	FARNOW DALE F	342-0345	
	FARNOW WILLA	342-0345	
510	XXXX	00	
515	HOFFMAN EVERETT K	343-3484	
520	PORTER WM ALBRIGHT	344-4311	+6
	WOLFSTONPORTER C A	344-4311	+6
525	ZIPKIN J	344-8077	1
530	QUETNICK JAY	348-3911	5
	QUETNICK NADINE	342-1673	
	QUETNICK SANDY	342-1673	
535	XXXX	00	
540	ADLER ADELE	344-6286	+6
545	XXXX	00	
550	XXXX	00	
555	STEPHENS A L JUDGE	343-7534	
560	HARBAND CHARLES	344-0443	
575	ERGUN SABRI	348-0865	7
650	LEGETTE CLIFFORD P	347-6115	
670	XXXX	00	
710	POLLAT J L	343-8784	
715	RUSSO RALPH S	342-5286	7
735	XXXX	00	
755	XXXX	00	
760	PARK MIN I	342-1958	1
770	SOTIR GEORGE A	344-6655	8
775	ZARINNAL HOMA	347-3410	1
780	HUANG VICKY	343-6319	+6
805	XXXX	00	
830	XXXX	00	
840	RUDNICK LAURENCE M	347-4208	5
850	LEE INGSHENG	348-2859	9

★ 0 BUS 89 RES 5 NEW

Target Street	Cross Street	Source
✓	-	HAINES AND COMPANY

DARRELL RD 1981

400	SHIELDS JOHN V JR	343-0502	3
405	NAKAGAWA S	342-6981	0
410	SCHULZE WM H	342-1796	
415	GARCIA ANTONIO	348-1255	0
420	GOODYEAR FRED D	343-4327	
425	BISHOP BOB	347-1365	6
440	FALK H L	342-1213	
	FALK H L CHLD	343-9938	7
445	HOLMAN J LEONARD	343-3080	+1
460	XXXX	00	
465	XXXX	00	
480	BAUIX ALFRED J	344-9834	
	SEGALAS A B	344-9834	
485	CHIRICO MARIUS	344-9590	
495	XXXX	00	
505	FARNOW DALE F	342-0345	5
510	XXXX	00	
515	HOFFMAN EVERETT K	343-3484	3
520	MCMURDIE C N	342-6875	3
525	ZIPKIN J	344-8077	+1
530	QUETNICK JAY	344-4630	
	QUETNICK NADINE	342-1673	
	QUETNICK SANDY	342-1673	
535	KOENIG K	344-0445	0
540	XXXX	00	
545	GUIDI HAROLD MRS	348-8432	5
550	XXXX	00	
555	STEPHENS A L JUDGE	343-7534	
560	HARBAND CHARLES	344-0443	
575	ERGUN SABRI	348-0865	7
595	MORAIS DENNIS	342-1803	+1
615	PIERCE L S	344-3833	
620	XXXX	00	
625	XXXX	00	
645	XXXX	00	
650	LEGETTE CLIFFORD P	347-6115	4
670	XXXX	00	
710	POLLAT FRED MRS	343-8784	6
715	RUSSO RALPH S	342-5286	7
735	STROBEL MONTY	342-2424	6
	STROBEL SUE	342-2424	6
755	DEMARTINI L J	344-8675	8
760	PARK MIN I	342-1958	+1
770	SOTIR GEORGE A	344-6655	8
775	ZARINNAL HOMA	347-3410	+1
780	HUANG VERNON	348-7312	+1
805	LAI DENNIS	344-9050	8
	LAI MARY	344-9155	8
830	LIGHT GARFIELD	347-2403	8
840	XXXX	00	
850	LEE INGSHENG	348-2859	9
★	0 BUS 91 RES	10 NEW	

Target Street	Cross Street	Source
✓	-	POLK DIRECTORY CO

DARRELL RD 1976

400 Shields John V
405 Tanaka K
410 Schulze Wm W
HAYNE RD INTERSECTS
415★Garcia Eusebio
420 Goodyear F D
425 Bishop R
440 Falk Herbert L
445★Di Costanzo Richd
460 Jurow Harry N
465 Newcomb Arth T
480 Segalas A B
485 Chirico Marius
495 Vegod Henry
505 Farnow Dale
510 Greenbach Gerald
515 Hoffman E K
520 Mc Murdie C N
525★Zipkin Charles R
530 Quetnick Jay
535 Flippen Homer W
540 Fowler Boyd
545 Guidi Harold V
550 Argilla Joseph
555 Stephens Albert L
560 Harband Charles S
575 Ergun Sabri
595 Wright Geo P III
615 Pierce Homer E Jr
620 Carr Wm E
625 O'Neill Gilmore
630 Dimon Stewart
645★Seelig Frank

Target Street	Cross Street	Source
✓	-	POLK DIRECTORY CO

DARRELL RD 1976

DARRELL RD (H)—Contd

650 Le Gette Clifford
665 Musey John H
670 Greene Jack W
710 Pollat Fred
715 Russo Ralph S
735 Strobel Monty
755★De Martini Lloyd
780★Roberts Kenneth N
805★Lai Dennis
810★Cossman T
830★Light Garfield L
840★Walsh Thos
845★Winter Ronald D
850★Huffman Gerald

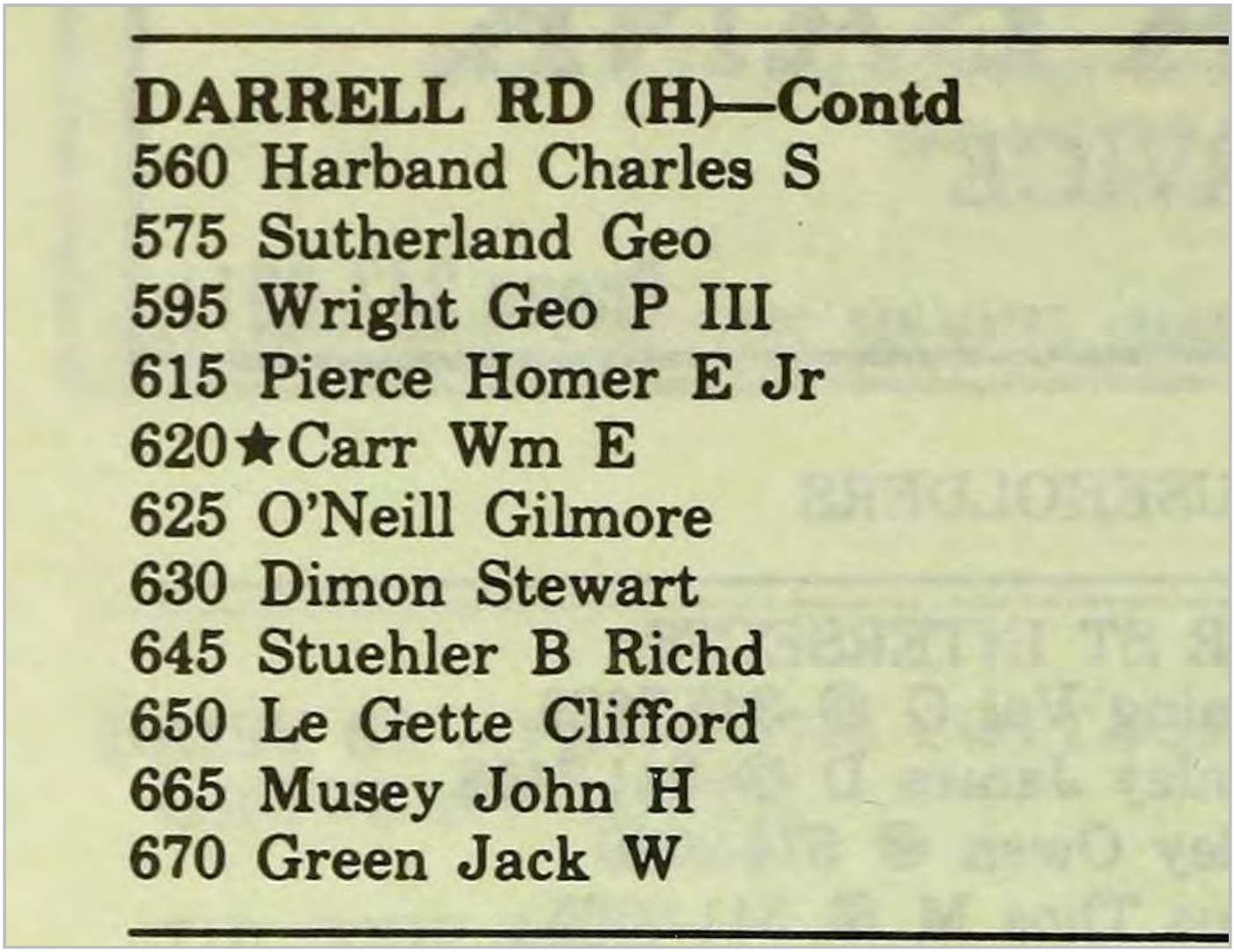
Target Street	Cross Street	Source
✓	-	POLK DIRECTORY CO

DARRELL RD 1973

400 Shields John V
405 Dupaix R L
410 Schulze Wm W
HAYNE RD INTERSECTS
415 Nelson Donald E
420 Goodyear F D
425 Smitherman Wm H
440 Falk Herbert L
445 Bennett G Bryce
460 Jurow Harry N
465 Newcomb Arth T
480 Segalas A B
485 Chirico Marius
495 Vegod Henry
505★Pasquet Iris
510 Greenbach Gerald
515★Hoffman E K
520 Mc Murdie C N
525★Green L E
530 Quetnick Jay
535 Flippen Homer W
540 Fowler Boyd
545 Guidi Harold V
550 Argilla John
555 Stephens Albert L

Target Street	Cross Street	Source
✓	-	POLK DIRECTORY CO

DARRELL RD 1973



DARRELL RD (H)—Contd

560 Harband Charles S
575 Sutherland Geo
595 Wright Geo P III
615 Pierce Homer E Jr
620 ★Carr Wm E
625 O'Neill Gilmore
630 Dimon Stewart
645 Stuehler B Richd
650 Le Gette Clifford
665 Musey John H
670 Green Jack W

CORNERSTONE EARTH GROUP

APPENDIX D – QUESTIONNAIRE

CORNERSTONE EARTH GROUP

General Environmental Questionnaire

Cornerstone Earth Group is performing a Phase I environmental site assessment (ESA). The purpose of the ESA is to evaluate current and historic uses of the property that may have involved the use, generation, or storage of hazardous materials. Please respond to these questions to the best of your knowledge.

Return the completed, signed questionnaire by fax at (925) 988-9501 or by mail to the address below. Alternatively, a scanned copy can be emailed to cheiny@cornerstoneearth.com. The completed questionnaire will be attached to the ESA report. Thank you for your assistance and timely response.

GENERAL PROPERTY INFORMATION

1) **Site Address(es) and Assessor's Parcel Number(s):** Please list all current and former addresses. Some sites have multiple addresses; all are needed, even if they are not in current use.

Address(es)	APN Number(s)
549 Darrell Road Hillsborough, CA 94010	030-041-100

2) **Property Size:** 1.34 ☐ Square Feet ☑ Acres [check one]

3) **Current site owner(s) and purchase date:**

Current Owner Name	Year Purchased
Town of Hillsborough	1950

4) **Previous site owner(s) and dates of ownership:**

Prior Owner Name	Year Purchased	Year Sold
N/A		

STRUCTURES AND OCCUPANTS

5) Please describe all on-site buildings:

Building Size (sq. ft)	Building Use	Date of Construction
Darrell Tank No.1 - 0.5 MG capacity (8900 sf), steel water tank, 1950		
Darrell Tank No.2 - 0.5 MG capacity (8900 sf), steel water tank, 1950		
Darrell Tank No.3 - 1 MG capacity (17,900 sf), steel water tank, 1958		
Garage and pump house		
Cellular antenna including equipment shelter, 2011		

Potable Water Source (*e.g.*, city or other water agency, on-site well, etc.): SFPUC

Sewage Disposal System (*e.g.*, city sewer, septic tank, etc.): N/A

Heating/Cooling System and Fuel Source (*e.g.*, electric, natural gas, fuel oil, etc.): Electric

6) Current site tenant(s), site use, and years of occupancy:

Tenant	Site Use	Years of Occupancy (*e.g.*, From 1995 to 2007)
For cellular use purposes: Verizon (2011 - present) T-Mobile (2012 - present) A		
The Site has been developed with the water tanks since approximately 1950.		
The Town of Hillsborough operates the site for potable water storage and conveyance (1950 - present).		

7) Prior site tenant(s), site use, and years of occupancy:

Tenant	Site Use	Years of Occupancy (*e.g.*, From 1975 to 1983)
Not known		

OTHER SITE FEATURES AND INFORMATION

8) Please indicate if you are aware of any of the following structures, features, or activities <u>currently or formerly</u> at the site.

Structure/Feature	Yes	No	Do Not Know
Aboveground Storage Tanks (ASTs)	✔		
Agricultural fields		✔	
Agricultural or drinking water supply wells		✔	
Air emission control systems		✔	
Areas where garbage or other wastes have been disposed on-site		✔	
Boilers		✔	
Chemical mixing or processing activities		✔	
Chemical storage areas			✔
Current or former drainage ditches, ponds, or streams		✔	
Dry cleaning equipment		✔	
Dry wells		✔	
Elevators		✔	
Emergency generators			✔
Equipment maintenance or repair areas			✔
Fill materials placed on-site (*i.e.,* fill used to build up the site elevation to current level)			✔
Ground water monitoring wells		✔	
Ground water or soil remediation systems		✔	
Hydraulic lifts		✔	
Incinerators		✔	
Manufacturing machinery		✔	
Medical Waste		✔	
Oil or gas wells			✔
Petroleum pipelines			✔
Railroad lines			✔
Septic tanks			✔
Stockpiles of soil or debris			✔
Storage sheds			✔
Sumps, clarifiers, oil/water separators, or similar structures			✔
Transformers			✔
Underground Storage Tanks (USTs)			✔
Vapor or dust control hoods and ducting		✔	
Waste burning areas (i.e. burn pit) or ash disposal area			✔

If you checked yes to any of the above, please provide additional information here or attach to this questionnaire.

As-Built Plans are attached.

9) Please indicate if, to your knowledge, any of the following documents exist:

Document	Yes	No	Do Not Know
Environmental site assessments		✔	
Environmental permits or violation notices		✔	
Underground or above ground storage tank documents/permits	✔		
Geotechnical reports or hydrogeologic studies	✔		
Risk assessments		✔	
Hazardous materials management plans or chemical inventories		✔	
Safety/emergency response plans or spill prevention plans	✔		
Compliance audits or community right-to-know plans	✔		
Asbestos or lead based paint surveys	✔		

If you checked yes to any of the above, please indicate the location of the documents.
Can copies be provided? Yes ✔ No _____

Town of Hillsborough, City Hall.

10) Have significant quantities of hazardous materials been used, stored, or generated on-site?
Yes _____ No ✔

If so, please list types and quantities and where these materials are or were located.

None known to have been stored or located on site. Testing indicates lead within control limits.

11) Are you aware of commonly known or reasonably ascertainable information about the site that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, do you know of past uses of the site, specific chemicals that were or are present at the site, have knowledge of spills or other chemical releases at the site, or any environmental cleanups at the site.
Yes ✔ No _____

If so, please briefly describe below, including whether reports documenting the activities are available for review by Cornerstone Earth Group.
Attached and available at City Hall.

12) Are you aware of any environmental cleanup liens against the site that are filed or recorded under federal, tribal, state, or local law?
Yes _____ No ✔

13) Are you aware of any activity or use limitations (UALs), such as engineering controls, land use restrictions, or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?

Yes _____ No ✓

If so, please briefly describe below.

None known.

14) Are you aware of 1) any pending, threatened or past litigation, or administrative proceedings relevant to hazardous substances or petroleum products at the site, or 2) any notices from any governmental entity regarding possible violations of environmental laws or possible liability related to hazardous substances or petroleum products?

Yes _____ No ✓

If so, please briefly describe below.

None known.

15) Completed by:

Name (print)	Signature	Company	Date
Mark A. Harris	Mark A Harris	Town of Hillsborough	2-9-21

CORNERSTONE EARTH GROUP

APPENDIX E – LABORATORY REPORTS

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

Laboratory Job ID: 720-100030-1
Client Project/Site: Darrell Water Tank

For:
Cornerstone Earth Group
1220 Oakland Blvd
Suite 220
Walnut Creek, California 94085

Attn: Mr. Chris Heiny

Authorized for release by:
10/7/2020 5:01:28 PM

Afsaneh Salimpour, Senior Project Manager
(925)484-1919
Afsaneh.Salimpour@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at:
www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Job ID: 720-100030-1

Laboratory: Eurofins TestAmerica, Pleasanton

Narrative

Job Narrative
720-100030-1

Comments
No additional comments.

Receipt
The samples were received on 9/30/2020 4:50 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 6.0º C.

Metals
Method 6010B: The matrix spike duplicate (MSD) recoveries for preparation batch 320-418659 and analytical batch 320-419012 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-1 (0'-0.5') — Lab Sample ID: 720-100030-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	12	F1	1.0		mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: HA-2 (0'-0.5') — Lab Sample ID: 720-100030-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	48		0.99		mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: HA-3 (0'-0.5') — Lab Sample ID: 720-100030-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	41		1.0		mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: HA-4 (0'-0.5') — Lab Sample ID: 720-100030-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	22		1.1		mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: HA-5 (0'-0.5') — Lab Sample ID: 720-100030-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	28		1.0		mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: HA-6 (0'-0.5') — Lab Sample ID: 720-100030-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	20		1.1		mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-1 (0'-0.5')
Date Collected: 09/29/20 16:15
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100030-1
Matrix: Solid
Percent Solids: 97.6

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	12	F1	1.0		mg/Kg	☼	10/05/20 06:30	10/06/20 00:01	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-2 (0'-0.5')
Date Collected: 09/29/20 16:20
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100030-3
Matrix: Solid
Percent Solids: 97.8

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	48		0.99		mg/Kg	☼	10/05/20 06:30	10/06/20 00:27	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-3 (0'-0.5')
Date Collected: 09/29/20 15:50
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100030-5
Matrix: Solid
Percent Solids: 97.4

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	41		1.0		mg/Kg	☼	10/05/20 06:30	10/06/20 00:31	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-4 (0'-0.5')
Date Collected: 09/29/20 16:05
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100030-7
Matrix: Solid
Percent Solids: 93.5

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	22		1.1		mg/Kg	☼	10/05/20 06:30	10/06/20 00:35	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-5 (0'-0.5')
Date Collected: 09/29/20 16:30
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100030-9
Matrix: Solid
Percent Solids: 95.2

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	28		1.0		mg/Kg	☼	10/05/20 06:30	10/06/20 00:39	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-6 (0'-0.5')
Date Collected: 09/29/20 16:45
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100030-11
Matrix: Solid
Percent Solids: 92.1

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	20		1.1		mg/Kg	☼	10/05/20 06:30	10/06/20 00:43	1

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 320-418659/1-A
Matrix: Solid
Analysis Batch: 419012

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418659

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		1.0		mg/Kg		10/05/20 06:30	10/05/20 22:19	1

Lab Sample ID: LCS 320-418659/2-A
Matrix: Solid
Analysis Batch: 419012

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418659

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			25.0	24.0		mg/Kg		96	80 - 120		

Lab Sample ID: 720-100030-1 MS
Matrix: Solid
Analysis Batch: 419012

Client Sample ID: HA-1 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 418659

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead	12	F1	24.9	36.1		mg/Kg	☼	96	80 - 120		

Lab Sample ID: 720-100030-1 MSD
Matrix: Solid
Analysis Batch: 419012

Client Sample ID: HA-1 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 418659

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	12	F1	25.4	31.9	F1	mg/Kg	☼	77	80 - 120	12	35

QC Association Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Metals

Prep Batch: 418659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100030-1	HA-1 (0'-0.5')	Total/NA	Solid	3050B	
720-100030-3	HA-2 (0'-0.5')	Total/NA	Solid	3050B	
720-100030-5	HA-3 (0'-0.5')	Total/NA	Solid	3050B	
720-100030-7	HA-4 (0'-0.5')	Total/NA	Solid	3050B	
720-100030-9	HA-5 (0'-0.5')	Total/NA	Solid	3050B	
720-100030-11	HA-6 (0'-0.5')	Total/NA	Solid	3050B	
MB 320-418659/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 320-418659/2-A	Lab Control Sample	Total/NA	Solid	3050B	
720-100030-1 MS	HA-1 (0'-0.5')	Total/NA	Solid	3050B	
720-100030-1 MSD	HA-1 (0'-0.5')	Total/NA	Solid	3050B	

Analysis Batch: 419012

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100030-1	HA-1 (0'-0.5')	Total/NA	Solid	6010B	418659
720-100030-3	HA-2 (0'-0.5')	Total/NA	Solid	6010B	418659
720-100030-5	HA-3 (0'-0.5')	Total/NA	Solid	6010B	418659
720-100030-7	HA-4 (0'-0.5')	Total/NA	Solid	6010B	418659
720-100030-9	HA-5 (0'-0.5')	Total/NA	Solid	6010B	418659
720-100030-11	HA-6 (0'-0.5')	Total/NA	Solid	6010B	418659
MB 320-418659/1-A	Method Blank	Total/NA	Solid	6010B	418659
LCS 320-418659/2-A	Lab Control Sample	Total/NA	Solid	6010B	418659
720-100030-1 MS	HA-1 (0'-0.5')	Total/NA	Solid	6010B	418659
720-100030-1 MSD	HA-1 (0'-0.5')	Total/NA	Solid	6010B	418659

General Chemistry

Analysis Batch: 418096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100030-1	HA-1 (0'-0.5')	Total/NA	Solid	D 2216	
720-100030-3	HA-2 (0'-0.5')	Total/NA	Solid	D 2216	
720-100030-5	HA-3 (0'-0.5')	Total/NA	Solid	D 2216	
720-100030-7	HA-4 (0'-0.5')	Total/NA	Solid	D 2216	
720-100030-9	HA-5 (0'-0.5')	Total/NA	Solid	D 2216	
720-100030-11	HA-6 (0'-0.5')	Total/NA	Solid	D 2216	
320-65203-A-2 DU	Duplicate	Total/NA	Solid	D 2216	

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-1 (0'-0.5')
Lab Sample ID: 720-100030-1
Date Collected: 09/29/20 16:15
Matrix: Solid
Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	418096	10/02/20 12:06	TCS	TAL SAC

Client Sample ID: HA-1 (0'-0.5')
Lab Sample ID: 720-100030-1
Date Collected: 09/29/20 16:15
Matrix: Solid
Date Received: 09/30/20 16:50
Percent Solids: 97.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418659	10/05/20 06:30	NIM	TAL SAC
Total/NA	Analysis	6010B		1	419012	10/06/20 00:01	GSH	TAL SAC

Client Sample ID: HA-2 (0'-0.5')
Lab Sample ID: 720-100030-3
Date Collected: 09/29/20 16:20
Matrix: Solid
Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	418096	10/02/20 12:06	TCS	TAL SAC

Client Sample ID: HA-2 (0'-0.5')
Lab Sample ID: 720-100030-3
Date Collected: 09/29/20 16:20
Matrix: Solid
Date Received: 09/30/20 16:50
Percent Solids: 97.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418659	10/05/20 06:30	NIM	TAL SAC
Total/NA	Analysis	6010B		1	419012	10/06/20 00:27	GSH	TAL SAC

Client Sample ID: HA-3 (0'-0.5')
Lab Sample ID: 720-100030-5
Date Collected: 09/29/20 15:50
Matrix: Solid
Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	418096	10/02/20 12:06	TCS	TAL SAC

Client Sample ID: HA-3 (0'-0.5')
Lab Sample ID: 720-100030-5
Date Collected: 09/29/20 15:50
Matrix: Solid
Date Received: 09/30/20 16:50
Percent Solids: 97.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418659	10/05/20 06:30	NIM	TAL SAC
Total/NA	Analysis	6010B		1	419012	10/06/20 00:31	GSH	TAL SAC

Client Sample ID: HA-4 (0'-0.5')
Lab Sample ID: 720-100030-7
Date Collected: 09/29/20 16:05
Matrix: Solid
Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	418096	10/02/20 12:06	TCS	TAL SAC

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Client Sample ID: HA-4 (0'-0.5')

Lab Sample ID: 720-100030-7
Date Collected: 09/29/20 16:05
Matrix: Solid
Date Received: 09/30/20 16:50
Percent Solids: 93.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418659	10/05/20 06:30	NIM	TAL SAC
Total/NA	Analysis	6010B		1	419012	10/06/20 00:35	GSH	TAL SAC

Client Sample ID: HA-5 (0'-0.5')

Lab Sample ID: 720-100030-9
Date Collected: 09/29/20 16:30
Matrix: Solid
Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	418096	10/02/20 12:06	TCS	TAL SAC

Client Sample ID: HA-5 (0'-0.5')

Lab Sample ID: 720-100030-9
Date Collected: 09/29/20 16:30
Matrix: Solid
Date Received: 09/30/20 16:50
Percent Solids: 95.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418659	10/05/20 06:30	NIM	TAL SAC
Total/NA	Analysis	6010B		1	419012	10/06/20 00:39	GSH	TAL SAC

Client Sample ID: HA-6 (0'-0.5')

Lab Sample ID: 720-100030-11
Date Collected: 09/29/20 16:45
Matrix: Solid
Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	418096	10/02/20 12:06	TCS	TAL SAC

Client Sample ID: HA-6 (0'-0.5')

Lab Sample ID: 720-100030-11
Date Collected: 09/29/20 16:45
Matrix: Solid
Date Received: 09/30/20 16:50
Percent Solids: 92.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418659	10/05/20 06:30	NIM	TAL SAC
Total/NA	Analysis	6010B		1	419012	10/06/20 00:43	GSH	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Laboratory: Eurofins TestAmerica, Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	2897	01-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
D 2216		Solid	Percent Moisture

Method Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3050B	Preparation, Metals	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100030-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
720-100030-1	HA-1 (0'-0.5')	Solid	09/29/20 16:15	09/30/20 16:50	
720-100030-3	HA-2 (0'-0.5')	Solid	09/29/20 16:20	09/30/20 16:50	
720-100030-5	HA-3 (0'-0.5')	Solid	09/29/20 15:50	09/30/20 16:50	
720-100030-7	HA-4 (0'-0.5')	Solid	09/29/20 16:05	09/30/20 16:50	
720-100030-9	HA-5 (0'-0.5')	Solid	09/29/20 16:30	09/30/20 16:50	
720-100030-11	HA-6 (0'-0.5')	Solid	09/29/20 16:45	09/30/20 16:50	

CORNERSTONE EARTH GROUP

Chain of Custody Record

720-100030

19741

	Project Manager: Chris Heiny	Site Sampler: Everett Allen	Date: 9/30/2020	COC No:
Cornerstone Earth Group, Inc.	Tel/Fax: 925-988-9500 ext. 217	Lab Contact:	Lab:	____ of ____ COCs
1220 Oakland Blvd. Suite 220	Analysis Turnaround Time			Laboratory's Job No.
Walnut Creek, CA 94596				
(925)-988-9500 Phone	TAT if different from Below ____			
(925)-988-9501 FAX	■ 1 week			
Project Name: Darrell Water Tank	☐ 3 days			
Site: 549 Darrell Road, Hillsborough,CA	☐ 2 days			
Project Number: 996-2-2	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	LEAD Only (6010B)	Hold	Laboratory's Sample Specific Notes:
HA-1 (0'-0.5')	9/29/2020	16:15	Liner	Soil	1		X		Report all on a dry weight basis
HA-1 (1.5'-2')	9/29/2020	16:20	Liner	Soil	1			X	
HA-2 (0'-0.5')	9/29/2020	16:40	Liner	Soil	1		X		
HA-2 (1.5'-2')	9/29/2020	16:25	Liner	Soil	1			X	
HA-3 (0'-0.5')	9/29/2020	15:50	Liner	Soil	1		X		
HA-3 (1.5'-2')	9/29/2020	15:55	Liner	Soil	1			X	
HA-4 (0'-0.5')	9/29/2020	16:05	Liner	Soil	1		X		
HA-4 (1.5'-2')	9/29/2020	16:10	Liner	Soil	1			X	
HA-5 (0'-0.5')	9/29/2020	16:30	Liner	Soil	1		X		
HA-5 (1.5'-2.0')	9/29/2020	16:35	Liner	Soil	1			X	
HA-6 (0'-0.5')	9/29/2020	16:45	Liner	Soil	1		X		
HA-6 (1.5'-2')	9/29/2020	16:50	Liner	Soil	1			X	

720-100030 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*

Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.

Please email results to: cheiny@cornerstoneearth.com;
eallen@cornerstoneearth.com
sfitinghoff@cornerstoneearth.com

6°C

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Cornerstone Earth Group	9/30/20 16:30	[signature]	DCS	9/30/20 15:45
[signature]	ETAPIS	9-30-2020 1650	[signature]	DCS	9/30/20 16:50

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919 Fax: 925-600-3002

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Salimpour, Afsaneh F	Carrier Tracking No(s):	COC No: 720-49995.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Afsaneh.Salimpour@Eurofinset.com	State of Origin: California	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State - California; State Program - California		Job #: 720-100030-1
Address: 880 Riverside Parkway,	Due Date Requested: 10/7/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Darrell Water Tank	Project #: 72007780			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B/3050B Lead	Moisture/ (MOD) Local Method	6010B/3050B Lead (Hold)	Moisture/ (MOD) Local Method (Hold)	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
HA-1 (0'-0.5') (720-100030-1)	9/29/20	16:15 Pacific		Solid			X	X			1	
HA-1 (1.5'-2') (720-100030-2)	9/29/20	16:20 Pacific		Solid					X	X	1	
HA-2 (0'-0.5') (720-100030-3)	9/29/20	16:20 Pacific		Solid			X	X			1	
HA-2 (1.5'-2') (720-100030-4)	9/29/20	16:25 Pacific		Solid					X	X	1	
HA-3 (0'-0.5') (720-100030-5)	9/29/20	15:50 Pacific		Solid			X	X			1	
HA-3 (1.5'-2') (720-100030-6)	9/29/20	15:55 Pacific		Solid					X	X	1	
HA-4 (0'-0.5') (720-100030-7)	9/29/20	16:05 Pacific		Solid			X	X			1	
HA-4 (1.5'-2') (720-100030-8)	9/29/20	16:10 Pacific		Solid					X	X	1	
HA-5 (0'-0.5') (720-100030-9)	9/29/20	16:30 Pacific		Solid			X	X			1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	10-1-2020 1610	DCS	[signature] 1630	10-1-20	DCS
2	[signature]	10/01 1820		[signature]	10/1/20 1820	EOAS
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.9

Ver: 01/16/2019

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919 Fax: 925-600-3002

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Salimpour, Afsaneh F	Carrier Tracking No(s):	COC No: 720-49995.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: Afsaneh.Salimpour@Eurofinset.com	State of Origin: California	Page: Page 2 of 2
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State - California; State Program - California		Job #: 720-100030-1
Address: 880 Riverside Parkway, ,	Due Date Requested: 10/7/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Darrell Water Tank	Project #: 72007780			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B/3050B Lead	Moisture/ (MOD) Local Method	6010B/3050B Lead (Hold)	Moisture/ (MOD) Local Method (Hold)	Total Number of containers	Special Instructions/Note:
			Preservation Code:									
HA-5 (1.5'-2.0) (720-100030-10)	9/29/20	16:35 Pacific		Solid					X	X	1	
HA-6 (0'-0.5') (720-100030-11)	9/29/20	16:45 Pacific		Solid			X	X			1	
HA-6 (1.5'-2') (720-100030-12)	9/29/20	16:50 Pacific		Solid					X	X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		10-1-2020 1620	PCS	1630	10-1-20	DCS
2		10/01 1820			10/1/20 1820	ETA
3		Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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Sacramento
Sample Receiving Notes

720-100030 Field Sheet

Tracking # : N/A

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: IR-02 Corr. Factor: (+/-) 0 °C

Ice ✓ Wet _____ Gel _____ Other _____

Cooler Custody Seal: _____

Cooler ID: _____

Temp Observed: 1.9 °C Corrected: 1.9 °C

From: Temp Blank ☐ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☐	☐
Cooler Temperature is acceptable?	☐	☐	☐

Initials: JG Date: 10/1/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☐	☐	☐
Samples compromised/tampered with?	☐	☐	☐
Sample containers have legible labels?	☐	☐	☐
Sample custody seal?	☐	☐	☐
Containers are not broken or leaking?	☐	☐	☐
Sample date/times are provided?	☐	☐	☐
Appropriate containers are used?	☐	☐	☐
Sample bottles are completely filled?	☐	☐	☐
Sample preservatives verified?	☐	☐	☐
Samples w/o discrepancies?	☐	☐	☐
Zero headspace?*	☐	☐	☐
Alkalinity has no headspace?	☐	☐	☐
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☐
Multiphasic samples are not present?	☐	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: JG Date: 10/1/20

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☐	☐	☐
Samples received within hold time?	☐	☐	☐
NCM Filed?	☐	☐	☐
Log Release checked in TALS?	☐	☐	☐

Initials: JG Date: 10/1/20

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100030-1

Login Number: 100030
List Number: 1
Creator: Mullen, Joan

List Source: Eurofins TestAmerica, Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100030-1

Login Number: 100030
List Number: 2
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/01/20 07:22 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

Laboratory Job ID: 720-100009-1
Client Project/Site: Darrell Water Tank

For:
Cornerstone Earth Group
1220 Oakland Blvd
Suite 220
Walnut Creek, California 94085

Attn: Mr. Chris Heiny

Authorized for release by:
10/8/2020 4:03:34 PM

Afsaneh Salimpour, Senior Project Manager
(925)484-1919
Afsaneh.Salimpour@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits

GC Semi VOA

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.
X	Surrogate recovery exceeds control limits

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Job ID: 720-100009-1

Laboratory: Eurofins TestAmerica, Pleasanton

Narrative

Job Narrative
720-100009-1

Comments
No additional comments.

Receipt
The samples were received on 9/29/2020 4:28 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 7.3º C.

GC/MS VOA
Method 8260B/CA_LUFTMS: The Gasoline Range Organics (GRO) concentration reported for the following sample is due to the presence of discrete peaks: EB-7 (0'-0.5') (720-100009-1). alpha-Pinene; beta-Pinene and Eucalyptol.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
Methods 8270C SIM, 8270D SIM: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 320-416565 and 320-418771 and analytical batch 320-419080 were outside control limits. Sample matrix interference and non-homogeneity are suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method 8015B: Surrogate recovery for the following sample was outside control limits: EB-7 (0'-0.5') (720-100009-1). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8015B: The matrix spike/matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 320-418857 and analytical batch 320-419593 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample/laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-99486 and 570-99486 and analytical batch 570-99780 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 8081A: Surrogate recovery for the following sample was outside the upper control limit: EB-7 (0'-0.5') (720-100009-1). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Client Sample ID: EB-7 (0'-0.5') — Lab Sample ID: 720-100009-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Gasoline Range Organics (GRO)-C4-C12	1.4		1.0		mg/Kg	1	☼	8260B/CA_LUFT MS	Total/NA
4-Isopropyltoluene	10		10		ug/Kg	1	☼	8260B	Total/NA
Acenaphthene	38		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Fluorene	20		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	360		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Anthracene	83		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]anthracene	370		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Chrysene	410		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]pyrene	410		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[b]fluoranthene	420		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[k]fluoranthene	160		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[g,h,i]perylene	290		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Indeno[1,2,3-cd]pyrene	250		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	600		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Pyrene	930		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Dibenz(a,h)anthracene	63		5.6		ug/Kg	1	☼	8270C SIM	Total/NA
Diesel Range Organics [C10-C28]	55	F2	1.2		mg/Kg	1	☼	8015B	Total/NA
Motor Oil Range Organics [C24-C36]	110	F1 F2	6.0		mg/Kg	1	☼	8015B	Total/NA
Aroclor-1260	13		12		ug/Kg	1	☼	8082	Total/NA
Arsenic	9.5		2.4		mg/Kg	1	☼	6010B	Total/NA
Barium	43		1.2		mg/Kg	1	☼	6010B	Total/NA
Cobalt	130		0.60		mg/Kg	1	☼	6010B	Total/NA
Chromium	1300		0.60		mg/Kg	1	☼	6010B	Total/NA
Copper	20		1.8		mg/Kg	1	☼	6010B	Total/NA
Nickel	2800		1.2		mg/Kg	1	☼	6010B	Total/NA
Lead	26	F1	1.2		mg/Kg	1	☼	6010B	Total/NA
Antimony	5.8	F1	2.4		mg/Kg	1	☼	6010B	Total/NA
Vanadium	50		0.60		mg/Kg	1	☼	6010B	Total/NA
Zinc	63		2.4		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.082		0.052		mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: EB-7 (3'-3.5') — Lab Sample ID: 720-100009-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acenaphthene	12		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Phenanthrene	110		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Anthracene	18		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]anthracene	96		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Chrysene	99		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]pyrene	94		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[b]fluoranthene	100		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[k]fluoranthene	36		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[g,h,i]perylene	72		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Indeno[1,2,3-cd]pyrene	57		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	150		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Pyrene	250		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Dibenz(a,h)anthracene	15		7.2		ug/Kg	1	☼	8270C SIM	Total/NA
Diesel Range Organics [C10-C28]	16		1.5		mg/Kg	1	☼	8015B	Total/NA
Motor Oil Range Organics [C24-C36]	42		7.3		mg/Kg	1	☼	8015B	Total/NA
Arsenic	9.8		2.8		mg/Kg	1	☼	6010B	Total/NA
Barium	8.2		1.4		mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: EB-7 (3'-3.5') (Continued)

Lab Sample ID: 720-100009-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	110		0.71		mg/Kg	1	☼	6010B	Total/NA
Chromium	1500		0.71		mg/Kg	1	☼	6010B	Total/NA
Copper	12		2.1		mg/Kg	1	☼	6010B	Total/NA
Nickel	2800		1.4		mg/Kg	1	☼	6010B	Total/NA
Lead	4.3		1.4		mg/Kg	1	☼	6010B	Total/NA
Antimony	6.5		2.8		mg/Kg	1	☼	6010B	Total/NA
Vanadium	50		0.71		mg/Kg	1	☼	6010B	Total/NA
Zinc	54		2.8		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.099		0.057		mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: EB-7 (9.5'-10')

Lab Sample ID: 720-100009-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	9.6		2.6		mg/Kg	1	☼	6010B	Total/NA
Barium	2.4		1.3		mg/Kg	1	☼	6010B	Total/NA
Cobalt	110		0.66		mg/Kg	1	☼	6010B	Total/NA
Chromium	1500		0.66		mg/Kg	1	☼	6010B	Total/NA
Copper	18		2.0		mg/Kg	1	☼	6010B	Total/NA
Nickel	2400		1.3		mg/Kg	1	☼	6010B	Total/NA
Lead	1.9		1.3		mg/Kg	1	☼	6010B	Total/NA
Antimony	7.0		2.6		mg/Kg	1	☼	6010B	Total/NA
Vanadium	61		0.66		mg/Kg	1	☼	6010B	Total/NA
Zinc	25		2.6		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.090		0.050		mg/Kg	1	☼	7471A	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: EB-7 (0'-0.5')

Date Collected: 09/29/20 09:25
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-1

Matrix: Solid
Percent Solids: 83.6

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C4-C12	1.4		1.0		mg/Kg	☼	09/30/20 14:08	10/02/20 16:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*70 - 131*	*09/30/20 14:08*	*10/02/20 16:41*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Acetone	ND		41		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Benzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Dichlorobromomethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Bromobenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Chlorobromomethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Bromoform	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Bromomethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
2-Butanone (MEK)	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
n-Butylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
sec-Butylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
tert-Butylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Carbon disulfide	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Carbon tetrachloride	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Chlorobenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Chloroethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Chloroform	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Chloromethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
2-Chlorotoluene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
4-Chlorotoluene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Chlorodibromomethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2-Dichlorobenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,3-Dichlorobenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,4-Dichlorobenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,3-Dichloropropane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1-Dichloropropene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2-Dibromo-3-Chloropropane	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Ethylene Dibromide	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Dibromomethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Dichlorodifluoromethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1-Dichloroethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2-Dichloroethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1-Dichloroethene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
cis-1,2-Dichloroethene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
trans-1,2-Dichloroethene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2-Dichloropropane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
cis-1,3-Dichloropropene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
trans-1,3-Dichloropropene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Ethylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Hexachlorobutadiene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
2-Hexanone	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Isopropylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1

Client Sample ID: EB-7 (0'-0.5')
Date Collected: 09/29/20 09:25
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-1
Matrix: Solid
Percent Solids: 83.6

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Isopropyltoluene	**10**		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Methylene Chloride	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
4-Methyl-2-pentanone (MIBK)	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Naphthalene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
N-Propylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Styrene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1,1,2-Tetrachloroethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1,2,2-Tetrachloroethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Tetrachloroethene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Toluene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2,3-Trichlorobenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2,4-Trichlorobenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1,1-Trichloroethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1,2-Trichloroethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Trichloroethene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Trichlorofluoromethane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2,3-Trichloropropane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,2,4-Trimethylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
1,3,5-Trimethylbenzene	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Vinyl acetate	ND		20		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Vinyl chloride	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
Xylenes, Total	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1
2,2-Dichloropropane	ND		10		ug/Kg	☼	09/30/20 14:08	10/02/20 16:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*63 - 143*	*09/30/20 14:08*	*10/02/20 16:41*	*1*
Dibromofluoromethane (Surr)	*108*		*55 - 129*	*09/30/20 14:08*	*10/02/20 16:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*32 - 156*	*09/30/20 14:08*	*10/02/20 16:41*	*1*
Toluene-d8 (Surr)	*114*		*63 - 138*	*09/30/20 14:08*	*10/02/20 16:41*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Acenaphthene	**38**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Acenaphthylene	ND		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Fluorene	**20**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Phenanthrene	**360**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Anthracene	**83**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Benzo[a]anthracene	**370**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Chrysene	**410**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Benzo[a]pyrene	**410**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Benzo[b]fluoranthene	**420**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Benzo[k]fluoranthene	**160**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Benzo[g,h,i]perylene	**290**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Indeno[1,2,3-cd]pyrene	**250**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Fluoranthene	**600**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Pyrene	**930**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1
Dibenz(a,h)anthracene	**63**		5.6		ug/Kg	☼	10/05/20 11:26	10/06/20 13:10	1

Client Sample ID: EB-7 (0'-0.5')

Date Collected: 09/29/20 09:25
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-1

Matrix: Solid
Percent Solids: 83.6

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*91*		*49 - 114*	*10/05/20 11:26*	*10/06/20 13:10*	*1*
2-Fluorobiphenyl (Surr)	*62*		*43 - 109*	*10/05/20 11:26*	*10/06/20 13:10*	*1*
Fluoranthene-d10 (Surr)	*71*		*50 - 150*	*10/05/20 11:26*	*10/06/20 13:10*	*1*
Terphenyl-d14	*65*		*53 - 121*	*10/05/20 11:26*	*10/06/20 13:10*	*1*
2-methylnaphthalene-d10	*67*		*50 - 150*	*10/05/20 11:26*	*10/06/20 13:10*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**55**	**F2**	1.2		mg/Kg	☼	10/05/20 13:14	10/08/20 01:41	1
Motor Oil Range Organics [C24-C36]	**110**	**F1 F2**	6.0		mg/Kg	☼	10/05/20 13:14	10/08/20 01:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*52*	*X*	*63 - 141*	*10/05/20 13:14*	*10/08/20 01:41*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Dieldrin	ND		0.24		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Endrin aldehyde	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Endrin	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Endrin ketone	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Heptachlor	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Heptachlor epoxide	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
4,4'-DDT	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
4,4'-DDE	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
4,4'-DDD	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Endosulfan I	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Endosulfan II	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
alpha-BHC	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
beta-BHC	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
gamma-BHC (Lindane)	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
delta-BHC	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Endosulfan sulfate	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Methoxychlor	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Toxaphene	ND		6.0		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
Chlordane (technical)	ND		6.0		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
cis-Chlordane	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1
trans-Chlordane	ND		1.2		ug/Kg	☼	10/05/20 11:52	10/06/20 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*89*		*25 - 126*	*10/05/20 11:52*	*10/06/20 15:37*	*1*
DCB Decachlorobiphenyl (Surr)	*199*	*p X*	*20 - 155*	*10/05/20 11:52*	*10/06/20 15:37*	*1*

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1
Aroclor-1221	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1
Aroclor-1232	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1
Aroclor-1242	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1
Aroclor-1248	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1

Client Sample ID: EB-7 (0'-0.5')

Date Collected: 09/29/20 09:25
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-1

Matrix: Solid
Percent Solids: 83.6

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1254	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1
Aroclor-1260	**13**		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1
Aroclor-1262	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1
Aroclor-1268	ND		12		ug/Kg	☼	10/05/20 11:52	10/06/20 12:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*105*		*20 - 155*	*10/05/20 11:52*	*10/06/20 12:53*	*1*
Tetrachloro-m-xylene (Surr)	*86*		*25 - 126*	*10/05/20 11:52*	*10/06/20 12:53*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.60		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Arsenic	**9.5**		2.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Barium	**43**		1.2		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Beryllium	ND		0.24		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Cadmium	ND		0.24		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Cobalt	**130**		0.60		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Chromium	**1300**		0.60		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Copper	**20**		1.8		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Molybdenum	ND		2.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Nickel	**2800**		1.2		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Lead	**26**	**F1**	1.2		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Selenium	ND		2.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Antimony	**5.8**	**F1**	2.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Thallium	ND		2.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Vanadium	**50**		0.60		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1
Zinc	**63**		2.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:33	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.082**		0.052		mg/Kg	☼	10/01/20 11:30	10/01/20 15:57	1

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Client Sample ID: EB-7 (3'-3.5')

Date Collected: 09/29/20 09:50
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-2

Matrix: Solid
Percent Solids: 67.5

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C4-C12	ND		1.6		mg/Kg	☼	09/30/20 14:08	10/02/20 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*70 - 131*	*09/30/20 14:08*	*10/02/20 17:05*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Acetone	ND		64		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Benzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Dichlorobromomethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Bromobenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Chlorobromomethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Bromoform	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Bromomethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
2-Butanone (MEK)	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
n-Butylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
sec-Butylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
tert-Butylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Carbon disulfide	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Carbon tetrachloride	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Chlorobenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Chloroethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Chloroform	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Chloromethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
2-Chlorotoluene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
4-Chlorotoluene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Chlorodibromomethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2-Dichlorobenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,3-Dichlorobenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,4-Dichlorobenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,3-Dichloropropane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1-Dichloropropene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2-Dibromo-3-Chloropropane	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Ethylene Dibromide	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Dibromomethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Dichlorodifluoromethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1-Dichloroethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2-Dichloroethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1-Dichloroethene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
cis-1,2-Dichloroethene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
trans-1,2-Dichloroethene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2-Dichloropropane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
cis-1,3-Dichloropropene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
trans-1,3-Dichloropropene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Ethylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Hexachlorobutadiene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
2-Hexanone	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Isopropylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1

Client Sample ID: EB-7 (3'-3.5')
Date Collected: 09/29/20 09:50
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-2
Matrix: Solid
Percent Solids: 67.5

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Isopropyltoluene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Methylene Chloride	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
4-Methyl-2-pentanone (MIBK)	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Naphthalene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
N-Propylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Styrene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1,1,2-Tetrachloroethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1,2,2-Tetrachloroethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Tetrachloroethene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Toluene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2,3-Trichlorobenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2,4-Trichlorobenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1,1-Trichloroethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1,2-Trichloroethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Trichloroethene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Trichlorofluoromethane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2,3-Trichloropropane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,2,4-Trimethylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
1,3,5-Trimethylbenzene	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Vinyl acetate	ND		32		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Vinyl chloride	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
Xylenes, Total	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1
2,2-Dichloropropane	ND		16		ug/Kg	☼	09/30/20 14:08	10/02/20 17:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*63 - 143*	*09/30/20 14:08*	*10/02/20 17:05*	*1*
Dibromofluoromethane (Surr)	*106*		*55 - 129*	*09/30/20 14:08*	*10/02/20 17:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*98*		*32 - 156*	*09/30/20 14:08*	*10/02/20 17:05*	*1*
Toluene-d8 (Surr)	*118*		*63 - 138*	*09/30/20 14:08*	*10/02/20 17:05*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Acenaphthene	**12**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Acenaphthylene	ND		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Fluorene	ND		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Phenanthrene	**110**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Anthracene	**18**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Benzo[a]anthracene	**96**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Chrysene	**99**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Benzo[a]pyrene	**94**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Benzo[b]fluoranthene	**100**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Benzo[k]fluoranthene	**36**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Benzo[g,h,i]perylene	**72**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Indeno[1,2,3-cd]pyrene	**57**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Fluoranthene	**150**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Pyrene	**250**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1
Dibenz(a,h)anthracene	**15**		7.2		ug/Kg	☼	10/05/20 11:26	10/06/20 13:39	1

Client Sample ID: EB-7 (3'-3.5')

Date Collected: 09/29/20 09:50
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-2

Matrix: Solid
Percent Solids: 67.5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	*60*		*49 - 114*	*10/05/20 11:26*	*10/06/20 13:39*	*1*
2-Fluorobiphenyl (Surr)	*67*		*43 - 109*	*10/05/20 11:26*	*10/06/20 13:39*	*1*
Fluoranthene-d10 (Surr)	*77*		*50 - 150*	*10/05/20 11:26*	*10/06/20 13:39*	*1*
Terphenyl-d14	*81*		*53 - 121*	*10/05/20 11:26*	*10/06/20 13:39*	*1*
2-methylnaphthalene-d10	*73*		*50 - 150*	*10/05/20 11:26*	*10/06/20 13:39*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	**16**		1.5		mg/Kg	☼	10/05/20 13:14	10/08/20 02:53	1
Motor Oil Range Organics [C24-C36]	**42**		7.3		mg/Kg	☼	10/05/20 13:14	10/08/20 02:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl (Surr)	*68*		*63 - 141*	*10/05/20 13:14*	*10/08/20 02:53*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.71		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Arsenic	**9.8**		2.8		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Barium	**8.2**		1.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Beryllium	ND		0.28		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Cadmium	ND		0.28		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Cobalt	**110**		0.71		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Chromium	**1500**		0.71		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Copper	**12**		2.1		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Molybdenum	ND		2.8		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Nickel	**2800**		1.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Lead	**4.3**		1.4		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Selenium	ND		2.8		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Antimony	**6.5**		2.8		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Thallium	ND		2.8		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Vanadium	**50**		0.71		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1
Zinc	**54**		2.8		mg/Kg	☼	10/05/20 13:40	10/06/20 10:54	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.099**		0.057		mg/Kg	☼	10/01/20 11:30	10/01/20 16:00	1

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Client Sample ID: EB-7 (9.5'-10')

Date Collected: 09/29/20 10:45
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-3

Matrix: Solid
Percent Solids: 75.0

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.66		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Arsenic	**9.6**		2.6		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Barium	**2.4**		1.3		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Beryllium	ND		0.26		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Cadmium	ND		0.26		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Cobalt	**110**		0.66		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Chromium	**1500**		0.66		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Copper	**18**		2.0		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Molybdenum	ND		2.6		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Nickel	**2400**		1.3		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Lead	**1.9**		1.3		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Selenium	ND		2.6		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Antimony	**7.0**		2.6		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Thallium	ND		2.6		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Vanadium	**61**		0.66		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1
Zinc	**25**		2.6		mg/Kg	☼	10/05/20 13:40	10/06/20 11:06	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.090**		0.050		mg/Kg	☼	10/01/20 11:30	10/01/20 16:02	1

Surrogate Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(63-143)	(55-129)	(32-156)	(63-138)
720-100009-1	EB-7 (0'-0.5')	105	108	101	114
720-100009-2	EB-7 (3'-3.5')	112	106	98	118
LCS 320-417964/8	Lab Control Sample	113	109	101	118
LCSD 320-417964/9	Lab Control Sample Dup	113	108	100	117
MB 320-417964/11	Method Blank	116	115	108	117

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		BFB
Lab Sample ID	Client Sample ID	(70-131)
720-100009-1	EB-7 (0'-0.5')	105
720-100009-2	EB-7 (3'-3.5')	112
LCS 320-417966/4	Lab Control Sample	114
LCSD 320-417966/5	Lab Control Sample Dup	111
MB 320-417966/11	Method Blank	116

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)				
		NBZ	FBP	FLN10	TPHL	2MN
Lab Sample ID	Client Sample ID	(49-114)	(43-109)	(50-150)	(53-121)	(50-150)
320-64982-G-1-I MS	Matrix Spike	79	76	87	91	82
320-64982-G-1-J MSD	Matrix Spike Duplicate	84	78	91	94	84
720-100009-1	EB-7 (0'-0.5')	91	62	71	65	67
720-100009-2	EB-7 (3'-3.5')	60	67	77	81	73
LCS 320-418771/2-A	Lab Control Sample	77	75	79	89	78
MB 320-418771/1-A	Method Blank	78	77	80	90	81

Surrogate Legend

NBZ = Nitrobenzene-d5
FBP = 2-Fluorobiphenyl (Surr)
FLN10 = Fluoranthene-d10 (Surr)
TPHL = Terphenyl-d14
2MN = 2-methylnaphthalene-d10

Surrogate Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
		OTPH1								
Lab Sample ID	Client Sample ID	(63-141)								
720-100009-1	EB-7 (0'-0.5')	52 X								
720-100009-1 MS	EB-7 (0'-0.5')	64								
720-100009-1 MSD	EB-7 (0'-0.5')	70								
720-100009-2	EB-7 (3'-3.5')	68								
LCS 320-418857/2-A	Lab Control Sample	77								
MB 320-418857/1-A	Method Blank	71								

Surrogate Legend

OTPH = o-Terphenyl (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
		TCX1	DCB1							
Lab Sample ID	Client Sample ID	(25-126)	(20-155)							
570-39813-A-5-K MS	Matrix Spike	113	106							
570-39813-A-5-L MSD	Matrix Spike Duplicate	116	118							
720-100009-1	EB-7 (0'-0.5')	89	199 p X							
LCS 570-99486/2-A	Lab Control Sample	94	93							
LCSD 570-99486/3-A	Lab Control Sample Dup	74	74							
MB 570-99486/1-A	Method Blank	90	84							

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)								
		DCB1	TCX1							
Lab Sample ID	Client Sample ID	(20-155)	(25-126)							
570-39813-A-5-M MS	Matrix Spike	82	84							
570-39813-A-5-N MSD	Matrix Spike Duplicate	93	95							
720-100009-1	EB-7 (0'-0.5')	105	86							
LCS 570-99486/4-A	Lab Control Sample	98	101							
LCSD 570-99486/5-A	Lab Control Sample Dup	108	110							
MB 570-99486/1-A	Method Blank	87	91							

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 320-417964/11
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		10		ug/Kg			10/02/20 12:21	1
Acetone	ND		20		ug/Kg			10/02/20 12:21	1
Benzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Dichlorobromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Bromobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Chlorobromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Bromoform	ND		5.0		ug/Kg			10/02/20 12:21	1
Bromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
2-Butanone (MEK)	ND		10		ug/Kg			10/02/20 12:21	1
n-Butylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
sec-Butylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
tert-Butylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Carbon disulfide	ND		10		ug/Kg			10/02/20 12:21	1
Carbon tetrachloride	ND		5.0		ug/Kg			10/02/20 12:21	1
Chlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Chloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Chloroform	ND		5.0		ug/Kg			10/02/20 12:21	1
Chloromethane	ND		5.0		ug/Kg			10/02/20 12:21	1
2-Chlorotoluene	ND		5.0		ug/Kg			10/02/20 12:21	1
4-Chlorotoluene	ND		5.0		ug/Kg			10/02/20 12:21	1
Chlorodibromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,3-Dichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,4-Dichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,3-Dichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1-Dichloropropene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dibromo-3-Chloropropane	ND		10		ug/Kg			10/02/20 12:21	1
Ethylene Dibromide	ND		10		ug/Kg			10/02/20 12:21	1
Dibromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Dichlorodifluoromethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1-Dichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1-Dichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
cis-1,2-Dichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
trans-1,2-Dichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1
cis-1,3-Dichloropropene	ND		5.0		ug/Kg			10/02/20 12:21	1
trans-1,3-Dichloropropene	ND		5.0		ug/Kg			10/02/20 12:21	1
Ethylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Hexachlorobutadiene	ND		5.0		ug/Kg			10/02/20 12:21	1
2-Hexanone	ND		10		ug/Kg			10/02/20 12:21	1
Isopropylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
4-Isopropyltoluene	ND		5.0		ug/Kg			10/02/20 12:21	1
Methylene Chloride	ND		10		ug/Kg			10/02/20 12:21	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/Kg			10/02/20 12:21	1
Naphthalene	ND		5.0		ug/Kg			10/02/20 12:21	1
N-Propylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Styrene	ND		5.0		ug/Kg			10/02/20 12:21	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 320-417964/11
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,2,2-Tetrachloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Tetrachloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
Toluene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2,3-Trichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2,4-Trichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,1-Trichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,2-Trichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Trichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
Trichlorofluoromethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2,3-Trichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10		ug/Kg			10/02/20 12:21	1
1,2,4-Trimethylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,3,5-Trimethylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Vinyl acetate	ND		10		ug/Kg			10/02/20 12:21	1
Vinyl chloride	ND		5.0		ug/Kg			10/02/20 12:21	1
Xylenes, Total	ND		5.0		ug/Kg			10/02/20 12:21	1
2,2-Dichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*63 - 143*		*10/02/20 12:21*	*1*
Dibromofluoromethane (Surr)	*115*		*55 - 129*		*10/02/20 12:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*32 - 156*		*10/02/20 12:21*	*1*
Toluene-d8 (Surr)	*117*		*63 - 138*		*10/02/20 12:21*	*1*

Lab Sample ID: LCS 320-417964/8
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	50.0	51.3		ug/Kg		103	66 - 146
Acetone	50.0	61.0		ug/Kg		122	64 - 128
Benzene	50.0	50.3		ug/Kg		101	78 - 128
Dichlorobromomethane	50.0	49.9		ug/Kg		100	80 - 137
Bromobenzene	50.0	49.4		ug/Kg		99	67 - 132
Chlorobromomethane	50.0	50.9		ug/Kg		102	80 - 127
Bromoform	50.0	51.0		ug/Kg		102	80 - 136
Bromomethane	50.0	46.8		ug/Kg		94	48 - 164
2-Butanone (MEK)	50.0	59.0		ug/Kg		118	71 - 142
n-Butylbenzene	50.0	47.6		ug/Kg		95	68 - 136
sec-Butylbenzene	50.0	48.2		ug/Kg		96	68 - 131
tert-Butylbenzene	50.0	49.2		ug/Kg		98	67 - 131
Carbon disulfide	50.0	60.9		ug/Kg		122	52 - 145
Carbon tetrachloride	50.0	49.9		ug/Kg		100	62 - 154
Chlorobenzene	50.0	49.7		ug/Kg		99	74 - 125
Chloroethane	50.0	48.3		ug/Kg		97	54 - 148
Chloroform	50.0	50.2		ug/Kg		100	78 - 135
Chloromethane	50.0	42.2		ug/Kg		84	60 - 141

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 320-417964/8
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chlorotoluene	50.0	48.6		ug/Kg		97	64 - 127
4-Chlorotoluene	50.0	47.9		ug/Kg		96	67 - 128
Chlorodibromomethane	50.0	50.5		ug/Kg		101	80 - 133
1,2-Dichlorobenzene	50.0	50.4		ug/Kg		101	68 - 121
1,3-Dichlorobenzene	50.0	49.1		ug/Kg		98	64 - 126
1,4-Dichlorobenzene	50.0	49.7		ug/Kg		99	65 - 124
1,3-Dichloropropane	50.0	51.3		ug/Kg		103	80 - 123
1,1-Dichloropropene	50.0	49.8		ug/Kg		100	76 - 132
1,2-Dibromo-3-Chloropropane	50.0	50.6		ug/Kg		101	75 - 137
Ethylene Dibromide	50.0	51.1		ug/Kg		102	80 - 124
Dibromomethane	50.0	49.8		ug/Kg		100	80 - 129
Dichlorodifluoromethane	50.0	36.2		ug/Kg		72	60 - 130
1,1-Dichloroethane	50.0	51.3		ug/Kg		103	76 - 134
1,2-Dichloroethane	50.0	49.1		ug/Kg		98	66 - 150
1,1-Dichloroethene	50.0	55.6		ug/Kg		111	66 - 136
cis-1,2-Dichloroethene	50.0	51.0		ug/Kg		102	74 - 131
trans-1,2-Dichloroethene	50.0	53.8		ug/Kg		108	67 - 135
1,2-Dichloropropane	50.0	50.1		ug/Kg		100	80 - 129
cis-1,3-Dichloropropene	50.0	49.7		ug/Kg		99	80 - 134
trans-1,3-Dichloropropene	50.0	48.3		ug/Kg		97	80 - 148
Ethylbenzene	50.0	49.7		ug/Kg		99	72 - 125
Hexachlorobutadiene	50.0	48.0		ug/Kg		96	52 - 140
2-Hexanone	50.0	55.1		ug/Kg		110	78 - 143
Isopropylbenzene	50.0	49.5		ug/Kg		99	69 - 137
4-Isopropyltoluene	50.0	48.6		ug/Kg		97	64 - 137
Methylene Chloride	50.0	52.3		ug/Kg		105	77 - 125
4-Methyl-2-pentanone (MIBK)	50.0	60.2		ug/Kg		120	79 - 150
Naphthalene	50.0	51.9		ug/Kg		104	53 - 140
N-Propylbenzene	50.0	48.1		ug/Kg		96	63 - 128
Styrene	50.0	55.7		ug/Kg		111	79 - 128
1,1,1,2-Tetrachloroethane	50.0	51.3		ug/Kg		103	77 - 134
1,1,2,2-Tetrachloroethane	50.0	50.7		ug/Kg		101	71 - 134
Tetrachloroethene	50.0	49.0		ug/Kg		98	65 - 135
Toluene	50.0	49.4		ug/Kg		99	80 - 124
1,2,3-Trichlorobenzene	50.0	51.5		ug/Kg		103	54 - 140
1,2,4-Trichlorobenzene	50.0	49.8		ug/Kg		100	48 - 145
1,1,1-Trichloroethane	50.0	51.0		ug/Kg		102	67 - 150
1,1,2-Trichloroethane	50.0	50.7		ug/Kg		101	80 - 128
Trichloroethene	50.0	50.0		ug/Kg		100	80 - 126
Trichlorofluoromethane	50.0	44.6		ug/Kg		89	43 - 158
1,2,3-Trichloropropane	50.0	49.9		ug/Kg		100	71 - 132
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	53.7		ug/Kg		107	62 - 138
1,2,4-Trimethylbenzene	50.0	49.1		ug/Kg		98	64 - 137
1,3,5-Trimethylbenzene	50.0	48.8		ug/Kg		98	66 - 135
Vinyl acetate	50.0	53.9		ug/Kg		108	39 - 160
Vinyl chloride	50.0	44.4		ug/Kg		89	67 - 127
m-Xylene & p-Xylene	50.0	49.5		ug/Kg		99	73 - 128
o-Xylene	50.0	50.1		ug/Kg		100	76 - 127

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 320-417964/8
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,2-Dichloropropane			50.0	49.0		ug/Kg		98	69 - 153		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*63 - 143*
Dibromofluoromethane (Surr)	*109*		*55 - 129*
1,2-Dichloroethane-d4 (Surr)	*101*		*32 - 156*
Toluene-d8 (Surr)	*118*		*63 - 138*

Lab Sample ID: LCSD 320-417964/9
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl tert-butyl ether			50.0	49.3		ug/Kg		99	66 - 146	4	45
Acetone			50.0	61.6		ug/Kg		123	64 - 128	1	36
Benzene			50.0	54.1		ug/Kg		108	78 - 128	7	37
Dichlorobromomethane			50.0	49.7		ug/Kg		99	80 - 137	0	37
Bromobenzene			50.0	51.1		ug/Kg		102	67 - 132	3	40
Chlorobromomethane			50.0	50.1		ug/Kg		100	80 - 127	2	36
Bromoform			50.0	51.1		ug/Kg		102	80 - 136	0	45
Bromomethane			50.0	50.0		ug/Kg		100	48 - 164	7	38
2-Butanone (MEK)			50.0	61.8		ug/Kg		124	71 - 142	5	44
n-Butylbenzene			50.0	57.5		ug/Kg		115	68 - 136	19	37
sec-Butylbenzene			50.0	56.0		ug/Kg		112	68 - 131	15	40
tert-Butylbenzene			50.0	55.3		ug/Kg		111	67 - 131	12	42
Carbon disulfide			50.0	69.7		ug/Kg		139	52 - 145	13	46
Carbon tetrachloride			50.0	56.6		ug/Kg		113	62 - 154	13	43
Chlorobenzene			50.0	52.3		ug/Kg		105	74 - 125	5	38
Chloroethane			50.0	52.0		ug/Kg		104	54 - 148	8	34
Chloroform			50.0	51.5		ug/Kg		103	78 - 135	2	23
Chloromethane			50.0	45.1		ug/Kg		90	60 - 141	7	36
2-Chlorotoluene			50.0	52.9		ug/Kg		106	64 - 127	8	41
4-Chlorotoluene			50.0	53.0		ug/Kg		106	67 - 128	10	40
Chlorodibromomethane			50.0	50.2		ug/Kg		100	80 - 133	1	24
1,2-Dichlorobenzene			50.0	51.5		ug/Kg		103	68 - 121	2	28
1,3-Dichlorobenzene			50.0	53.0		ug/Kg		106	64 - 126	8	41
1,4-Dichlorobenzene			50.0	52.7		ug/Kg		105	65 - 124	6	38
1,3-Dichloropropane			50.0	51.2		ug/Kg		102	80 - 123	0	39
1,1-Dichloropropene			50.0	56.8		ug/Kg		114	76 - 132	13	38
1,2-Dibromo-3-Chloropropane			50.0	47.2		ug/Kg		94	75 - 137	7	48
Ethylene Dibromide			50.0	50.1		ug/Kg		100	80 - 124	2	39
Dibromomethane			50.0	48.4		ug/Kg		97	80 - 129	3	37
Dichlorodifluoromethane			50.0	41.1		ug/Kg		82	60 - 130	13	46
1,1-Dichloroethane			50.0	54.0		ug/Kg		108	76 - 134	5	24
1,2-Dichloroethane			50.0	49.3		ug/Kg		99	66 - 150	0	36
1,1-Dichloroethene			50.0	64.8		ug/Kg		130	66 - 136	15	42
cis-1,2-Dichloroethene			50.0	53.1		ug/Kg		106	74 - 131	4	37
trans-1,2-Dichloroethene			50.0	59.2		ug/Kg		118	67 - 135	10	37

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 320-417964/9
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dichloropropane	50.0	51.6		ug/Kg		103	80 - 129	3	38
cis-1,3-Dichloropropene	50.0	50.2		ug/Kg		100	80 - 134	1	39
trans-1,3-Dichloropropene	50.0	49.3		ug/Kg		99	80 - 148	2	42
Ethylbenzene	50.0	55.3		ug/Kg		111	72 - 125	11	41
Hexachlorobutadiene	50.0	58.0		ug/Kg		116	52 - 140	19	38
2-Hexanone	50.0	60.9		ug/Kg		122	78 - 143	10	73
Isopropylbenzene	50.0	57.0		ug/Kg		114	69 - 137	14	41
4-Isopropyltoluene	50.0	56.5		ug/Kg		113	64 - 137	15	40
Methylene Chloride	50.0	53.8		ug/Kg		108	77 - 125	3	25
4-Methyl-2-pentanone (MIBK)	50.0	61.1		ug/Kg		122	79 - 150	2	48
Naphthalene	50.0	50.6		ug/Kg		101	53 - 140	3	46
N-Propylbenzene	50.0	55.3		ug/Kg		111	63 - 128	14	42
Styrene	50.0	59.0		ug/Kg		118	79 - 128	6	40
1,1,1,2-Tetrachloroethane	50.0	52.0		ug/Kg		104	77 - 134	1	25
1,1,2,2-Tetrachloroethane	50.0	48.1		ug/Kg		96	71 - 134	5	31
Tetrachloroethene	50.0	57.0		ug/Kg		114	65 - 135	15	39
Toluene	50.0	53.9		ug/Kg		108	80 - 124	9	39
1,2,3-Trichlorobenzene	50.0	54.2		ug/Kg		108	54 - 140	5	42
1,2,4-Trichlorobenzene	50.0	55.6		ug/Kg		111	48 - 145	11	39
1,1,1-Trichloroethane	50.0	56.5		ug/Kg		113	67 - 150	10	43
1,1,2-Trichloroethane	50.0	49.7		ug/Kg		99	80 - 128	2	41
Trichloroethene	50.0	54.3		ug/Kg		109	80 - 126	8	40
Trichlorofluoromethane	50.0	52.6		ug/Kg		105	43 - 158	16	32
1,2,3-Trichloropropane	50.0	49.9		ug/Kg		100	71 - 132	0	41
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	66.6		ug/Kg		133	62 - 138	21	22
1,2,4-Trimethylbenzene	50.0	54.2		ug/Kg		108	64 - 137	10	41
1,3,5-Trimethylbenzene	50.0	54.8		ug/Kg		110	66 - 135	12	42
Vinyl acetate	50.0	55.2		ug/Kg		110	39 - 160	2	50
Vinyl chloride	50.0	50.4		ug/Kg		101	67 - 127	13	37
m-Xylene & p-Xylene	50.0	54.8		ug/Kg		110	73 - 128	10	40
o-Xylene	50.0	54.0		ug/Kg		108	76 - 127	7	40
2,2-Dichloropropane	50.0	58.8		ug/Kg		118	69 - 153	18	47

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*63 - 143*
Dibromofluoromethane (Surr)	*108*		*55 - 129*
1,2-Dichloroethane-d4 (Surr)	*100*		*32 - 156*
Toluene-d8 (Surr)	*117*		*63 - 138*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 320-417966/11
Matrix: Solid
Analysis Batch: 417966

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C4-C12	ND		0.50		mg/Kg			10/02/20 12:21	1

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 320-417966/11
Matrix: Solid
Analysis Batch: 417966

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	116		70 - 131		10/02/20 12:21	1

Lab Sample ID: LCS 320-417966/4
Matrix: Solid
Analysis Batch: 417966

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline Range Organics (GRO)-C4-C12			1.00	0.961		mg/Kg		96	79 - 123		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	114		70 - 131

Lab Sample ID: LCSD 320-417966/5
Matrix: Solid
Analysis Batch: 417966

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C4-C12			1.00	0.943		mg/Kg		94	79 - 123	2	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	111		70 - 131

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 320-418771/1-A
Matrix: Solid
Analysis Batch: 419081

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418771

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Acenaphthene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Acenaphthylene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Fluorene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Phenanthrene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Anthracene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Benzo[a]anthracene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Chrysene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Benzo[a]pyrene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Benzo[b]fluoranthene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Benzo[k]fluoranthene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Benzo[g,h,i]perylene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Indeno[1,2,3-cd]pyrene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Fluoranthene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Pyrene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1
Dibenz(a,h)anthracene	ND		5.0		ug/Kg		10/05/20 11:26	10/06/20 12:11	1

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: MB 320-418771/1-A
Matrix: Solid
Analysis Batch: 419081

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418771

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	*78*		*49 - 114*	*10/05/20 11:26*	*10/06/20 12:11*	*1*
2-Fluorobiphenyl (Surr)	*77*		*43 - 109*	*10/05/20 11:26*	*10/06/20 12:11*	*1*
Fluoranthene-d10 (Surr)	*80*		*50 - 150*	*10/05/20 11:26*	*10/06/20 12:11*	*1*
Terphenyl-d14	*90*		*53 - 121*	*10/05/20 11:26*	*10/06/20 12:11*	*1*
2-methylnaphthalene-d10	*81*		*50 - 150*	*10/05/20 11:26*	*10/06/20 12:11*	*1*

Lab Sample ID: LCS 320-418771/2-A
Matrix: Solid
Analysis Batch: 419081

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418771

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	25.0	17.9		ug/Kg		71	55 - 100
Acenaphthene	25.0	17.1		ug/Kg		69	54 - 97
Acenaphthylene	25.0	16.9		ug/Kg		67	52 - 99
Fluorene	25.0	17.1		ug/Kg		68	53 - 100
Phenanthrene	25.0	17.0		ug/Kg		68	54 - 98
Anthracene	25.0	16.9		ug/Kg		68	52 - 102
Benzo[a]anthracene	25.0	19.3		ug/Kg		77	55 - 109
Chrysene	25.0	19.2		ug/Kg		77	54 - 110
Benzo[a]pyrene	25.0	18.6		ug/Kg		74	54 - 110
Benzo[b]fluoranthene	25.0	18.3		ug/Kg		73	52 - 112
Benzo[k]fluoranthene	25.0	18.2		ug/Kg		73	56 - 106
Benzo[g,h,i]perylene	25.0	20.5		ug/Kg		82	51 - 119
Indeno[1,2,3-cd]pyrene	25.0	19.9		ug/Kg		80	52 - 120
Fluoranthene	25.0	17.7		ug/Kg		71	53 - 110
Pyrene	25.0	17.7		ug/Kg		71	53 - 108
Dibenz(a,h)anthracene	25.0	19.5		ug/Kg		78	55 - 119

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Nitrobenzene-d5	*77*		*49 - 114*
2-Fluorobiphenyl (Surr)	*75*		*43 - 109*
Fluoranthene-d10 (Surr)	*79*		*50 - 150*
Terphenyl-d14	*89*		*53 - 121*
2-methylnaphthalene-d10	*78*		*50 - 150*

Lab Sample ID: 320-64982-G-1-I MS
Matrix: Solid
Analysis Batch: 419080

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 418771

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	ND		27.9	22.0		ug/Kg	☼	76	55 - 100
Acenaphthene	ND		27.9	27.8		ug/Kg	☼	91	54 - 97
Acenaphthylene	ND		27.9	20.8		ug/Kg	☼	75	52 - 99
Fluorene	ND	F1	27.9	32.0	F1	ug/Kg	☼	104	53 - 100
Phenanthrene	47	F2 F1	27.9	156	F1	ug/Kg	☼	390	54 - 98
Anthracene	ND	F1	27.9	38.7	F1	ug/Kg	☼	124	52 - 102
Benzo[a]anthracene	20	F1	27.9	74.1	F1	ug/Kg	☼	193	55 - 109
Chrysene	30	F1	27.9	80.2	F1	ug/Kg	☼	180	54 - 110

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 320-64982-G-1-I MS
Matrix: Solid
Analysis Batch: 419080

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 418771

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[a]pyrene	24	F1	27.9	68.4	F1	ug/Kg	☼	160	54 - 110
Benzo[b]fluoranthene	38	F1	27.9	89.8	F1	ug/Kg	☼	187	52 - 112
Benzo[k]fluoranthene	15	F1	27.9	47.2	F1	ug/Kg	☼	114	56 - 106
Benzo[g,h,i]perylene	19	F1	27.9	56.2	F1	ug/Kg	☼	134	51 - 119
Indeno[1,2,3-cd]pyrene	19	F1	27.9	55.3	F1	ug/Kg	☼	129	52 - 120
Fluoranthene	70	F1	27.9	172	F1	ug/Kg	☼	367	53 - 110
Pyrene	53	F1	27.9	137	F1	ug/Kg	☼	300	53 - 108
Dibenz(a,h)anthracene	ND		27.9	29.2		ug/Kg	☼	89	55 - 119

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Nitrobenzene-d5	*79*		*49 - 114*
2-Fluorobiphenyl (Surr)	*76*		*43 - 109*
Fluoranthene-d10 (Surr)	*87*		*50 - 150*
Terphenyl-d14	*91*		*53 - 121*
2-methylnaphthalene-d10	*82*		*50 - 150*

Lab Sample ID: 320-64982-G-1-J MSD
Matrix: Solid
Analysis Batch: 419080

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 418771

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		25.6	20.7		ug/Kg	☼	78	55 - 100	6	30
Acenaphthene	ND		25.6	23.2		ug/Kg	☼	81	54 - 97	18	30
Acenaphthylene	ND		25.6	19.3		ug/Kg	☼	75	52 - 99	8	30
Fluorene	ND	F1	25.6	25.0		ug/Kg	☼	86	53 - 100	24	30
Phenanthrene	47	F2 F1	25.6	97.5	F1 F2	ug/Kg	☼	197	54 - 98	46	30
Anthracene	ND	F1	25.6	29.5		ug/Kg	☼	99	52 - 102	27	30
Benzo[a]anthracene	20	F1	25.6	61.8	F1	ug/Kg	☼	163	55 - 109	18	30
Chrysene	30	F1	25.6	72.5	F1	ug/Kg	☼	167	54 - 110	10	30
Benzo[a]pyrene	24	F1	25.6	63.5	F1	ug/Kg	☼	155	54 - 110	7	30
Benzo[b]fluoranthene	38	F1	25.6	81.6	F1	ug/Kg	☼	172	52 - 112	10	30
Benzo[k]fluoranthene	15	F1	25.6	43.7	F1	ug/Kg	☼	111	56 - 106	8	30
Benzo[g,h,i]perylene	19	F1	25.6	55.9	F1	ug/Kg	☼	145	51 - 119	1	30
Indeno[1,2,3-cd]pyrene	19	F1	25.6	52.3	F1	ug/Kg	☼	129	52 - 120	5	30
Fluoranthene	70	F1	25.6	136	F1	ug/Kg	☼	260	53 - 110	23	30
Pyrene	53	F1	25.6	114	F1	ug/Kg	☼	237	53 - 108	18	30
Dibenz(a,h)anthracene	ND		25.6	27.0		ug/Kg	☼	89	55 - 119	8	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Nitrobenzene-d5	*84*		*49 - 114*
2-Fluorobiphenyl (Surr)	*78*		*43 - 109*
Fluoranthene-d10 (Surr)	*91*		*50 - 150*
Terphenyl-d14	*94*		*53 - 121*
2-methylnaphthalene-d10	*84*		*50 - 150*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 320-418857/1-A
Matrix: Solid
Analysis Batch: 419593

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418857

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		1.0		mg/Kg		10/05/20 13:14	10/07/20 22:04	1
Motor Oil Range Organics [C24-C36]	ND		5.0		mg/Kg		10/05/20 13:14	10/07/20 22:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl (Surr)	*71*		*63 - 141*	*10/05/20 13:14*	*10/07/20 22:04*	*1*

Lab Sample ID: LCS 320-418857/2-A
Matrix: Solid
Analysis Batch: 419593

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418857

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	10.0	8.44		mg/Kg		84	67 - 113

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl (Surr)	*77*		*63 - 141*

Lab Sample ID: 720-100009-1 MS
Matrix: Solid
Analysis Batch: 419593

Client Sample ID: EB-7 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 418857

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	55	F2	11.7	27.4	4	mg/Kg	☼	-232	67 - 113

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
o-Terphenyl (Surr)	*64*		*63 - 141*

Lab Sample ID: 720-100009-1 MSD
Matrix: Solid
Analysis Batch: 419593

Client Sample ID: EB-7 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 418857

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	55	F2	11.9	56.2	4 F2	mg/Kg	☼	13	67 - 113	69	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
o-Terphenyl (Surr)	*70*		*63 - 141*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 570-99486/1-A
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99486

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Dieldrin	ND		0.20		ug/Kg		10/05/20 11:52	10/06/20 13:57	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 570-99486/1-A
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99486

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Endrin aldehyde	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Endrin	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Endrin ketone	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Heptachlor	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Heptachlor epoxide	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
4,4'-DDT	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
4,4'-DDE	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
4,4'-DDD	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Endosulfan I	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Endosulfan II	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
alpha-BHC	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
beta-BHC	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
gamma-BHC (Lindane)	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
delta-BHC	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Endosulfan sulfate	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Methoxychlor	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Toxaphene	ND		5.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
Chlordane (technical)	ND		5.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
cis-Chlordane	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1
trans-Chlordane	ND		1.0		ug/Kg		10/05/20 11:52	10/06/20 13:57	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*90*		*25 - 126*	*10/05/20 11:52*	*10/06/20 13:57*	*1*
DCB Decachlorobiphenyl (Surr)	*84*		*20 - 155*	*10/05/20 11:52*	*10/06/20 13:57*	*1*

Lab Sample ID: LCS 570-99486/2-A
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	5.00	3.25		ug/Kg		65	50 - 135
Dieldrin	5.00	3.77		ug/Kg		75	50 - 135
Endrin aldehyde	5.00	3.56		ug/Kg		71	50 - 135
Endrin	5.00	3.41		ug/Kg		68	50 - 135
Endrin ketone	5.00	4.13		ug/Kg		83	50 - 135
Heptachlor	5.00	3.20		ug/Kg		64	50 - 135
Heptachlor epoxide	5.00	3.51		ug/Kg		70	50 - 135
4,4'-DDT	5.00	3.35		ug/Kg		67	50 - 135
4,4'-DDE	5.00	3.79		ug/Kg		76	50 - 135
4,4'-DDD	5.00	3.80		ug/Kg		76	50 - 135
Endosulfan I	5.00	3.47		ug/Kg		69	50 - 135
Endosulfan II	5.00	3.88		ug/Kg		78	50 - 135
alpha-BHC	5.00	3.46		ug/Kg		69	50 - 135
beta-BHC	5.00	3.04		ug/Kg		61	50 - 135
gamma-BHC (Lindane)	5.00	3.31		ug/Kg		66	50 - 135
delta-BHC	5.00	3.29		ug/Kg		66	50 - 135
Endosulfan sulfate	5.00	3.71		ug/Kg		74	50 - 135
Methoxychlor	5.00	3.91		ug/Kg		78	50 - 135

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 570-99486/2-A
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-Chlordane	5.00	3.52		ug/Kg		70	50 - 135
trans-Chlordane	5.00	3.46		ug/Kg		69	50 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*94*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*93*		*20 - 155*

Lab Sample ID: LCSD 570-99486/3-A
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	5.00	3.78		ug/Kg		76	50 - 135	15	25
Dieldrin	5.00	4.42		ug/Kg		88	50 - 135	16	25
Endrin aldehyde	5.00	4.09		ug/Kg		82	50 - 135	14	25
Endrin	5.00	4.04		ug/Kg		81	50 - 135	17	25
Endrin ketone	5.00	4.92		ug/Kg		98	50 - 135	17	25
Heptachlor	5.00	3.71		ug/Kg		74	50 - 135	15	25
Heptachlor epoxide	5.00	4.11		ug/Kg		82	50 - 135	16	25
4,4'-DDT	5.00	3.82		ug/Kg		76	50 - 135	13	25
4,4'-DDE	5.00	4.59		ug/Kg		92	50 - 135	19	25
4,4'-DDD	5.00	4.56		ug/Kg		91	50 - 135	18	25
Endosulfan I	5.00	4.15		ug/Kg		83	50 - 135	18	25
Endosulfan II	5.00	4.65		ug/Kg		93	50 - 135	18	25
alpha-BHC	5.00	3.97		ug/Kg		79	50 - 135	14	25
beta-BHC	5.00	3.53		ug/Kg		71	50 - 135	15	25
gamma-BHC (Lindane)	5.00	3.83		ug/Kg		77	50 - 135	15	25
delta-BHC	5.00	3.83		ug/Kg		77	50 - 135	15	25
Endosulfan sulfate	5.00	4.41		ug/Kg		88	50 - 135	17	25
Methoxychlor	5.00	4.69		ug/Kg		94	50 - 135	18	25
cis-Chlordane	5.00	4.18		ug/Kg		84	50 - 135	17	25
trans-Chlordane	5.00	4.13		ug/Kg		83	50 - 135	18	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*74*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*74*		*20 - 155*

Lab Sample ID: 570-39813-A-5-K MS
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	ND		5.76	3.83		ug/Kg	☼	67	50 - 135
Dieldrin	ND		5.76	4.41		ug/Kg	☼	77	50 - 135
Endrin aldehyde	ND	F2 F1	5.76	2.49	F1	ug/Kg	☼	43	50 - 135
Endrin	ND		5.76	3.85		ug/Kg	☼	67	50 - 135
Endrin ketone	ND	F2	5.76	3.29		ug/Kg	☼	57	50 - 135
Heptachlor	ND		5.76	3.88		ug/Kg	☼	67	50 - 135

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 570-39813-A-5-K MS
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Heptachlor epoxide	ND		5.76	4.06		ug/Kg	☼	71	50 - 135
4,4'-DDT	ND		5.76	3.53		ug/Kg	☼	58	50 - 135
4,4'-DDE	ND		5.76	4.27		ug/Kg	☼	71	50 - 135
4,4'-DDD	ND		5.76	4.30		ug/Kg	☼	75	50 - 135
Endosulfan I	ND		5.76	3.98		ug/Kg	☼	69	50 - 135
Endosulfan II	ND	F2 F1	5.76	1.86	F1	ug/Kg	☼	32	50 - 135
alpha-BHC	ND		5.76	4.07		ug/Kg	☼	71	50 - 135
beta-BHC	ND		5.76	3.50		ug/Kg	☼	61	50 - 135
gamma-BHC (Lindane)	ND		5.76	3.85		ug/Kg	☼	67	50 - 135
delta-BHC	ND	F2	5.76	3.28		ug/Kg	☼	57	50 - 135
Endosulfan sulfate	ND	F2 F1	5.76	ND	F1	ug/Kg	☼	17	50 - 135
Methoxychlor	ND	F1	5.76	ND	F1	ug/Kg	☼	11	50 - 135
cis-Chlordane	ND		5.76	4.08		ug/Kg	☼	71	50 - 135
trans-Chlordane	ND		5.76	4.11		ug/Kg	☼	71	50 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*113*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*106*		*20 - 155*

Lab Sample ID: 570-39813-A-5-L MSD
Matrix: Solid
Analysis Batch: 99780

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	ND		5.70	4.32		ug/Kg	☼	76	50 - 135	12	25
Dieldrin	ND		5.70	5.09		ug/Kg	☼	89	50 - 135	14	25
Endrin aldehyde	ND	F2 F1	5.70	3.90	F2	ug/Kg	☼	68	50 - 135	44	25
Endrin	ND		5.70	4.32		ug/Kg	☼	76	50 - 135	12	25
Endrin ketone	ND	F2	5.70	4.86	F2	ug/Kg	☼	85	50 - 135	39	25
Heptachlor	ND		5.70	4.30		ug/Kg	☼	76	50 - 135	11	25
Heptachlor epoxide	ND		5.70	4.82		ug/Kg	☼	85	50 - 135	17	25
4,4'-DDT	ND		5.70	4.14		ug/Kg	☼	69	50 - 135	16	25
4,4'-DDE	ND		5.70	4.90		ug/Kg	☼	83	50 - 135	14	25
4,4'-DDD	ND		5.70	5.09		ug/Kg	☼	89	50 - 135	17	25
Endosulfan I	ND		5.70	4.63		ug/Kg	☼	81	50 - 135	15	25
Endosulfan II	ND	F2 F1	5.70	3.79	F2	ug/Kg	☼	67	50 - 135	69	25
alpha-BHC	ND		5.70	4.67		ug/Kg	☼	82	50 - 135	14	25
beta-BHC	ND		5.70	4.12		ug/Kg	☼	72	50 - 135	16	25
gamma-BHC (Lindane)	ND		5.70	4.45		ug/Kg	☼	78	50 - 135	14	25
delta-BHC	ND	F2	5.70	4.28	F2	ug/Kg	☼	75	50 - 135	26	25
Endosulfan sulfate	ND	F2 F1	5.70	2.69	F2 F1	ug/Kg	☼	47	50 - 135	92	25
Methoxychlor	ND	F1	5.70	2.18	F2 F1	ug/Kg	☼	38	50 - 135	108	25
cis-Chlordane	ND		5.70	4.67		ug/Kg	☼	82	50 - 135	14	25
trans-Chlordane	ND		5.70	4.63		ug/Kg	☼	81	50 - 135	12	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*116*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*118*		*20 - 155*

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 570-99486/1-A
Matrix: Solid
Analysis Batch: 99724

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99486

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1221	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1232	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1242	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1248	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1254	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1260	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1262	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1
Aroclor-1268	ND		10		ug/Kg		10/05/20 11:52	10/06/20 10:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*87*		*20 - 155*	*10/05/20 11:52*	*10/06/20 10:45*	*1*
Tetrachloro-m-xylene (Surr)	*91*		*25 - 126*	*10/05/20 11:52*	*10/06/20 10:45*	*1*

Lab Sample ID: LCS 570-99486/4-A
Matrix: Solid
Analysis Batch: 99724

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99486

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aroclor-1016			20.0	22.0		ug/Kg		110	50 - 150		
Aroclor-1260			20.0	19.3		ug/Kg		97	50 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*98*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*101*		*25 - 126*

Lab Sample ID: LCSD 570-99486/5-A
Matrix: Solid
Analysis Batch: 99724

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99486

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor-1016			20.0	24.9		ug/Kg		124	50 - 150	12	30
Aroclor-1260			20.0	22.1		ug/Kg		110	50 - 150	13	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*108*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*110*		*25 - 126*

Lab Sample ID: 570-39813-A-5-M MS
Matrix: Solid
Analysis Batch: 99724

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aroclor-1016	ND		20.1	18.5		ug/Kg		92	20 - 180		
Aroclor-1260	ND		20.1	17.7		ug/Kg		88	20 - 180		

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: 570-39813-A-5-M MS
Matrix: Solid
Analysis Batch: 99724

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99486

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*82*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*84*		*25 - 126*

Lab Sample ID: 570-39813-A-5-N MSD
Matrix: Solid
Analysis Batch: 99724

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 99486

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor-1016	ND		20.1	18.7		ug/Kg		93	20 - 180	1	40
Aroclor-1260	ND		20.1	17.8		ug/Kg		89	20 - 180	0	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*93*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*95*		*25 - 126*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 320-418834/1-A
Matrix: Solid
Analysis Batch: 419260

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 418834

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.50		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Arsenic	ND		2.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Barium	ND		1.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Beryllium	ND		0.20		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Cadmium	ND		0.20		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Cobalt	ND		0.50		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Chromium	ND		0.50		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Copper	ND		1.5		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Molybdenum	ND		2.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Nickel	ND		1.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Lead	ND		1.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Selenium	ND		2.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Antimony	ND		2.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Thallium	ND		2.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Vanadium	ND		0.50		mg/Kg		10/05/20 13:40	10/06/20 10:17	1
Zinc	ND		2.0		mg/Kg		10/05/20 13:40	10/06/20 10:17	1

Lab Sample ID: LCS 320-418834/2-A
Matrix: Solid
Analysis Batch: 419260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418834

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	4.98	4.31		mg/Kg		87	80 - 120
Arsenic	50.0	42.0		mg/Kg		84	80 - 120
Barium	50.0	45.6		mg/Kg		91	80 - 120
Beryllium	25.0	22.6		mg/Kg		90	80 - 120
Cadmium	25.0	21.9		mg/Kg		88	80 - 120

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 320-418834/2-A
Matrix: Solid
Analysis Batch: 419260

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 418834

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cobalt	25.0	22.5		mg/Kg		90	80 - 120
Chromium	25.0	22.5		mg/Kg		90	80 - 120
Copper	25.0	23.4		mg/Kg		94	80 - 120
Molybdenum	25.0	23.0		mg/Kg		92	80 - 120
Nickel	25.0	22.2		mg/Kg		89	80 - 120
Lead	25.0	22.7		mg/Kg		91	80 - 120
Selenium	50.0	41.3		mg/Kg		83	80 - 120
Antimony	49.5	41.7		mg/Kg		84	80 - 120
Thallium	50.0	45.0		mg/Kg		90	80 - 120
Vanadium	25.0	23.2		mg/Kg		93	80 - 120
Zinc	50.0	45.2		mg/Kg		90	80 - 120

Lab Sample ID: 720-100009-1 MS
Matrix: Solid
Analysis Batch: 419260

Client Sample ID: EB-7 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 418834

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND		6.01	5.23		mg/Kg	☼	87	80 - 120
Arsenic	9.5		60.4	58.9		mg/Kg	☼	82	80 - 120
Barium	43		60.4	101		mg/Kg	☼	95	80 - 120
Beryllium	ND		30.2	26.3		mg/Kg	☼	87	80 - 120
Cadmium	ND		30.2	25.5		mg/Kg	☼	84	80 - 120
Cobalt	130		30.2	160	4	mg/Kg	☼	107	80 - 120
Chromium	1300		30.2	1150	4	mg/Kg	☼	-519	80 - 120
Copper	20		30.2	49.7		mg/Kg	☼	98	80 - 120
Molybdenum	ND		30.2	27.5		mg/Kg	☼	91	80 - 120
Nickel	2800		30.2	2820	4	mg/Kg	☼	144	80 - 120
Lead	26	F1	30.2	51.2		mg/Kg	☼	82	80 - 120
Selenium	ND		60.4	49.9		mg/Kg	☼	83	80 - 120
Antimony	5.8	F1	59.8	17.0	F1	mg/Kg	☼	19	80 - 120
Thallium	ND		60.4	53.8		mg/Kg	☼	86	80 - 120
Vanadium	50		30.2	75.1		mg/Kg	☼	82	80 - 120
Zinc	63		60.4	114		mg/Kg	☼	85	80 - 120

Lab Sample ID: 720-100009-1 MSD
Matrix: Solid
Analysis Batch: 419260

Client Sample ID: EB-7 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 418834

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver	ND		5.90	5.13		mg/Kg	☼	87	80 - 120	2	35
Arsenic	9.5		59.2	57.2		mg/Kg	☼	81	80 - 120	3	35
Barium	43		59.2	97.4		mg/Kg	☼	92	80 - 120	3	35
Beryllium	ND		29.6	25.9		mg/Kg	☼	87	80 - 120	1	35
Cadmium	ND		29.6	24.8		mg/Kg	☼	84	80 - 120	3	35
Cobalt	130		29.6	150	4	mg/Kg	☼	76	80 - 120	6	35
Chromium	1300		29.6	1110	4	mg/Kg	☼	-676	80 - 120	4	35
Copper	20		29.6	49.6		mg/Kg	☼	99	80 - 120	0	35
Molybdenum	ND		29.6	26.8		mg/Kg	☼	91	80 - 120	2	35
Nickel	2800		29.6	2890	4	mg/Kg	☼	360	80 - 120	2	35

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 720-100009-1 MSD
Matrix: Solid
Analysis Batch: 419260

Client Sample ID: EB-7 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 418834

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	26	F1	29.6	49.3	F1	mg/Kg	☼	78	80 - 120	4	35
Selenium	ND		59.2	49.0		mg/Kg	☼	83	80 - 120	2	35
Antimony	5.8	F1	58.6	17.1	F1	mg/Kg	☼	19	80 - 120	1	35
Thallium	ND		59.2	52.4		mg/Kg	☼	86	80 - 120	3	35
Vanadium	50		29.6	75.0		mg/Kg	☼	83	80 - 120	0	35
Zinc	63		59.2	113		mg/Kg	☼	85	80 - 120	1	35

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 320-417508/11-A
Matrix: Solid
Analysis Batch: 418201

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 417508

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.040		mg/Kg		10/01/20 11:30	10/01/20 14:43	1

Lab Sample ID: LCS 320-417508/12-A
Matrix: Solid
Analysis Batch: 418201

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 417508

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.167	0.171		mg/Kg		102	86 - 114		

Lab Sample ID: LCSD 320-417508/13-A
Matrix: Solid
Analysis Batch: 418201

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 417508

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.167	0.173		mg/Kg		103	86 - 114	1	17

QC Association Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

GC/MS VOA

Prep Batch: 417283

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	5035	
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	5035	

Analysis Batch: 417964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	8260B	417283
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	8260B	417283
MB 320-417964/11	Method Blank	Total/NA	Solid	8260B	
LCS 320-417964/8	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 320-417964/9	Lab Control Sample Dup	Total/NA	Solid	8260B	

Analysis Batch: 417966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	8260B/CA_LUFT MS	417283
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	8260B/CA_LUFT MS	417283
MB 320-417966/11	Method Blank	Total/NA	Solid	8260B/CA_LUFT MS	
LCS 320-417966/4	Lab Control Sample	Total/NA	Solid	8260B/CA_LUFT MS	
LCSD 320-417966/5	Lab Control Sample Dup	Total/NA	Solid	8260B/CA_LUFT MS	

GC/MS Semi VOA

ISM Prep Batch: 416565

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64982-G-1-I MS	Matrix Spike	Total/NA	Solid	Increment, prep	
320-64982-G-1-J MSD	Matrix Spike Duplicate	Total/NA	Solid	Increment, prep	

Prep Batch: 418771

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	3546	
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	3546	
MB 320-418771/1-A	Method Blank	Total/NA	Solid	3546	
LCS 320-418771/2-A	Lab Control Sample	Total/NA	Solid	3546	
320-64982-G-1-I MS	Matrix Spike	Total/NA	Solid	3546	416565
320-64982-G-1-J MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	416565

Analysis Batch: 419080

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-64982-G-1-I MS	Matrix Spike	Total/NA	Solid	8270C SIM	418771
320-64982-G-1-J MSD	Matrix Spike Duplicate	Total/NA	Solid	8270C SIM	418771

Analysis Batch: 419081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	8270C SIM	418771
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	8270C SIM	418771
MB 320-418771/1-A	Method Blank	Total/NA	Solid	8270C SIM	418771
LCS 320-418771/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	418771

GC Semi VOA

Prep Batch: 99486

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	3546	
MB 570-99486/1-A	Method Blank	Total/NA	Solid	3546	
LCS 570-99486/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCS 570-99486/4-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 570-99486/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
LCSD 570-99486/5-A	Lab Control Sample Dup	Total/NA	Solid	3546	
570-39813-A-5-K MS	Matrix Spike	Total/NA	Solid	3546	
570-39813-A-5-L MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	
570-39813-A-5-M MS	Matrix Spike	Total/NA	Solid	3546	
570-39813-A-5-N MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	

Analysis Batch: 99724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	8082	99486
MB 570-99486/1-A	Method Blank	Total/NA	Solid	8082	99486
LCS 570-99486/4-A	Lab Control Sample	Total/NA	Solid	8082	99486
LCSD 570-99486/5-A	Lab Control Sample Dup	Total/NA	Solid	8082	99486
570-39813-A-5-M MS	Matrix Spike	Total/NA	Solid	8082	99486
570-39813-A-5-N MSD	Matrix Spike Duplicate	Total/NA	Solid	8082	99486

Analysis Batch: 99780

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	8081A	99486
MB 570-99486/1-A	Method Blank	Total/NA	Solid	8081A	99486
LCS 570-99486/2-A	Lab Control Sample	Total/NA	Solid	8081A	99486
LCSD 570-99486/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	99486
570-39813-A-5-K MS	Matrix Spike	Total/NA	Solid	8081A	99486
570-39813-A-5-L MSD	Matrix Spike Duplicate	Total/NA	Solid	8081A	99486

Prep Batch: 418857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	3550B	
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	3550B	
MB 320-418857/1-A	Method Blank	Total/NA	Solid	3550B	
LCS 320-418857/2-A	Lab Control Sample	Total/NA	Solid	3550B	
720-100009-1 MS	EB-7 (0'-0.5')	Total/NA	Solid	3550B	
720-100009-1 MSD	EB-7 (0'-0.5')	Total/NA	Solid	3550B	

Analysis Batch: 419593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	8015B	418857
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	8015B	418857
MB 320-418857/1-A	Method Blank	Total/NA	Solid	8015B	418857
LCS 320-418857/2-A	Lab Control Sample	Total/NA	Solid	8015B	418857
720-100009-1 MS	EB-7 (0'-0.5')	Total/NA	Solid	8015B	418857
720-100009-1 MSD	EB-7 (0'-0.5')	Total/NA	Solid	8015B	418857

QC Association Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Metals

Prep Batch: 417508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	7471A	
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	7471A	
720-100009-3	EB-7 (9.5'-10')	Total/NA	Solid	7471A	
MB 320-417508/11-A	Method Blank	Total/NA	Solid	7471A	
LCS 320-417508/12-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 320-417508/13-A	Lab Control Sample Dup	Total/NA	Solid	7471A	

Analysis Batch: 418201

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	7471A	417508
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	7471A	417508
720-100009-3	EB-7 (9.5'-10')	Total/NA	Solid	7471A	417508
MB 320-417508/11-A	Method Blank	Total/NA	Solid	7471A	417508
LCS 320-417508/12-A	Lab Control Sample	Total/NA	Solid	7471A	417508
LCSD 320-417508/13-A	Lab Control Sample Dup	Total/NA	Solid	7471A	417508

Prep Batch: 418834

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	3050B	
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	3050B	
720-100009-3	EB-7 (9.5'-10')	Total/NA	Solid	3050B	
MB 320-418834/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 320-418834/2-A	Lab Control Sample	Total/NA	Solid	3050B	
720-100009-1 MS	EB-7 (0'-0.5')	Total/NA	Solid	3050B	
720-100009-1 MSD	EB-7 (0'-0.5')	Total/NA	Solid	3050B	

Analysis Batch: 419260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	6010B	418834
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	6010B	418834
720-100009-3	EB-7 (9.5'-10')	Total/NA	Solid	6010B	418834
MB 320-418834/1-A	Method Blank	Total/NA	Solid	6010B	418834
LCS 320-418834/2-A	Lab Control Sample	Total/NA	Solid	6010B	418834
720-100009-1 MS	EB-7 (0'-0.5')	Total/NA	Solid	6010B	418834
720-100009-1 MSD	EB-7 (0'-0.5')	Total/NA	Solid	6010B	418834

General Chemistry

Analysis Batch: 417650

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	Total/NA	Solid	D 2216	
720-100009-2	EB-7 (3'-3.5')	Total/NA	Solid	D 2216	
720-100009-3	EB-7 (9.5'-10')	Total/NA	Solid	D 2216	
320-65190-A-1 DU	Duplicate	Total/NA	Solid	D 2216	

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Client Sample ID: EB-7 (0'-0.5')
Date Collected: 09/29/20 09:25
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	417650	10/01/20 12:36	TCS	TAL SAC

Client Sample ID: EB-7 (0'-0.5')
Date Collected: 09/29/20 09:25
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-1
Matrix: Solid
Percent Solids: 83.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			417283	09/30/20 14:08	SD	TAL SAC
Total/NA	Analysis	8260B		1	417964	10/02/20 16:41	AP1	TAL SAC
Total/NA	Prep	5035			417283	09/30/20 14:08	SD	TAL SAC
Total/NA	Analysis	8260B/CA_LUFTMS		1	417966	10/02/20 16:41	AP1	TAL SAC
Total/NA	Prep	3546			418771	10/05/20 11:26	EDC	TAL SAC
Total/NA	Analysis	8270C SIM		1	419081	10/06/20 13:10	Y1S	TAL SAC
Total/NA	Prep	3550B			418857	10/05/20 13:14	EDC	TAL SAC
Total/NA	Analysis	8015B		1	419593	10/08/20 01:41	VMN	TAL SAC
Total/NA	Prep	3546			99486	10/05/20 11:52	F7UI	ECL 1
Total/NA	Analysis	8081A		1	99780	10/06/20 15:37	UHHN	ECL 1
Total/NA	Prep	3546			99486	10/05/20 11:52	F7UI	ECL 1
Total/NA	Analysis	8082		1	99724	10/06/20 12:53	UHHN	ECL 1
Total/NA	Prep	3050B			418834	10/05/20 13:40	JP	TAL SAC
Total/NA	Analysis	6010B		1	419260	10/06/20 10:33	SP	TAL SAC
Total/NA	Prep	7471A			417508	10/01/20 11:30	IM	TAL SAC
Total/NA	Analysis	7471A		1	418201	10/01/20 15:57	IM	TAL SAC

Client Sample ID: EB-7 (3'-3.5')
Date Collected: 09/29/20 09:50
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	417650	10/01/20 12:36	TCS	TAL SAC

Client Sample ID: EB-7 (3'-3.5')
Date Collected: 09/29/20 09:50
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-2
Matrix: Solid
Percent Solids: 67.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			417283	09/30/20 14:08	SD	TAL SAC
Total/NA	Analysis	8260B		1	417964	10/02/20 17:05	AP1	TAL SAC
Total/NA	Prep	5035			417283	09/30/20 14:08	SD	TAL SAC
Total/NA	Analysis	8260B/CA_LUFTMS		1	417966	10/02/20 17:05	AP1	TAL SAC
Total/NA	Prep	3546			418771	10/05/20 11:26	EDC	TAL SAC
Total/NA	Analysis	8270C SIM		1	419081	10/06/20 13:39	Y1S	TAL SAC
Total/NA	Prep	3550B			418857	10/05/20 13:14	EDC	TAL SAC
Total/NA	Analysis	8015B		1	419593	10/08/20 02:53	VMN	TAL SAC

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Client Sample ID: EB-7 (3'-3.5')

Lab Sample ID: 720-100009-2

Date Collected: 09/29/20 09:50
Matrix: Solid
Date Received: 09/29/20 16:28
Percent Solids: 67.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418834	10/05/20 13:40	JP	TAL SAC
Total/NA	Analysis	6010B		1	419260	10/06/20 10:54	SP	TAL SAC
Total/NA	Prep	7471A			417508	10/01/20 11:30	IM	TAL SAC
Total/NA	Analysis	7471A		1	418201	10/01/20 16:00	IM	TAL SAC

Client Sample ID: EB-7 (9.5'-10')

Lab Sample ID: 720-100009-3

Date Collected: 09/29/20 10:45
Matrix: Solid
Date Received: 09/29/20 16:28

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	417650	10/01/20 12:36	TCS	TAL SAC

Client Sample ID: EB-7 (9.5'-10')

Lab Sample ID: 720-100009-3

Date Collected: 09/29/20 10:45
Matrix: Solid
Date Received: 09/29/20 16:28
Percent Solids: 75.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			418834	10/05/20 13:40	JP	TAL SAC
Total/NA	Analysis	6010B		1	419260	10/06/20 11:06	SP	TAL SAC
Total/NA	Prep	7471A			417508	10/01/20 11:30	IM	TAL SAC
Total/NA	Analysis	7471A		1	418201	10/01/20 16:02	IM	TAL SAC

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Laboratory: Eurofins Calscience LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2944	09-30-21

Laboratory: Eurofins TestAmerica, Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	2897	01-31-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015B	3550B	Solid	Motor Oil Range Organics [C24-C36]
D 2216		Solid	Percent Moisture

Method Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAC
8260B/CA_LUFTMS	Volatile Organic Compounds by GC/MS	SW846	TAL SAC
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	TAL SAC
8015B	Diesel Range Organics (DRO) (GC)	SW846	TAL SAC
8081A	Organochlorine Pesticides (GC)	SW846	ECL 1
8082	Polychlorinated Biphenyls (PCBs) (GC)	SW846	ECL 1
6010B	Metals (ICP)	SW846	TAL SAC
7471A	Mercury (CVAA)	SW846	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3050B	Preparation, Metals	SW846	TAL SAC
3546	Microwave Extraction (Low Level)	SW846	ECL 1
3546	Microwave Extraction	SW846	TAL SAC
3550B	Ultrasonic Extraction	SW846	TAL SAC
5035	Closed System Purge and Trap	SW846	TAL SAC
7471A	Preparation, Mercury	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
720-100009-1	EB-7 (0'-0.5')	Solid	09/29/20 09:25	09/29/20 16:28	
720-100009-2	EB-7 (3'-3.5')	Solid	09/29/20 09:50	09/29/20 16:28	
720-100009-3	EB-7 (9.5'-10')	Solid	09/29/20 10:45	09/29/20 16:28	

CORNERSTONE EARTH GROUP

Chain of Custody Record

720-100009

197390

Cornerstone Earth Group, Inc.	Project Manager: Chris Heiny	Site Sampler: Everett Allen	Date: 9/29/20	COC No:
1220 Oakland Blvd. Suite 220	Tel/Fax: 925-988-9500 ext. 217	Lab Contact:	Lab:	____ of ____ COCs
Walnut Creek, CA 94596	Analysis Turnaround Time			Laboratory's Job No.
(925)-988-9500 Phone	TAT if different from Below ____			
(925)-988-9501 FAX	■ 1 week			
Project Name: Darrell Water Tank	☐ 3 days			
Site: Hillsborough, CA	☐ 2 days			
Project Number: 996-2-2	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	CAM 17 Metals (EPA Test Method 6010B/7471)	PCBs (EPA Test Method 8082)	OCPs (EPA Test Method 8081)	PAHs (EPA Test Method 8270SIM)	TPHd/TPHo (EPA Test Method 8015)	VOCs/TPHg (EPA Test Method 8260B)	Report on Dry Weight Basis	Laboratory's Sample Specific Notes:
EB-7 (0'-0.5')	9/29/20	9:25	Liner/CNO ~~Grab~~	Soil	4		X	X	X	X	X	X		Report all on a dry weight basis
EB-7 (3'-3.5')	9/29/20	9:50	Liner/CNO	Soil	4		X			X	X	X		
EB-7 (9.5'-10')	9/29/20	10:45	liner	Soil	1		X							
				~~Soil~~ EA										

720-100009 Chain of Custody

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other ____

Possible Hazard Identification

☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown*

Sample Disposal

☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*

Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.

Please email results to: cheiny@cornerstoneearth.com;
eallen@cornerstoneearth.com
dlin@cornerstoneearth.com

7.3°C
~~7.3°C~~ DC 9-29-20

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Cornerstone Earth Group	9/29/20 15:00	[signature]	DCS	9/29 / 15:00 pm
[signature]	DCS	9/29/20 16:23	[signature]	ETA DIS	9-29-2020 1628

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919 Fax: 925-600-3002

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Salimpour, Afsaneh F	Carrier Tracking No(s):	COC No: 720-49965.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Afsaneh.Salimpour@Eurofinset.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State - California; State Program - California		Job #: 720-100009-1
Address: 880 Riverside Parkway,	Due Date Requested: 10/6/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Darrell Water Tank	Project #: 72007780			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	7471A/7471A_Prep Mercury Only	6010B/3050B CAM 17 List, minus Mercury	8260B/5035LP_Calc (MOD) VOCs	8260B/CA_LUFTMS/5035LP_Calc GRO C4-C12	8270C_SIM/3546 (MOD) PAH SIM	8015B_DRO/3550B (MOD) DRO/MRO	Moisture/ (MOD) Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:												
EB-7 (0'-0.5') (720-100009-1)	9/29/20	09:25 Pacific		Solid			X	X	X	X	X	X	X	4	
EB-7 (3'-3.5') (720-100009-2)	9/29/20	09:50 Pacific		Solid			X	X	X	X	X	X	X	4	
EB-7 (9.5'-10') (720-100009-3)	9/29/20	10:45 Pacific		Solid			X	X						1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		9/30/20 8:35	EA PB		09/30/20 835	eta Sac
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.1 on S.R

Ver: 01/16/2019

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919 Fax: 925-600-3002

Chain of Custody Record

eurofins | Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Salimpour, Afsaneh F	Carrier Tracking No(s):	COC No: 720-49966.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Afsaneh.Salimpour@Eurofinset.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): State - California; State Program - California		Job #: 720-100009-1
Address: 7440 Lincoln Way, ,	Due Date Requested: 10/6/2020			
City: Garden Grove	TAT Requested (days):			
State, Zip: CA, 92841				
Phone: 714-895-5494(Tel) 714-894-7501(Fax)	PO #:			
Email:	WO #:			
Project Name: Darrell Water Tank	Project #: 72007780			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8081A_LL/3546_LL (MOD) Local Method	8082_LL/3546_LL Routine PCBs	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
EB-7 (0'-0.5') (720-100009-1)	9/29/20	09:25 Pacific		Solid			X	X	1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	[signature]	9/30/20 1600	FedEx			
2	[signature] (Fed EX)			[signature]	10-1-2020 10:30	ECI
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 3.9 / 3.1 sc 6

eurofins | Environment Testing TestAmerica

Sacramento Sample Receiving Notes

720-100009 Field Sheet

Job: _____

Tracking # : N/A

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / (Courier)

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.
File in the job folder with the COC.

Therm. ID: NM03 Corr. Factor: (+) / -) 0.4 °C

Ice ✓ Wet _____ Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: —

Temp Observed: 3.1 °C Corrected: 3.5 °C

From: Temp Blank ☐ Sample ☑

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐

Initials: ST Date: 9/30/20 9/30 ST 9/30/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☐	☑
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: ST Date: 9/30/20

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☐	☑
Log Release checked in TALS?	☐	☐	☑

Initials: ST Date: 9/30/20

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100009-1

Login Number: 100009
List Number: 1
Creator: Mullen, Joan

List Source: Eurofins TestAmerica, Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100009-1

Login Number: 100009
List Number: 3
Creator: Cortez Diaz, Antonio

List Source: Eurofins Calscience
List Creation: 10/01/20 05:33 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.9/3.1
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100009-1

Login Number: 100009
List Number: 2
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento
List Creation: 09/30/20 08:52 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1c cor 3.5c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

Laboratory Job ID: 720-100009-2
Client Project/Site: Darrell Water Tank

For:
Cornerstone Earth Group
1220 Oakland Blvd
Suite 220
Walnut Creek, California 94085

Attn: Mr. Chris Heiny

Authorized for release by:
10/20/2020 4:21:28 PM

Afsaneh Salimpour, Senior Project Manager
(925)484-1919
Afsaneh.Salimpour@Eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Job ID: 720-100009-2

Laboratory: Eurofins TestAmerica, Pleasanton

Narrative

Job Narrative
720-100009-2

Comments
No additional comments.

Receipt
The samples were received on 9/29/2020 4:28 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 7.3º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Client Sample ID: EB-7 (0'-0.5') — Lab Sample ID: 720-100009-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.14		0.10		mg/L	1		6010B	TCLP

Client Sample ID: EB-7 (3'-3.5') — Lab Sample ID: 720-100009-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.10		0.10		mg/L	1		6010B	TCLP

Client Sample ID: EB-7 (9.5'-10') — Lab Sample ID: 720-100009-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.12		0.10		mg/L	1		6010B	TCLP

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Client Sample ID: EB-7 (0'-0.5')
Date Collected: 09/29/20 09:25
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-1
Matrix: Solid

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.14		0.10		mg/L		10/19/20 14:34	10/20/20 13:44	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Client Sample ID: EB-7 (3'-3.5')

Date Collected: 09/29/20 09:50
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-2

Matrix: Solid

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.10		0.10		mg/L		10/19/20 14:34	10/20/20 13:48	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Client Sample ID: EB-7 (9.5'-10')

Date Collected: 09/29/20 10:45
Date Received: 09/29/20 16:28

Lab Sample ID: 720-100009-3

Matrix: Solid

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	0.12		0.10		mg/L		10/19/20 14:34	10/20/20 14:00	1

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 320-423425/1-A
Matrix: Solid
Analysis Batch: 423679

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423425

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.020		mg/L		10/19/20 14:34	10/20/20 12:34	1

Lab Sample ID: LCS 320-423425/2-A
Matrix: Solid
Analysis Batch: 423679

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423425

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.250	0.262		mg/L		105	84 - 114

Lab Sample ID: LB 320-422400/1-B
Matrix: Solid
Analysis Batch: 423679

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 423425

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.10		mg/L		10/19/20 14:34	10/20/20 12:42	1

Lab Sample ID: 720-99822-D-19-J MS
Matrix: Solid
Analysis Batch: 423679

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 423425

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chromium	0.69		1.25	1.89		mg/L		97	84 - 114

Lab Sample ID: 720-99822-D-19-K MSD
Matrix: Solid
Analysis Batch: 423679

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP
Prep Batch: 423425

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	0.69		1.25	1.86		mg/L		94	84 - 114	2	20

QC Association Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Metals

Leach Batch: 422400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	TCLP	Solid	1311	
720-100009-2	EB-7 (3'-3.5')	TCLP	Solid	1311	
720-100009-3	EB-7 (9.5'-10')	TCLP	Solid	1311	
LB 320-422400/1-B	Method Blank	TCLP	Solid	1311	
720-99822-D-19-J MS	Matrix Spike	TCLP	Solid	1311	
720-99822-D-19-K MSD	Matrix Spike Duplicate	TCLP	Solid	1311	

Prep Batch: 423425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	TCLP	Solid	3010A	422400
720-100009-2	EB-7 (3'-3.5')	TCLP	Solid	3010A	422400
720-100009-3	EB-7 (9.5'-10')	TCLP	Solid	3010A	422400
LB 320-422400/1-B	Method Blank	TCLP	Solid	3010A	422400
MB 320-423425/1-A	Method Blank	Total/NA	Solid	3010A	
LCS 320-423425/2-A	Lab Control Sample	Total/NA	Solid	3010A	
720-99822-D-19-J MS	Matrix Spike	TCLP	Solid	3010A	422400
720-99822-D-19-K MSD	Matrix Spike Duplicate	TCLP	Solid	3010A	422400

Analysis Batch: 423679

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100009-1	EB-7 (0'-0.5')	TCLP	Solid	6010B	423425
720-100009-2	EB-7 (3'-3.5')	TCLP	Solid	6010B	423425
720-100009-3	EB-7 (9.5'-10')	TCLP	Solid	6010B	423425
LB 320-422400/1-B	Method Blank	TCLP	Solid	6010B	423425
MB 320-423425/1-A	Method Blank	Total/NA	Solid	6010B	423425
LCS 320-423425/2-A	Lab Control Sample	Total/NA	Solid	6010B	423425
720-99822-D-19-J MS	Matrix Spike	TCLP	Solid	6010B	423425
720-99822-D-19-K MSD	Matrix Spike Duplicate	TCLP	Solid	6010B	423425

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Client Sample ID: EB-7 (0'-0.5')

Lab Sample ID: 720-100009-1

Date Collected: 09/29/20 09:25

Matrix: Solid

Date Received: 09/29/20 16:28

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			422400	10/16/20 19:19	JP	TAL SAC
TCLP	Prep	3010A			423425	10/19/20 14:34	JP	TAL SAC
TCLP	Analysis	6010B		1	423679	10/20/20 13:44	SP	TAL SAC

Client Sample ID: EB-7 (3'-3.5')

Lab Sample ID: 720-100009-2

Date Collected: 09/29/20 09:50

Matrix: Solid

Date Received: 09/29/20 16:28

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			422400	10/16/20 19:19	JP	TAL SAC
TCLP	Prep	3010A			423425	10/19/20 14:34	JP	TAL SAC
TCLP	Analysis	6010B		1	423679	10/20/20 13:48	SP	TAL SAC

Client Sample ID: EB-7 (9.5'-10')

Lab Sample ID: 720-100009-3

Date Collected: 09/29/20 10:45

Matrix: Solid

Date Received: 09/29/20 16:28

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
TCLP	Leach	1311			422400	10/16/20 19:19	JP	TAL SAC
TCLP	Prep	3010A			423425	10/19/20 14:34	JP	TAL SAC
TCLP	Analysis	6010B		1	423679	10/20/20 14:00	SP	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2897	01-31-22

Method Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	TAL SAC
1311	TCLP Extraction	SW846	TAL SAC
3010A	Preparation, Total Metals	SW846	TAL SAC

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100009-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
720-100009-1	EB-7 (0'-0.5')	Solid	09/29/20 09:25	09/29/20 16:28	
720-100009-2	EB-7 (3'-3.5')	Solid	09/29/20 09:50	09/29/20 16:28	
720-100009-3	EB-7 (9.5'-10')	Solid	09/29/20 10:45	09/29/20 16:28	

Reply all Delete Junk Block ...

720-100009-2

FW: Eurofins TestAmerica report and EDD files from 720-100030-1 Darrell Water Tank

Hi Afsaneh,

Can you please run the following analyses on a standard TAT.

TCLP Chromium:

EB-7 (0'-0.5')
EB-7 (3'-3.5')
EB-7 (9.5'-10')
EB-8 (0'-0.5')
EB-8 (9-9.5)

STLC chromium on the following samples:

EB-8 (0'-0.5')
EB-8 (9-9.5)

720-100009 Chain of Custody

AND STLC nickel on the following sample:

EB-8 (0'-0.5')

Thank you,

Daysi Nemecio
Senior Staff Geologist
1220 Oakland Boulevard, Suite 220 | Walnut Creek, CA 94596
T 925.988.9500, Ext. 216 | C 408.769.8490
E dnemecio@cornerstoneearth.com
CORNERSTONE EARTH GROUP

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100009-2

Login Number: 100009
List Number: 1
Creator: Mullen, Joan

List Source: Eurofins TestAmerica, Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100009-2

Login Number: 100009
List Number: 2
Creator: Thompson, Sarah W

List Source: Eurofins TestAmerica, Sacramento
List Creation: 09/30/20 08:52 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	3.1c cor 3.5c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

Laboratory Job ID: 720-100032-1
Client Project/Site: Darrell Water Tank

For:
Cornerstone Earth Group
1220 Oakland Blvd
Suite 220
Walnut Creek, California 94085

Attn: Mr. Chris Heiny

Authorized for release by:
10/9/2020 2:41:20 PM

Afsaneh Salimpour, Senior Project Manager
(925)484-1919
Afsaneh.Salimpour@Eurofinset.com

LINKS

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
p	The %RPD between the primary and confirmation column/detector is >40%. The lower value has been reported.

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits
L	A negative instrument reading had an absolute value greater than the reporting limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 720-100032-1

Laboratory: Eurofins TestAmerica, Pleasanton

Narrative

Job Narrative
720-100032-1

Comments
No additional comments.

Receipt
The samples were received on 9/30/2020 4:50 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 12.0º C.

GC/MS VOA

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC/MS Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC Semi VOA
Method 8081A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-99546 and analytical batch 570-99900 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method 6010B: The absolute response for Molybdenum and Selenium was greater than the method reporting limit (RL) in the following sample: EB-8 (9'-9.5') (720-100032-3).
The instrument raw data has been manually reviewed and the result can be reported as ND.

Method 7471A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-99848 and analytical batch 570-100092 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 6010B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 570-99847 and analytical batch 570-100146 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method 6010B: Due to the high concentration of Barium, Lead, and Zinc the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 570-99847 and analytical batch 570-100146 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Method 6010B: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 570-99847 and analytical batch 570-100146 was outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

Method 6010B: The absolute response for Cadmium, Molybdenum, and Selenium was greater than the method reporting limit (RL) in the following sample: EB-8 (0'-0.5') (720-100032-1).
The instrument raw data has been manually reviewed and the result can be reported as ND.

Method 6010B: The absolute response for Arsenic and Molybdenum was greater than the method reporting limit (RL) in the following sample: EB-8 (3'-3.5') (720-100032-2).
The instrument raw data has been manually reviewed and the result can be reported as ND.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Job ID: 720-100032-1 (Continued)

Laboratory: Eurofins TestAmerica, Pleasanton (Continued)

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (0'-0.5') — Lab Sample ID: 720-100032-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Phenanthrene	16		12		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]anthracene	15		12		ug/Kg	1	☼	8270C SIM	Total/NA
Chrysene	17		12		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[a]pyrene	16		12		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[b]fluoranthene	12		12		ug/Kg	1	☼	8270C SIM	Total/NA
Benzo[k]fluoranthene	14		12		ug/Kg	1	☼	8270C SIM	Total/NA
Fluoranthene	23		12		ug/Kg	1	☼	8270C SIM	Total/NA
Pyrene	36		12		ug/Kg	1	☼	8270C SIM	Total/NA
Arsenic	1.8		0.92		mg/Kg	1	☼	6010B	Total/NA
Barium	66		0.61		mg/Kg	1	☼	6010B	Total/NA
Beryllium	0.43		0.31		mg/Kg	1	☼	6010B	Total/NA
Cobalt	20		0.31		mg/Kg	1	☼	6010B	Total/NA
Chromium	140		0.31		mg/Kg	1	☼	6010B	Total/NA
Copper	23		0.61		mg/Kg	1	☼	6010B	Total/NA
Nickel	330		0.31		mg/Kg	1	☼	6010B	Total/NA
Antimony	2.0		0.92		mg/Kg	1	☼	6010B	Total/NA
Vanadium	29		0.31		mg/Kg	1	☼	6010B	Total/NA
Zinc	55		1.2		mg/Kg	1	☼	6010B	Total/NA
Lead	15		0.61		mg/Kg	1	☼	6010B	Total/NA

Client Sample ID: EB-8 (3'-3.5') — Lab Sample ID: 720-100032-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	28		0.56		mg/Kg	1	☼	6010B	Total/NA
Beryllium	0.37		0.28		mg/Kg	1	☼	6010B	Total/NA
Cobalt	7.0		0.28		mg/Kg	1	☼	6010B	Total/NA
Chromium	34		0.28		mg/Kg	1	☼	6010B	Total/NA
Copper	11		0.56		mg/Kg	1	☼	6010B	Total/NA
Nickel	74		0.28		mg/Kg	1	☼	6010B	Total/NA
Vanadium	10		0.28		mg/Kg	1	☼	6010B	Total/NA
Zinc	15		1.1		mg/Kg	1	☼	6010B	Total/NA
Lead	1.5		0.56		mg/Kg	1	☼	6010B	Total/NA
Mercury	0.10		0.091		mg/Kg	1	☼	7471A	Total/NA

Client Sample ID: EB-8 (9'-9.5') — Lab Sample ID: 720-100032-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	1.8		0.89		mg/Kg	1	☼	6010B	Total/NA
Barium	63		0.59		mg/Kg	1	☼	6010B	Total/NA
Beryllium	0.68		0.30		mg/Kg	1	☼	6010B	Total/NA
Cobalt	20		0.30		mg/Kg	1	☼	6010B	Total/NA
Chromium	100		0.30		mg/Kg	1	☼	6010B	Total/NA
Copper	24		0.59		mg/Kg	1	☼	6010B	Total/NA
Nickel	130		0.30		mg/Kg	1	☼	6010B	Total/NA
Antimony	4.4		0.89		mg/Kg	1	☼	6010B	Total/NA
Vanadium	52		0.30		mg/Kg	1	☼	6010B	Total/NA
Zinc	53		1.2		mg/Kg	1	☼	6010B	Total/NA
Lead	2.2		0.59		mg/Kg	1	☼	6010B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (0'-0.5')

Date Collected: 09/30/20 09:00
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-1

Matrix: Solid
Percent Solids: 80.2

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C4-C12	ND		0.90		mg/Kg	☼	10/01/20 19:40	10/02/20 17:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*110*		*70 - 131*	*10/01/20 19:40*	*10/02/20 17:52*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Acetone	ND		32		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Benzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Dichlorobromomethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Bromobenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Chlorobromomethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Bromoform	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Bromomethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
2-Butanone (MEK)	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
n-Butylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
sec-Butylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
tert-Butylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Carbon disulfide	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Carbon tetrachloride	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Chlorobenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Chloroethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Chloroform	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Chloromethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
2-Chlorotoluene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
4-Chlorotoluene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Chlorodibromomethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2-Dichlorobenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,3-Dichlorobenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,4-Dichlorobenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,3-Dichloropropane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1-Dichloropropene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2-Dibromo-3-Chloropropane	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Ethylene Dibromide	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Dibromomethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Dichlorodifluoromethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1-Dichloroethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2-Dichloroethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1-Dichloroethene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
cis-1,2-Dichloroethene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
trans-1,2-Dichloroethene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2-Dichloropropane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
cis-1,3-Dichloropropene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
trans-1,3-Dichloropropene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Ethylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Hexachlorobutadiene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
2-Hexanone	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Isopropylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (0'-0.5')
Date Collected: 09/30/20 09:00
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-1
Matrix: Solid
Percent Solids: 80.2

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Isopropyltoluene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Methylene Chloride	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
4-Methyl-2-pentanone (MIBK)	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Naphthalene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
N-Propylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Styrene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1,1,2-Tetrachloroethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1,2,2-Tetrachloroethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Tetrachloroethene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Toluene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2,3-Trichlorobenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2,4-Trichlorobenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1,1-Trichloroethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1,2-Trichloroethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Trichloroethene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Trichlorofluoromethane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2,3-Trichloropropane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,2,4-Trimethylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
1,3,5-Trimethylbenzene	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Vinyl acetate	ND		16		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Vinyl chloride	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
Xylenes, Total	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1
2,2-Dichloropropane	ND		7.9		ug/Kg	☼	10/01/20 19:40	10/03/20 11:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*63 - 143*	*10/01/20 19:40*	*10/03/20 11:41*	*1*
Dibromofluoromethane (Surr)	*105*		*55 - 129*	*10/01/20 19:40*	*10/03/20 11:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*32 - 156*	*10/01/20 19:40*	*10/03/20 11:41*	*1*
Toluene-d8 (Surr)	*108*		*63 - 138*	*10/01/20 19:40*	*10/03/20 11:41*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Acenaphthene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Acenaphthylene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Fluorene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Phenanthrene	**16**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Anthracene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Benzo[a]anthracene	**15**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Chrysene	**17**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Benzo[a]pyrene	**16**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Benzo[b]fluoranthene	**12**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Benzo[k]fluoranthene	**14**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Fluoranthene	**23**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Pyrene	**36**		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 16:44	1

Client Sample ID: EB-8 (0'-0.5')

Date Collected: 09/30/20 09:00
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-1

Matrix: Solid
Percent Solids: 80.2

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4,6-Tribromophenol (Surr)	*71*		*16 - 132*	*10/05/20 08:01*	*10/06/20 16:44*	*1*
2-Fluorobiphenyl (Surr)	*62*		*19 - 120*	*10/05/20 08:01*	*10/06/20 16:44*	*1*
2-Fluorophenol (Surr)	*59*		*13 - 120*	*10/05/20 08:01*	*10/06/20 16:44*	*1*
Nitrobenzene-d5 (Surr)	*55*		*14 - 120*	*10/05/20 08:01*	*10/06/20 16:44*	*1*
Phenol-d6 (Surr)	*60*		*12 - 120*	*10/05/20 08:01*	*10/06/20 16:44*	*1*
p-Terphenyl-d14 (Surr)	*69*		*24 - 120*	*10/05/20 08:01*	*10/06/20 16:44*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		6.1		mg/Kg	☼	10/05/20 12:04	10/05/20 19:39	1
Motor Oil Range Organics [C24-C36]	ND		6.1		mg/Kg	☼	10/05/20 12:04	10/05/20 19:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
n-Octacosane (Surr)	*90*		*61 - 145*	*10/05/20 12:04*	*10/05/20 19:39*	*1*

Method: 8081A - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Dieldrin	ND	F1	0.25		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Endrin aldehyde	ND	F2	1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Endrin	ND	F2	1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Endrin ketone	ND	F1 F2	1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Heptachlor	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Heptachlor epoxide	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
4,4'-DDT	ND	F1	1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
4,4'-DDE	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
4,4'-DDD	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Endosulfan I	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Endosulfan II	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
alpha-BHC	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
beta-BHC	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
gamma-BHC (Lindane)	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
delta-BHC	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Endosulfan sulfate	ND	F1	1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Methoxychlor	ND	F1	1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Toxaphene	ND		6.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
Chlordane (technical)	ND		6.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
cis-Chlordane	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1
trans-Chlordane	ND		1.2		ug/Kg	☼	10/05/20 15:00	10/07/20 10:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	*77*		*25 - 126*	*10/05/20 15:00*	*10/07/20 10:38*	*1*
DCB Decachlorobiphenyl (Surr)	*135*		*20 - 155*	*10/05/20 15:00*	*10/07/20 10:38*	*1*

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1
Aroclor-1221	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1
Aroclor-1232	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1
Aroclor-1242	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1
Aroclor-1248	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (0'-0.5')
Date Collected: 09/30/20 09:00
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-1
Matrix: Solid
Percent Solids: 80.2

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1254	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1
Aroclor-1260	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1
Aroclor-1262	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1
Aroclor-1268	ND		12		ug/Kg	☼	10/05/20 15:00	10/07/20 12:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*77*		*20 - 155*	*10/05/20 15:00*	*10/07/20 12:49*	*1*
Tetrachloro-m-xylene (Surr)	*81*		*25 - 126*	*10/05/20 15:00*	*10/07/20 12:49*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.31		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Arsenic	**1.8**		0.92		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Barium	**66**		0.61		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Beryllium	**0.43**		0.31		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Cadmium	ND	L	0.61		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Cobalt	**20**		0.31		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Chromium	**140**		0.31		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Copper	**23**		0.61		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Molybdenum	ND	L	0.31		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Nickel	**330**		0.31		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Antimony	**2.0**		0.92		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Selenium	ND	L	0.92		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Thallium	ND		0.92		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Vanadium	**29**		0.31		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Zinc	**55**		1.2		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1
Lead	**15**		0.61		mg/Kg	☼	10/06/20 16:00	10/07/20 15:50	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.099		mg/Kg	☼	10/06/20 16:00	10/07/20 15:46	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (3'-3.5')

Date Collected: 09/30/20 09:20
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-2

Matrix: Solid
Percent Solids: 87.5

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.28		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Arsenic	ND	L	0.84		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Barium	**28**		0.56		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Beryllium	**0.37**		0.28		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Cadmium	ND		0.56		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Cobalt	**7.0**		0.28		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Chromium	**34**		0.28		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Copper	**11**		0.56		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Molybdenum	ND	L	0.28		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Nickel	**74**		0.28		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Antimony	ND		0.84		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Selenium	ND		0.84		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Thallium	ND		0.84		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Vanadium	**10**		0.28		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Zinc	**15**		1.1		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1
Lead	**1.5**		0.56		mg/Kg	☼	10/06/20 16:00	10/07/20 15:52	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	**0.10**		0.091		mg/Kg	☼	10/06/20 16:00	10/07/20 15:49	1

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (9'-9.5')
Date Collected: 09/30/20 09:45
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-3
Matrix: Solid
Percent Solids: 83.9

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C4-C12	ND		0.68		mg/Kg	☼	10/01/20 19:40	10/02/20 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*70 - 131*	*10/01/20 19:40*	*10/02/20 18:16*	*1*

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Acetone	ND		27		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Benzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Dichlorobromomethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Bromobenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Chlorobromomethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Bromoform	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Bromomethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
2-Butanone (MEK)	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
n-Butylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
sec-Butylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
tert-Butylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Carbon disulfide	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Carbon tetrachloride	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Chlorobenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Chloroethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Chloroform	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Chloromethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
2-Chlorotoluene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
4-Chlorotoluene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Chlorodibromomethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2-Dichlorobenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,3-Dichlorobenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,4-Dichlorobenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,3-Dichloropropane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1-Dichloropropene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2-Dibromo-3-Chloropropane	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Ethylene Dibromide	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Dibromomethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Dichlorodifluoromethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1-Dichloroethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2-Dichloroethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1-Dichloroethene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
cis-1,2-Dichloroethene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
trans-1,2-Dichloroethene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2-Dichloropropane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
cis-1,3-Dichloropropene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
trans-1,3-Dichloropropene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Ethylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Hexachlorobutadiene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
2-Hexanone	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Isopropylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1

Client Sample ID: EB-8 (9'-9.5')
Date Collected: 09/30/20 09:45
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-3
Matrix: Solid
Percent Solids: 83.9

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
4-Isopropyltoluene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Methylene Chloride	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
4-Methyl-2-pentanone (MIBK)	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Naphthalene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
N-Propylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Styrene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1,1,2-Tetrachloroethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1,2,2-Tetrachloroethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Tetrachloroethene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Toluene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2,3-Trichlorobenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2,4-Trichlorobenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1,1-Trichloroethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1,2-Trichloroethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Trichloroethene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Trichlorofluoromethane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2,3-Trichloropropane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,2,4-Trimethylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
1,3,5-Trimethylbenzene	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Vinyl acetate	ND		14		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Vinyl chloride	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
Xylenes, Total	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1
2,2-Dichloropropane	ND		6.8		ug/Kg	☼	10/01/20 19:40	10/02/20 18:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*63 - 143*	*10/01/20 19:40*	*10/02/20 18:16*	*1*
Dibromofluoromethane (Surr)	*107*		*55 - 129*	*10/01/20 19:40*	*10/02/20 18:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*32 - 156*	*10/01/20 19:40*	*10/02/20 18:16*	*1*
Toluene-d8 (Surr)	*118*		*63 - 138*	*10/01/20 19:40*	*10/02/20 18:16*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Acenaphthene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Acenaphthylene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Fluorene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Phenanthrene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Anthracene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Benzo[a]anthracene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Chrysene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Benzo[a]pyrene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Benzo[b]fluoranthene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Benzo[k]fluoranthene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Benzo[g,h,i]perylene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Indeno[1,2,3-cd]pyrene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Fluoranthene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Pyrene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1
Dibenz(a,h)anthracene	ND		12		ug/Kg	☼	10/05/20 08:01	10/06/20 15:13	1

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (9'-9.5')
Date Collected: 09/30/20 09:45
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-3
Matrix: Solid
Percent Solids: 83.9

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*56*		*16 - 132*	*10/05/20 08:01*	*10/06/20 15:13*	*1*
2-Fluorobiphenyl (Surr)	*70*		*19 - 120*	*10/05/20 08:01*	*10/06/20 15:13*	*1*
2-Fluorophenol (Surr)	*67*		*13 - 120*	*10/05/20 08:01*	*10/06/20 15:13*	*1*
Nitrobenzene-d5 (Surr)	*63*		*14 - 120*	*10/05/20 08:01*	*10/06/20 15:13*	*1*
Phenol-d6 (Surr)	*66*		*12 - 120*	*10/05/20 08:01*	*10/06/20 15:13*	*1*
p-Terphenyl-d14 (Surr)	*74*		*24 - 120*	*10/05/20 08:01*	*10/06/20 15:13*	*1*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		5.8		mg/Kg	☼	10/05/20 12:04	10/05/20 19:59	1
Motor Oil Range Organics [C24-C36]	ND		5.8		mg/Kg	☼	10/05/20 12:04	10/05/20 19:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*96*		*61 - 145*	*10/05/20 12:04*	*10/05/20 19:59*	*1*

Method: 6010B - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.30		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Arsenic	**1.8**		0.89		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Barium	**63**		0.59		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Beryllium	**0.68**		0.30		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Cadmium	ND		0.59		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Cobalt	**20**		0.30		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Chromium	**100**		0.30		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Copper	**24**		0.59		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Molybdenum	ND	L	0.30		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Nickel	**130**		0.30		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Antimony	**4.4**		0.89		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Selenium	ND	L	0.89		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Thallium	ND		0.89		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Vanadium	**52**		0.30		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Zinc	**53**		1.2		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1
Lead	**2.2**		0.59		mg/Kg	☼	10/06/20 16:00	10/07/20 15:54	1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.099		mg/Kg	☼	10/06/20 16:00	10/07/20 15:51	1

Surrogate Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	DCA	TOL
Lab Sample ID	Client Sample ID	(63-143)	(55-129)	(32-156)	(63-138)
720-100032-1	EB-8 (0'-0.5')	106	105	106	108
720-100032-3	EB-8 (9'-9.5')	111	107	102	118
LCS 320-417964/8	Lab Control Sample	113	109	101	118
LCS 320-418322/7	Lab Control Sample	110	105	101	111
LCSD 320-417964/9	Lab Control Sample Dup	113	108	100	117
LCSD 320-418322/8	Lab Control Sample Dup	104	102	98	106
MB 320-417964/11	Method Blank	116	115	108	117
MB 320-418322/10	Method Blank	107	101	100	107

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
		BFB
Lab Sample ID	Client Sample ID	(70-131)
720-100032-1	EB-8 (0'-0.5')	110
720-100032-3	EB-8 (9'-9.5')	111
LCS 320-417966/4	Lab Control Sample	114
LCSD 320-417966/5	Lab Control Sample Dup	111
MB 320-417966/11	Method Blank	116

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		TBP	FBP	2FP	NBZ	PHL6	TPHd14
Lab Sample ID	Client Sample ID	(16-132)	(19-120)	(13-120)	(14-120)	(12-120)	(24-120)
720-100029-D-1-A MS	Matrix Spike	61	74	64	67	70	88
720-100029-D-1-B MSD	Matrix Spike Duplicate	69	65	57	61	60	88
720-100032-1	EB-8 (0'-0.5')	71	62	59	55	60	69
720-100032-3	EB-8 (9'-9.5')	56	70	67	63	66	74
LCS 570-99354/2-A	Lab Control Sample	68	68	65	67	66	84
LCSD 570-99354/3-A	Lab Control Sample Dup	69	68	63	64	65	82
MB 570-99354/1-A	Method Blank	75	91	83	83	85	101

Surrogate Legend

TBP = 2,4,6-Tribromophenol (Surr)
FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL6 = Phenol-d6 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)

Surrogate Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Method: 8015B - Diesel Range Organics (DRO) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)
Lab Sample ID	Client Sample ID	OTCSN1 (61-145)
720-100029-D-1-D MS	Matrix Spike	70
720-100029-D-1-E MSD	Matrix Spike Duplicate	67
720-100032-1	EB-8 (0'-0.5')	90
720-100032-3	EB-8 (9'-9.5')	96
LCS 570-99490/2-A	Lab Control Sample	114
LCSD 570-99490/3-A	Lab Control Sample Dup	110
MB 570-99490/1-A	Method Blank	108

Surrogate Legend

OTCSN = n-Octacosane (Surr)

Method: 8081A - Organochlorine Pesticides (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	TCX1 (25-126)	DCB1 (20-155)
720-100032-1	EB-8 (0'-0.5')	77	135
720-100032-1 MS	EB-8 (0'-0.5')	73	99
720-100032-1 MSD	EB-8 (0'-0.5')	78	126 p
LCS 570-99546/2-A	Lab Control Sample	83	79
LCSD 570-99546/3-A	Lab Control Sample Dup	87	85
MB 570-99546/1-A	Method Blank	80	73

Surrogate Legend

TCX = Tetrachloro-m-xylene
DCB = DCB Decachlorobiphenyl (Surr)

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	DCB1 (20-155)	TCX1 (25-126)
720-100029-D-1-J MS	Matrix Spike	71	68
720-100029-D-1-K MSD	Matrix Spike Duplicate	67	62
720-100032-1	EB-8 (0'-0.5')	77	81
LCS 570-99546/6-A	Lab Control Sample	100	93
LCSD 570-99546/7-A	Lab Control Sample Dup	100	94
MB 570-99546/1-A	Method Blank	107	93

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 320-417964/11
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		10		ug/Kg			10/02/20 12:21	1
Acetone	ND		20		ug/Kg			10/02/20 12:21	1
Benzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Dichlorobromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Bromobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Chlorobromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Bromoform	ND		5.0		ug/Kg			10/02/20 12:21	1
Bromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
2-Butanone (MEK)	ND		10		ug/Kg			10/02/20 12:21	1
n-Butylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
sec-Butylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
tert-Butylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Carbon disulfide	ND		10		ug/Kg			10/02/20 12:21	1
Carbon tetrachloride	ND		5.0		ug/Kg			10/02/20 12:21	1
Chlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Chloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Chloroform	ND		5.0		ug/Kg			10/02/20 12:21	1
Chloromethane	ND		5.0		ug/Kg			10/02/20 12:21	1
2-Chlorotoluene	ND		5.0		ug/Kg			10/02/20 12:21	1
4-Chlorotoluene	ND		5.0		ug/Kg			10/02/20 12:21	1
Chlorodibromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,3-Dichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,4-Dichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,3-Dichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1-Dichloropropene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dibromo-3-Chloropropane	ND		10		ug/Kg			10/02/20 12:21	1
Ethylene Dibromide	ND		10		ug/Kg			10/02/20 12:21	1
Dibromomethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Dichlorodifluoromethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1-Dichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1-Dichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
cis-1,2-Dichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
trans-1,2-Dichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2-Dichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1
cis-1,3-Dichloropropene	ND		5.0		ug/Kg			10/02/20 12:21	1
trans-1,3-Dichloropropene	ND		5.0		ug/Kg			10/02/20 12:21	1
Ethylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Hexachlorobutadiene	ND		5.0		ug/Kg			10/02/20 12:21	1
2-Hexanone	ND		10		ug/Kg			10/02/20 12:21	1
Isopropylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
4-Isopropyltoluene	ND		5.0		ug/Kg			10/02/20 12:21	1
Methylene Chloride	ND		10		ug/Kg			10/02/20 12:21	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/Kg			10/02/20 12:21	1
Naphthalene	ND		5.0		ug/Kg			10/02/20 12:21	1
N-Propylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Styrene	ND		5.0		ug/Kg			10/02/20 12:21	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 320-417964/11
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,2,2-Tetrachloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Tetrachloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
Toluene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2,3-Trichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2,4-Trichlorobenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,1-Trichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,2-Trichloroethane	ND		5.0		ug/Kg			10/02/20 12:21	1
Trichloroethene	ND		5.0		ug/Kg			10/02/20 12:21	1
Trichlorofluoromethane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,2,3-Trichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10		ug/Kg			10/02/20 12:21	1
1,2,4-Trimethylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
1,3,5-Trimethylbenzene	ND		5.0		ug/Kg			10/02/20 12:21	1
Vinyl acetate	ND		10		ug/Kg			10/02/20 12:21	1
Vinyl chloride	ND		5.0		ug/Kg			10/02/20 12:21	1
Xylenes, Total	ND		5.0		ug/Kg			10/02/20 12:21	1
2,2-Dichloropropane	ND		5.0		ug/Kg			10/02/20 12:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*63 - 143*		*10/02/20 12:21*	*1*
Dibromofluoromethane (Surr)	*115*		*55 - 129*		*10/02/20 12:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*32 - 156*		*10/02/20 12:21*	*1*
Toluene-d8 (Surr)	*117*		*63 - 138*		*10/02/20 12:21*	*1*

Lab Sample ID: LCS 320-417964/8
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	50.0	51.3		ug/Kg		103	66 - 146
Acetone	50.0	61.0		ug/Kg		122	64 - 128
Benzene	50.0	50.3		ug/Kg		101	78 - 128
Dichlorobromomethane	50.0	49.9		ug/Kg		100	80 - 137
Bromobenzene	50.0	49.4		ug/Kg		99	67 - 132
Chlorobromomethane	50.0	50.9		ug/Kg		102	80 - 127
Bromoform	50.0	51.0		ug/Kg		102	80 - 136
Bromomethane	50.0	46.8		ug/Kg		94	48 - 164
2-Butanone (MEK)	50.0	59.0		ug/Kg		118	71 - 142
n-Butylbenzene	50.0	47.6		ug/Kg		95	68 - 136
sec-Butylbenzene	50.0	48.2		ug/Kg		96	68 - 131
tert-Butylbenzene	50.0	49.2		ug/Kg		98	67 - 131
Carbon disulfide	50.0	60.9		ug/Kg		122	52 - 145
Carbon tetrachloride	50.0	49.9		ug/Kg		100	62 - 154
Chlorobenzene	50.0	49.7		ug/Kg		99	74 - 125
Chloroethane	50.0	48.3		ug/Kg		97	54 - 148
Chloroform	50.0	50.2		ug/Kg		100	78 - 135
Chloromethane	50.0	42.2		ug/Kg		84	60 - 141

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 320-417964/8
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chlorotoluene	50.0	48.6		ug/Kg		97	64 - 127
4-Chlorotoluene	50.0	47.9		ug/Kg		96	67 - 128
Chlorodibromomethane	50.0	50.5		ug/Kg		101	80 - 133
1,2-Dichlorobenzene	50.0	50.4		ug/Kg		101	68 - 121
1,3-Dichlorobenzene	50.0	49.1		ug/Kg		98	64 - 126
1,4-Dichlorobenzene	50.0	49.7		ug/Kg		99	65 - 124
1,3-Dichloropropane	50.0	51.3		ug/Kg		103	80 - 123
1,1-Dichloropropene	50.0	49.8		ug/Kg		100	76 - 132
1,2-Dibromo-3-Chloropropane	50.0	50.6		ug/Kg		101	75 - 137
Ethylene Dibromide	50.0	51.1		ug/Kg		102	80 - 124
Dibromomethane	50.0	49.8		ug/Kg		100	80 - 129
Dichlorodifluoromethane	50.0	36.2		ug/Kg		72	60 - 130
1,1-Dichloroethane	50.0	51.3		ug/Kg		103	76 - 134
1,2-Dichloroethane	50.0	49.1		ug/Kg		98	66 - 150
1,1-Dichloroethene	50.0	55.6		ug/Kg		111	66 - 136
cis-1,2-Dichloroethene	50.0	51.0		ug/Kg		102	74 - 131
trans-1,2-Dichloroethene	50.0	53.8		ug/Kg		108	67 - 135
1,2-Dichloropropane	50.0	50.1		ug/Kg		100	80 - 129
cis-1,3-Dichloropropene	50.0	49.7		ug/Kg		99	80 - 134
trans-1,3-Dichloropropene	50.0	48.3		ug/Kg		97	80 - 148
Ethylbenzene	50.0	49.7		ug/Kg		99	72 - 125
Hexachlorobutadiene	50.0	48.0		ug/Kg		96	52 - 140
2-Hexanone	50.0	55.1		ug/Kg		110	78 - 143
Isopropylbenzene	50.0	49.5		ug/Kg		99	69 - 137
4-Isopropyltoluene	50.0	48.6		ug/Kg		97	64 - 137
Methylene Chloride	50.0	52.3		ug/Kg		105	77 - 125
4-Methyl-2-pentanone (MIBK)	50.0	60.2		ug/Kg		120	79 - 150
Naphthalene	50.0	51.9		ug/Kg		104	53 - 140
N-Propylbenzene	50.0	48.1		ug/Kg		96	63 - 128
Styrene	50.0	55.7		ug/Kg		111	79 - 128
1,1,1,2-Tetrachloroethane	50.0	51.3		ug/Kg		103	77 - 134
1,1,2,2-Tetrachloroethane	50.0	50.7		ug/Kg		101	71 - 134
Tetrachloroethene	50.0	49.0		ug/Kg		98	65 - 135
Toluene	50.0	49.4		ug/Kg		99	80 - 124
1,2,3-Trichlorobenzene	50.0	51.5		ug/Kg		103	54 - 140
1,2,4-Trichlorobenzene	50.0	49.8		ug/Kg		100	48 - 145
1,1,1-Trichloroethane	50.0	51.0		ug/Kg		102	67 - 150
1,1,2-Trichloroethane	50.0	50.7		ug/Kg		101	80 - 128
Trichloroethene	50.0	50.0		ug/Kg		100	80 - 126
Trichlorofluoromethane	50.0	44.6		ug/Kg		89	43 - 158
1,2,3-Trichloropropane	50.0	49.9		ug/Kg		100	71 - 132
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	53.7		ug/Kg		107	62 - 138
1,2,4-Trimethylbenzene	50.0	49.1		ug/Kg		98	64 - 137
1,3,5-Trimethylbenzene	50.0	48.8		ug/Kg		98	66 - 135
Vinyl acetate	50.0	53.9		ug/Kg		108	39 - 160
Vinyl chloride	50.0	44.4		ug/Kg		89	67 - 127
m-Xylene & p-Xylene	50.0	49.5		ug/Kg		99	73 - 128
o-Xylene	50.0	50.1		ug/Kg		100	76 - 127

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 320-417964/8
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
2,2-Dichloropropane			50.0	49.0		ug/Kg		98	69 - 153		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*63 - 143*
Dibromofluoromethane (Surr)	*109*		*55 - 129*
1,2-Dichloroethane-d4 (Surr)	*101*		*32 - 156*
Toluene-d8 (Surr)	*118*		*63 - 138*

Lab Sample ID: LCSD 320-417964/9
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl tert-butyl ether			50.0	49.3		ug/Kg		99	66 - 146	4	45
Acetone			50.0	61.6		ug/Kg		123	64 - 128	1	36
Benzene			50.0	54.1		ug/Kg		108	78 - 128	7	37
Dichlorobromomethane			50.0	49.7		ug/Kg		99	80 - 137	0	37
Bromobenzene			50.0	51.1		ug/Kg		102	67 - 132	3	40
Chlorobromomethane			50.0	50.1		ug/Kg		100	80 - 127	2	36
Bromoform			50.0	51.1		ug/Kg		102	80 - 136	0	45
Bromomethane			50.0	50.0		ug/Kg		100	48 - 164	7	38
2-Butanone (MEK)			50.0	61.8		ug/Kg		124	71 - 142	5	44
n-Butylbenzene			50.0	57.5		ug/Kg		115	68 - 136	19	37
sec-Butylbenzene			50.0	56.0		ug/Kg		112	68 - 131	15	40
tert-Butylbenzene			50.0	55.3		ug/Kg		111	67 - 131	12	42
Carbon disulfide			50.0	69.7		ug/Kg		139	52 - 145	13	46
Carbon tetrachloride			50.0	56.6		ug/Kg		113	62 - 154	13	43
Chlorobenzene			50.0	52.3		ug/Kg		105	74 - 125	5	38
Chloroethane			50.0	52.0		ug/Kg		104	54 - 148	8	34
Chloroform			50.0	51.5		ug/Kg		103	78 - 135	2	23
Chloromethane			50.0	45.1		ug/Kg		90	60 - 141	7	36
2-Chlorotoluene			50.0	52.9		ug/Kg		106	64 - 127	8	41
4-Chlorotoluene			50.0	53.0		ug/Kg		106	67 - 128	10	40
Chlorodibromomethane			50.0	50.2		ug/Kg		100	80 - 133	1	24
1,2-Dichlorobenzene			50.0	51.5		ug/Kg		103	68 - 121	2	28
1,3-Dichlorobenzene			50.0	53.0		ug/Kg		106	64 - 126	8	41
1,4-Dichlorobenzene			50.0	52.7		ug/Kg		105	65 - 124	6	38
1,3-Dichloropropane			50.0	51.2		ug/Kg		102	80 - 123	0	39
1,1-Dichloropropene			50.0	56.8		ug/Kg		114	76 - 132	13	38
1,2-Dibromo-3-Chloropropane			50.0	47.2		ug/Kg		94	75 - 137	7	48
Ethylene Dibromide			50.0	50.1		ug/Kg		100	80 - 124	2	39
Dibromomethane			50.0	48.4		ug/Kg		97	80 - 129	3	37
Dichlorodifluoromethane			50.0	41.1		ug/Kg		82	60 - 130	13	46
1,1-Dichloroethane			50.0	54.0		ug/Kg		108	76 - 134	5	24
1,2-Dichloroethane			50.0	49.3		ug/Kg		99	66 - 150	0	36
1,1-Dichloroethene			50.0	64.8		ug/Kg		130	66 - 136	15	42
cis-1,2-Dichloroethene			50.0	53.1		ug/Kg		106	74 - 131	4	37
trans-1,2-Dichloroethene			50.0	59.2		ug/Kg		118	67 - 135	10	37

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 320-417964/9
Matrix: Solid
Analysis Batch: 417964

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dichloropropane			50.0	51.6		ug/Kg		103	80 - 129	3	38
cis-1,3-Dichloropropene			50.0	50.2		ug/Kg		100	80 - 134	1	39
trans-1,3-Dichloropropene			50.0	49.3		ug/Kg		99	80 - 148	2	42
Ethylbenzene			50.0	55.3		ug/Kg		111	72 - 125	11	41
Hexachlorobutadiene			50.0	58.0		ug/Kg		116	52 - 140	19	38
2-Hexanone			50.0	60.9		ug/Kg		122	78 - 143	10	73
Isopropylbenzene			50.0	57.0		ug/Kg		114	69 - 137	14	41
4-Isopropyltoluene			50.0	56.5		ug/Kg		113	64 - 137	15	40
Methylene Chloride			50.0	53.8		ug/Kg		108	77 - 125	3	25
4-Methyl-2-pentanone (MIBK)			50.0	61.1		ug/Kg		122	79 - 150	2	48
Naphthalene			50.0	50.6		ug/Kg		101	53 - 140	3	46
N-Propylbenzene			50.0	55.3		ug/Kg		111	63 - 128	14	42
Styrene			50.0	59.0		ug/Kg		118	79 - 128	6	40
1,1,1,2-Tetrachloroethane			50.0	52.0		ug/Kg		104	77 - 134	1	25
1,1,2,2-Tetrachloroethane			50.0	48.1		ug/Kg		96	71 - 134	5	31
Tetrachloroethene			50.0	57.0		ug/Kg		114	65 - 135	15	39
Toluene			50.0	53.9		ug/Kg		108	80 - 124	9	39
1,2,3-Trichlorobenzene			50.0	54.2		ug/Kg		108	54 - 140	5	42
1,2,4-Trichlorobenzene			50.0	55.6		ug/Kg		111	48 - 145	11	39
1,1,1-Trichloroethane			50.0	56.5		ug/Kg		113	67 - 150	10	43
1,1,2-Trichloroethane			50.0	49.7		ug/Kg		99	80 - 128	2	41
Trichloroethene			50.0	54.3		ug/Kg		109	80 - 126	8	40
Trichlorofluoromethane			50.0	52.6		ug/Kg		105	43 - 158	16	32
1,2,3-Trichloropropane			50.0	49.9		ug/Kg		100	71 - 132	0	41
1,1,2-Trichloro-1,2,2-trifluoroethane			50.0	66.6		ug/Kg		133	62 - 138	21	22
1,2,4-Trimethylbenzene			50.0	54.2		ug/Kg		108	64 - 137	10	41
1,3,5-Trimethylbenzene			50.0	54.8		ug/Kg		110	66 - 135	12	42
Vinyl acetate			50.0	55.2		ug/Kg		110	39 - 160	2	50
Vinyl chloride			50.0	50.4		ug/Kg		101	67 - 127	13	37
m-Xylene & p-Xylene			50.0	54.8		ug/Kg		110	73 - 128	10	40
o-Xylene			50.0	54.0		ug/Kg		108	76 - 127	7	40
2,2-Dichloropropane			50.0	58.8		ug/Kg		118	69 - 153	18	47

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*113*		*63 - 143*
Dibromofluoromethane (Surr)	*108*		*55 - 129*
1,2-Dichloroethane-d4 (Surr)	*100*		*32 - 156*
Toluene-d8 (Surr)	*117*		*63 - 138*

Lab Sample ID: MB 320-418322/10
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methyl tert-butyl ether	ND		10		ug/Kg			10/03/20 09:23	1
Acetone	ND		20		ug/Kg			10/03/20 09:23	1
Benzene	ND		5.0		ug/Kg			10/03/20 09:23	1
Dichlorobromomethane	ND		5.0		ug/Kg			10/03/20 09:23	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 320-418322/10
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bromobenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
Chlorobromomethane	ND		5.0		ug/Kg			10/03/20 09:23	1
Bromoform	ND		5.0		ug/Kg			10/03/20 09:23	1
Bromomethane	ND		5.0		ug/Kg			10/03/20 09:23	1
2-Butanone (MEK)	ND		10		ug/Kg			10/03/20 09:23	1
n-Butylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
sec-Butylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
tert-Butylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
Carbon disulfide	ND		10		ug/Kg			10/03/20 09:23	1
Carbon tetrachloride	ND		5.0		ug/Kg			10/03/20 09:23	1
Chlorobenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
Chloroethane	ND		5.0		ug/Kg			10/03/20 09:23	1
Chloroform	ND		5.0		ug/Kg			10/03/20 09:23	1
Chloromethane	ND		5.0		ug/Kg			10/03/20 09:23	1
2-Chlorotoluene	ND		5.0		ug/Kg			10/03/20 09:23	1
4-Chlorotoluene	ND		5.0		ug/Kg			10/03/20 09:23	1
Chlorodibromomethane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,2-Dichlorobenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,3-Dichlorobenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,4-Dichlorobenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,3-Dichloropropane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1-Dichloropropene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,2-Dibromo-3-Chloropropane	ND		10		ug/Kg			10/03/20 09:23	1
Ethylene Dibromide	ND		10		ug/Kg			10/03/20 09:23	1
Dibromomethane	ND		5.0		ug/Kg			10/03/20 09:23	1
Dichlorodifluoromethane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1-Dichloroethane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,2-Dichloroethane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1-Dichloroethene	ND		5.0		ug/Kg			10/03/20 09:23	1
cis-1,2-Dichloroethene	ND		5.0		ug/Kg			10/03/20 09:23	1
trans-1,2-Dichloroethene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,2-Dichloropropane	ND		5.0		ug/Kg			10/03/20 09:23	1
cis-1,3-Dichloropropene	ND		5.0		ug/Kg			10/03/20 09:23	1
trans-1,3-Dichloropropene	ND		5.0		ug/Kg			10/03/20 09:23	1
Ethylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
Hexachlorobutadiene	ND		5.0		ug/Kg			10/03/20 09:23	1
2-Hexanone	ND		10		ug/Kg			10/03/20 09:23	1
Isopropylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
4-Isopropyltoluene	ND		5.0		ug/Kg			10/03/20 09:23	1
Methylene Chloride	ND		10		ug/Kg			10/03/20 09:23	1
4-Methyl-2-pentanone (MIBK)	ND		10		ug/Kg			10/03/20 09:23	1
Naphthalene	ND		5.0		ug/Kg			10/03/20 09:23	1
N-Propylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
Styrene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1,1,2-Tetrachloroethane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1,2,2-Tetrachloroethane	ND		5.0		ug/Kg			10/03/20 09:23	1
Tetrachloroethene	ND		5.0		ug/Kg			10/03/20 09:23	1
Toluene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,2,3-Trichlorobenzene	ND		5.0		ug/Kg			10/03/20 09:23	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 320-418322/10
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1,1-Trichloroethane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1,2-Trichloroethane	ND		5.0		ug/Kg			10/03/20 09:23	1
Trichloroethene	ND		5.0		ug/Kg			10/03/20 09:23	1
Trichlorofluoromethane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,2,3-Trichloropropane	ND		5.0		ug/Kg			10/03/20 09:23	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		10		ug/Kg			10/03/20 09:23	1
1,2,4-Trimethylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
1,3,5-Trimethylbenzene	ND		5.0		ug/Kg			10/03/20 09:23	1
Vinyl acetate	ND		10		ug/Kg			10/03/20 09:23	1
Vinyl chloride	ND		5.0		ug/Kg			10/03/20 09:23	1
Xylenes, Total	ND		5.0		ug/Kg			10/03/20 09:23	1
2,2-Dichloropropane	ND		5.0		ug/Kg			10/03/20 09:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*63 - 143*		*10/03/20 09:23*	*1*
Dibromofluoromethane (Surr)	*101*		*55 - 129*		*10/03/20 09:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*32 - 156*		*10/03/20 09:23*	*1*
Toluene-d8 (Surr)	*107*		*63 - 138*		*10/03/20 09:23*	*1*

Lab Sample ID: LCS 320-418322/7
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methyl tert-butyl ether	50.0	47.9		ug/Kg		96	66 - 146
Acetone	50.0	49.0		ug/Kg		98	64 - 128
Benzene	50.0	46.2		ug/Kg		92	78 - 128
Dichlorobromomethane	50.0	48.6		ug/Kg		97	80 - 137
Bromobenzene	50.0	46.5		ug/Kg		93	67 - 132
Chlorobromomethane	50.0	47.6		ug/Kg		95	80 - 127
Bromoform	50.0	50.4		ug/Kg		101	80 - 136
Bromomethane	50.0	52.3		ug/Kg		105	48 - 164
2-Butanone (MEK)	50.0	50.7		ug/Kg		101	71 - 142
n-Butylbenzene	50.0	44.6		ug/Kg		89	68 - 136
sec-Butylbenzene	50.0	46.4		ug/Kg		93	68 - 131
tert-Butylbenzene	50.0	46.6		ug/Kg		93	67 - 131
Carbon disulfide	50.0	46.7		ug/Kg		93	52 - 145
Carbon tetrachloride	50.0	51.2		ug/Kg		102	62 - 154
Chlorobenzene	50.0	47.4		ug/Kg		95	74 - 125
Chloroethane	50.0	45.6		ug/Kg		91	54 - 148
Chloroform	50.0	47.6		ug/Kg		95	78 - 135
Chloromethane	50.0	48.3		ug/Kg		97	60 - 141
2-Chlorotoluene	50.0	46.0		ug/Kg		92	64 - 127
4-Chlorotoluene	50.0	45.5		ug/Kg		91	67 - 128
Chlorodibromomethane	50.0	49.0		ug/Kg		98	80 - 133
1,2-Dichlorobenzene	50.0	45.1		ug/Kg		90	68 - 121
1,3-Dichlorobenzene	50.0	45.8		ug/Kg		92	64 - 126

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 320-418322/7
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,4-Dichlorobenzene	50.0	46.4		ug/Kg		93	65 - 124
1,3-Dichloropropane	50.0	46.1		ug/Kg		92	80 - 123
1,1-Dichloropropene	50.0	46.2		ug/Kg		92	76 - 132
1,2-Dibromo-3-Chloropropane	50.0	50.0		ug/Kg		100	75 - 137
Ethylene Dibromide	50.0	48.0		ug/Kg		96	80 - 124
Dibromomethane	50.0	48.6		ug/Kg		97	80 - 129
Dichlorodifluoromethane	50.0	54.6		ug/Kg		109	60 - 130
1,1-Dichloroethane	50.0	46.2		ug/Kg		92	76 - 134
1,2-Dichloroethane	50.0	48.1		ug/Kg		96	66 - 150
1,1-Dichloroethene	50.0	49.7		ug/Kg		99	66 - 136
cis-1,2-Dichloroethene	50.0	48.4		ug/Kg		97	74 - 131
trans-1,2-Dichloroethene	50.0	48.2		ug/Kg		96	67 - 135
1,2-Dichloropropane	50.0	45.4		ug/Kg		91	80 - 129
cis-1,3-Dichloropropene	50.0	47.5		ug/Kg		95	80 - 134
trans-1,3-Dichloropropene	50.0	45.0		ug/Kg		90	80 - 148
Ethylbenzene	50.0	47.0		ug/Kg		94	72 - 125
Hexachlorobutadiene	50.0	49.3		ug/Kg		99	52 - 140
2-Hexanone	50.0	49.8		ug/Kg		100	78 - 143
Isopropylbenzene	50.0	47.9		ug/Kg		96	69 - 137
4-Isopropyltoluene	50.0	46.8		ug/Kg		94	64 - 137
Methylene Chloride	50.0	46.6		ug/Kg		93	77 - 125
4-Methyl-2-pentanone (MIBK)	50.0	45.1		ug/Kg		90	79 - 150
Naphthalene	50.0	51.6		ug/Kg		103	53 - 140
N-Propylbenzene	50.0	45.5		ug/Kg		91	63 - 128
Styrene	50.0	51.6		ug/Kg		103	79 - 128
1,1,1,2-Tetrachloroethane	50.0	47.5		ug/Kg		95	77 - 134
1,1,2,2-Tetrachloroethane	50.0	47.9		ug/Kg		96	71 - 134
Tetrachloroethene	50.0	48.5		ug/Kg		97	65 - 135
Toluene	50.0	47.8		ug/Kg		96	80 - 124
1,2,3-Trichlorobenzene	50.0	49.4		ug/Kg		99	54 - 140
1,2,4-Trichlorobenzene	50.0	48.1		ug/Kg		96	48 - 145
1,1,1-Trichloroethane	50.0	50.3		ug/Kg		101	67 - 150
1,1,2-Trichloroethane	50.0	48.6		ug/Kg		97	80 - 128
Trichloroethene	50.0	47.6		ug/Kg		95	80 - 126
Trichlorofluoromethane	50.0	49.9		ug/Kg		100	43 - 158
1,2,3-Trichloropropane	50.0	50.0		ug/Kg		100	71 - 132
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	46.4		ug/Kg		93	62 - 138
1,2,4-Trimethylbenzene	50.0	46.5		ug/Kg		93	64 - 137
1,3,5-Trimethylbenzene	50.0	46.1		ug/Kg		92	66 - 135
Vinyl acetate	50.0	43.2		ug/Kg		86	39 - 160
Vinyl chloride	50.0	49.6		ug/Kg		99	67 - 127
m-Xylene & p-Xylene	50.0	46.8		ug/Kg		94	73 - 128
o-Xylene	50.0	47.3		ug/Kg		95	76 - 127
2,2-Dichloropropane	50.0	49.9		ug/Kg		100	69 - 153

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*110*		*63 - 143*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 320-418322/7
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	*105*		*55 - 129*
1,2-Dichloroethane-d4 (Surr)	*101*		*32 - 156*
Toluene-d8 (Surr)	*111*		*63 - 138*

Lab Sample ID: LCSD 320-418322/8
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methyl tert-butyl ether			50.0	50.4		ug/Kg		101	66 - 146	5	45
Acetone			50.0	61.0		ug/Kg		122	64 - 128	22	36
Benzene			50.0	50.1		ug/Kg		100	78 - 128	8	37
Dichlorobromomethane			50.0	51.9		ug/Kg		104	80 - 137	7	37
Bromobenzene			50.0	50.6		ug/Kg		101	67 - 132	8	40
Chlorobromomethane			50.0	50.1		ug/Kg		100	80 - 127	5	36
Bromoform			50.0	53.4		ug/Kg		107	80 - 136	6	45
Bromomethane			50.0	56.7		ug/Kg		113	48 - 164	8	38
2-Butanone (MEK)			50.0	61.0		ug/Kg		122	71 - 142	18	44
n-Butylbenzene			50.0	46.6		ug/Kg		93	68 - 136	4	37
sec-Butylbenzene			50.0	50.2		ug/Kg		100	68 - 131	8	40
tert-Butylbenzene			50.0	51.8		ug/Kg		104	67 - 131	11	42
Carbon disulfide			50.0	51.4		ug/Kg		103	52 - 145	10	46
Carbon tetrachloride			50.0	56.1		ug/Kg		112	62 - 154	9	43
Chlorobenzene			50.0	51.0		ug/Kg		102	74 - 125	7	38
Chloroethane			50.0	48.3		ug/Kg		97	54 - 148	6	34
Chloroform			50.0	51.2		ug/Kg		102	78 - 135	7	23
Chloromethane			50.0	52.8		ug/Kg		106	60 - 141	9	36
2-Chlorotoluene			50.0	49.6		ug/Kg		99	64 - 127	8	41
4-Chlorotoluene			50.0	49.1		ug/Kg		98	67 - 128	7	40
Chlorodibromomethane			50.0	52.9		ug/Kg		106	80 - 133	8	24
1,2-Dichlorobenzene			50.0	49.5		ug/Kg		99	68 - 121	9	28
1,3-Dichlorobenzene			50.0	48.8		ug/Kg		98	64 - 126	6	41
1,4-Dichlorobenzene			50.0	49.8		ug/Kg		100	65 - 124	7	38
1,3-Dichloropropane			50.0	49.4		ug/Kg		99	80 - 123	7	39
1,1-Dichloropropene			50.0	50.7		ug/Kg		101	76 - 132	9	38
1,2-Dibromo-3-Chloropropane			50.0	57.0		ug/Kg		114	75 - 137	13	48
Ethylene Dibromide			50.0	51.2		ug/Kg		102	80 - 124	6	39
Dibromomethane			50.0	51.0		ug/Kg		102	80 - 129	5	37
Dichlorodifluoromethane			50.0	58.5		ug/Kg		117	60 - 130	7	46
1,1-Dichloroethane			50.0	50.5		ug/Kg		101	76 - 134	9	24
1,2-Dichloroethane			50.0	51.1		ug/Kg		102	66 - 150	6	36
1,1-Dichloroethene			50.0	54.8		ug/Kg		110	66 - 136	10	42
cis-1,2-Dichloroethene			50.0	52.2		ug/Kg		104	74 - 131	7	37
trans-1,2-Dichloroethene			50.0	53.3		ug/Kg		107	67 - 135	10	37
1,2-Dichloropropane			50.0	48.1		ug/Kg		96	80 - 129	6	38
cis-1,3-Dichloropropene			50.0	48.9		ug/Kg		98	80 - 134	3	39
trans-1,3-Dichloropropene			50.0	46.6		ug/Kg		93	80 - 148	3	42
Ethylbenzene			50.0	51.2		ug/Kg		102	72 - 125	8	41

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 320-418322/8
Matrix: Solid
Analysis Batch: 418322

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Hexachlorobutadiene	50.0	51.0		ug/Kg		102	52 - 140	3	38
2-Hexanone	50.0	56.4		ug/Kg		113	78 - 143	12	73
Isopropylbenzene	50.0	52.6		ug/Kg		105	69 - 137	9	41
4-Isopropyltoluene	50.0	49.8		ug/Kg		100	64 - 137	6	40
Methylene Chloride	50.0	50.2		ug/Kg		100	77 - 125	7	25
4-Methyl-2-pentanone (MIBK)	50.0	47.3		ug/Kg		95	79 - 150	5	48
Naphthalene	50.0	55.6		ug/Kg		111	53 - 140	7	46
N-Propylbenzene	50.0	49.5		ug/Kg		99	63 - 128	8	42
Styrene	50.0	55.4		ug/Kg		111	79 - 128	7	40
1,1,1,2-Tetrachloroethane	50.0	52.0		ug/Kg		104	77 - 134	9	25
1,1,2,2-Tetrachloroethane	50.0	52.0		ug/Kg		104	71 - 134	8	31
Tetrachloroethene	50.0	52.8		ug/Kg		106	65 - 135	8	39
Toluene	50.0	50.1		ug/Kg		100	80 - 124	5	39
1,2,3-Trichlorobenzene	50.0	52.5		ug/Kg		105	54 - 140	6	42
1,2,4-Trichlorobenzene	50.0	50.1		ug/Kg		100	48 - 145	4	39
1,1,1-Trichloroethane	50.0	54.7		ug/Kg		109	67 - 150	8	43
1,1,2-Trichloroethane	50.0	48.9		ug/Kg		98	80 - 128	1	41
Trichloroethene	50.0	52.1		ug/Kg		104	80 - 126	9	40
Trichlorofluoromethane	50.0	55.1		ug/Kg		110	43 - 158	10	32
1,2,3-Trichloropropane	50.0	53.7		ug/Kg		107	71 - 132	7	41
1,1,2-Trichloro-1,2,2-trifluoroethane	50.0	50.6		ug/Kg		101	62 - 138	9	22
1,2,4-Trimethylbenzene	50.0	50.4		ug/Kg		101	64 - 137	8	41
1,3,5-Trimethylbenzene	50.0	50.7		ug/Kg		101	66 - 135	9	42
Vinyl acetate	50.0	45.1		ug/Kg		90	39 - 160	4	50
Vinyl chloride	50.0	55.0		ug/Kg		110	67 - 127	10	37
m-Xylene & p-Xylene	50.0	50.2		ug/Kg		100	73 - 128	7	40
o-Xylene	50.0	51.1		ug/Kg		102	76 - 127	8	40
2,2-Dichloropropane	50.0	55.3		ug/Kg		111	69 - 153	10	47

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*63 - 143*
Dibromofluoromethane (Surr)	*102*		*55 - 129*
1,2-Dichloroethane-d4 (Surr)	*98*		*32 - 156*
Toluene-d8 (Surr)	*106*		*63 - 138*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 320-417966/11
Matrix: Solid
Analysis Batch: 417966

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline Range Organics (GRO)-C4-C12	ND		0.50		mg/Kg			10/02/20 12:21	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*116*		*70 - 131*		*10/02/20 12:21*	*1*

Method: 8260B/CA_LUFTMS - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 320-417966/4
Matrix: Solid
Analysis Batch: 417966

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Gasoline Range Organics (GRO)-C4-C12			1.00	0.961		mg/Kg		96	79 - 123		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*114*		*70 - 131*

Lab Sample ID: LCSD 320-417966/5
Matrix: Solid
Analysis Batch: 417966

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO)-C4-C12			1.00	0.943		mg/Kg		94	79 - 123	2	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*111*		*70 - 131*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 570-99354/1-A
Matrix: Solid
Analysis Batch: 99758

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99354

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Acenaphthene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Acenaphthylene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Fluorene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Phenanthrene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Anthracene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Benzo[a]anthracene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Chrysene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Benzo[a]pyrene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Benzo[b]fluoranthene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Benzo[k]fluoranthene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Benzo[g,h,i]perylene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Indeno[1,2,3-cd]pyrene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Fluoranthene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Pyrene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1
Dibenz(a,h)anthracene	ND		10		ug/Kg		10/05/20 08:01	10/06/20 13:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4,6-Tribromophenol (Surr)	*75*		*16 - 132*	*10/05/20 08:01*	*10/06/20 13:24*	*1*
2-Fluorobiphenyl (Surr)	*91*		*19 - 120*	*10/05/20 08:01*	*10/06/20 13:24*	*1*
2-Fluorophenol (Surr)	*83*		*13 - 120*	*10/05/20 08:01*	*10/06/20 13:24*	*1*
Nitrobenzene-d5 (Surr)	*83*		*14 - 120*	*10/05/20 08:01*	*10/06/20 13:24*	*1*
Phenol-d6 (Surr)	*85*		*12 - 120*	*10/05/20 08:01*	*10/06/20 13:24*	*1*
p-Terphenyl-d14 (Surr)	*101*		*24 - 120*	*10/05/20 08:01*	*10/06/20 13:24*	*1*

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 570-99354/2-A
Matrix: Solid
Analysis Batch: 99758

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99354

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Naphthalene			1000	742		ug/Kg		74	41 - 126		
Acenaphthene			1000	771		ug/Kg		77	37 - 126		
Acenaphthylene			1000	809		ug/Kg		81	42 - 141		
Fluorene			1000	759		ug/Kg		76	36 - 134		
Phenanthrene			1000	764		ug/Kg		76	43 - 125		
Anthracene			1000	763		ug/Kg		76	46 - 127		
Benzo[a]anthracene			1000	905		ug/Kg		91	52 - 134		
Chrysene			1000	868		ug/Kg		87	47 - 130		
Benzo[a]pyrene			1000	860		ug/Kg		86	48 - 137		
Benzo[b]fluoranthene			1000	897		ug/Kg		90	50 - 133		
Benzo[k]fluoranthene			1000	829		ug/Kg		83	49 - 136		
Benzo[g,h,i]perylene			1000	908		ug/Kg		91	51 - 137		
Indeno[1,2,3-cd]pyrene			1000	873		ug/Kg		87	49 - 133		
Fluoranthene			1000	806		ug/Kg		81	47 - 135		
Pyrene			1000	860		ug/Kg		86	46 - 129		
Dibenz(a,h)anthracene			1000	902		ug/Kg		90	50 - 136		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*68*		*16 - 132*
2-Fluorobiphenyl (Surr)	*68*		*19 - 120*
2-Fluorophenol (Surr)	*65*		*13 - 120*
Nitrobenzene-d5 (Surr)	*67*		*14 - 120*
Phenol-d6 (Surr)	*66*		*12 - 120*
p-Terphenyl-d14 (Surr)	*84*		*24 - 120*

Lab Sample ID: LCSD 570-99354/3-A
Matrix: Solid
Analysis Batch: 99758

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99354

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene			1000	718		ug/Kg		72	41 - 126	3	23
Acenaphthene			1000	762		ug/Kg		76	37 - 126	1	21
Acenaphthylene			1000	803		ug/Kg		80	42 - 141	1	20
Fluorene			1000	737		ug/Kg		74	36 - 134	3	22
Phenanthrene			1000	755		ug/Kg		75	43 - 125	1	19
Anthracene			1000	760		ug/Kg		76	46 - 127	0	19
Benzo[a]anthracene			1000	888		ug/Kg		89	52 - 134	2	21
Chrysene			1000	838		ug/Kg		84	47 - 130	3	21
Benzo[a]pyrene			1000	831		ug/Kg		83	48 - 137	3	25
Benzo[b]fluoranthene			1000	854		ug/Kg		85	50 - 133	5	24
Benzo[k]fluoranthene			1000	821		ug/Kg		82	49 - 136	1	24
Benzo[g,h,i]perylene			1000	891		ug/Kg		89	51 - 137	2	21
Indeno[1,2,3-cd]pyrene			1000	863		ug/Kg		86	49 - 133	1	22
Fluoranthene			1000	776		ug/Kg		78	47 - 135	4	25
Pyrene			1000	840		ug/Kg		84	46 - 129	2	22
Dibenz(a,h)anthracene			1000	884		ug/Kg		88	50 - 136	2	22

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCSD 570-99354/3-A
Matrix: Solid
Analysis Batch: 99758

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99354

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*69*		*16 - 132*
2-Fluorobiphenyl (Surr)	*68*		*19 - 120*
2-Fluorophenol (Surr)	*63*		*13 - 120*
Nitrobenzene-d5 (Surr)	*64*		*14 - 120*
Phenol-d6 (Surr)	*65*		*12 - 120*
p-Terphenyl-d14 (Surr)	*82*		*24 - 120*

Lab Sample ID: 720-100029-D-1-A MS
Matrix: Solid
Analysis Batch: 99758

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99354

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	ND		1020	826		ug/Kg	☼	81	33 - 125
Acenaphthene	ND		1020	893		ug/Kg	☼	87	36 - 125
Acenaphthylene	ND		1020	899		ug/Kg	☼	88	41 - 128
Fluorene	ND		1020	897		ug/Kg	☼	88	40 - 125
Phenanthrene	100		1020	993		ug/Kg	☼	87	18 - 150
Anthracene	ND		1020	943		ug/Kg	☼	91	39 - 129
Benzo[a]anthracene	60		1020	1020		ug/Kg	☼	94	40 - 150
Chrysene	110		1020	996		ug/Kg	☼	86	28 - 158
Benzo[a]pyrene	ND		1020	970		ug/Kg	☼	90	25 - 172
Benzo[b]fluoranthene	ND		1020	957		ug/Kg	☼	89	32 - 158
Benzo[k]fluoranthene	ND		1020	878		ug/Kg	☼	84	38 - 149
Benzo[g,h,i]perylene	ND		1020	948		ug/Kg	☼	88	28 - 160
Indeno[1,2,3-cd]pyrene	ND		1020	923		ug/Kg	☼	89	35 - 146
Fluoranthene	71		1020	962		ug/Kg	☼	87	14 - 175
Pyrene	130		1020	1070		ug/Kg	☼	92	30 - 154
Dibenz(a,h)anthracene	ND		1020	940		ug/Kg	☼	91	43 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*61*		*16 - 132*
2-Fluorobiphenyl (Surr)	*74*		*19 - 120*
2-Fluorophenol (Surr)	*64*		*13 - 120*
Nitrobenzene-d5 (Surr)	*67*		*14 - 120*
Phenol-d6 (Surr)	*70*		*12 - 120*
p-Terphenyl-d14 (Surr)	*88*		*24 - 120*

Lab Sample ID: 720-100029-D-1-B MSD
Matrix: Solid
Analysis Batch: 99758

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 99354

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Naphthalene	ND		1020	753		ug/Kg	☼	74	33 - 125	9	28
Acenaphthene	ND		1020	876		ug/Kg	☼	86	36 - 125	2	29
Acenaphthylene	ND		1020	884		ug/Kg	☼	86	41 - 128	2	25
Fluorene	ND		1020	948		ug/Kg	☼	93	40 - 125	6	24
Phenanthrene	100		1020	1080		ug/Kg	☼	96	18 - 150	8	22
Anthracene	ND		1020	1020		ug/Kg	☼	98	39 - 129	8	19

Method: 8270C SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: 720-100029-D-1-B MSD
Matrix: Solid
Analysis Batch: 99758

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 99354

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzo[a]anthracene	60		1020	1060		ug/Kg	☼	97	40 - 150	3	26
Chrysene	110		1020	1030		ug/Kg	☼	89	28 - 158	3	27
Benzo[a]pyrene	ND		1020	992		ug/Kg	☼	92	25 - 172	2	27
Benzo[b]fluoranthene	ND		1020	957		ug/Kg	☼	89	32 - 158	0	27
Benzo[k]fluoranthene	ND		1020	936		ug/Kg	☼	89	38 - 149	6	25
Benzo[g,h,i]perylene	ND		1020	991		ug/Kg	☼	92	28 - 160	4	28
Indeno[1,2,3-cd]pyrene	ND		1020	944		ug/Kg	☼	91	35 - 146	2	26
Fluoranthene	71		1020	996		ug/Kg	☼	90	14 - 175	3	23
Pyrene	130		1020	1090		ug/Kg	☼	94	30 - 154	2	29
Dibenz(a,h)anthracene	ND		1020	967		ug/Kg	☼	93	43 - 135	3	28

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2,4,6-Tribromophenol (Surr)	*69*		*16 - 132*
2-Fluorobiphenyl (Surr)	*65*		*19 - 120*
2-Fluorophenol (Surr)	*57*		*13 - 120*
Nitrobenzene-d5 (Surr)	*61*		*14 - 120*
Phenol-d6 (Surr)	*60*		*12 - 120*
p-Terphenyl-d14 (Surr)	*88*		*24 - 120*

Method: 8015B - Diesel Range Organics (DRO) (GC)

Lab Sample ID: MB 570-99490/1-A
Matrix: Solid
Analysis Batch: 99406

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99490

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Diesel Range Organics [C10-C28]	ND		5.0		mg/Kg		10/05/20 12:04	10/05/20 17:37	1
Motor Oil Range Organics [C24-C36]	ND		5.0		mg/Kg		10/05/20 12:04	10/05/20 17:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
n-Octacosane (Surr)	*108*		*61 - 145*	*10/05/20 12:04*	*10/05/20 17:37*	*1*

Lab Sample ID: LCS 570-99490/2-A
Matrix: Solid
Analysis Batch: 99406

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99490

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Diesel Range Organics [C10-C28]			400	435		mg/Kg		109	67 - 121		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
n-Octacosane (Surr)	*114*		*61 - 145*

Method: 8015B - Diesel Range Organics (DRO) (GC) (Continued)

Lab Sample ID: LCSD 570-99490/3-A
Matrix: Solid
Analysis Batch: 99406

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99490

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]			400	410		mg/Kg		102	67 - 121	6	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
n-Octacosane (Surr)	*110*		*61 - 145*

Lab Sample ID: 720-100029-D-1-D MS
Matrix: Solid
Analysis Batch: 99406

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99490

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Diesel Range Organics [C10-C28]	660		407	1070		mg/Kg	☼	101	33 - 153

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
n-Octacosane (Surr)	*70*		*61 - 145*

Lab Sample ID: 720-100029-D-1-E MSD
Matrix: Solid
Analysis Batch: 99406

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 99490

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Diesel Range Organics [C10-C28]	660		418	1100		mg/Kg	☼	105	33 - 153	2	32

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
n-Octacosane (Surr)	*67*		*61 - 145*

Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 570-99546/1-A
Matrix: Solid
Analysis Batch: 99900

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99546

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aldrin	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Dieldrin	ND		0.20		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Endrin aldehyde	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Endrin	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Endrin ketone	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Heptachlor	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Heptachlor epoxide	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
4,4'-DDT	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
4,4'-DDE	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
4,4'-DDD	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Endosulfan I	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Endosulfan II	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
alpha-BHC	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
beta-BHC	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: MB 570-99546/1-A
Matrix: Solid
Analysis Batch: 99900

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99546

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
gamma-BHC (Lindane)	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
delta-BHC	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Endosulfan sulfate	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Methoxychlor	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Toxaphene	ND		5.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
Chlordane (technical)	ND		5.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
cis-Chlordane	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1
trans-Chlordane	ND		1.0		ug/Kg		10/05/20 15:00	10/07/20 09:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*80*		*25 - 126*	*10/05/20 15:00*	*10/07/20 09:24*	*1*
DCB Decachlorobiphenyl (Surr)	*73*		*20 - 155*	*10/05/20 15:00*	*10/07/20 09:24*	*1*

Lab Sample ID: LCS 570-99546/2-A
Matrix: Solid
Analysis Batch: 99900

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99546

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	5.00	3.79		ug/Kg		76	50 - 135
Dieldrin	5.00	4.08		ug/Kg		82	50 - 135
Endrin aldehyde	5.00	3.39		ug/Kg		68	50 - 135
Endrin	5.00	4.13		ug/Kg		83	50 - 135
Endrin ketone	5.00	4.41		ug/Kg		88	50 - 135
Heptachlor	5.00	4.19		ug/Kg		84	50 - 135
Heptachlor epoxide	5.00	4.06		ug/Kg		81	50 - 135
4,4'-DDT	5.00	4.65		ug/Kg		93	50 - 135
4,4'-DDE	5.00	4.77		ug/Kg		95	50 - 135
4,4'-DDD	5.00	4.39		ug/Kg		88	50 - 135
Endosulfan I	5.00	3.85		ug/Kg		77	50 - 135
Endosulfan II	5.00	4.21		ug/Kg		84	50 - 135
alpha-BHC	5.00	4.10		ug/Kg		82	50 - 135
beta-BHC	5.00	4.19		ug/Kg		84	50 - 135
gamma-BHC (Lindane)	5.00	4.13		ug/Kg		83	50 - 135
delta-BHC	5.00	3.75		ug/Kg		75	50 - 135
Endosulfan sulfate	5.00	3.93		ug/Kg		79	50 - 135
Methoxychlor	5.00	4.10		ug/Kg		82	50 - 135
cis-Chlordane	5.00	4.05		ug/Kg		81	50 - 135
trans-Chlordane	5.00	5.26		ug/Kg		105	50 - 135

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*83*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*79*		*20 - 155*

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCSD 570-99546/3-A
Matrix: Solid
Analysis Batch: 99900

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99546

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin			5.00	4.04		ug/Kg		81	50 - 135	6	25
Dieldrin			5.00	4.33		ug/Kg		87	50 - 135	6	25
Endrin aldehyde			5.00	3.62		ug/Kg		72	50 - 135	7	25
Endrin			5.00	4.39		ug/Kg		88	50 - 135	6	25
Endrin ketone			5.00	4.72		ug/Kg		94	50 - 135	7	25
Heptachlor			5.00	4.43		ug/Kg		89	50 - 135	6	25
Heptachlor epoxide			5.00	4.33		ug/Kg		87	50 - 135	6	25
4,4'-DDT			5.00	4.93		ug/Kg		99	50 - 135	6	25
4,4'-DDE			5.00	5.03		ug/Kg		101	50 - 135	5	25
4,4'-DDD			5.00	4.71		ug/Kg		94	50 - 135	7	25
Endosulfan I			5.00	4.10		ug/Kg		82	50 - 135	6	25
Endosulfan II			5.00	4.30		ug/Kg		86	50 - 135	2	25
alpha-BHC			5.00	4.36		ug/Kg		87	50 - 135	6	25
beta-BHC			5.00	4.44		ug/Kg		89	50 - 135	6	25
gamma-BHC (Lindane)			5.00	4.39		ug/Kg		88	50 - 135	6	25
delta-BHC			5.00	4.00		ug/Kg		80	50 - 135	6	25
Endosulfan sulfate			5.00	4.20		ug/Kg		84	50 - 135	7	25
Methoxychlor			5.00	4.41		ug/Kg		88	50 - 135	7	25
cis-Chlordane			5.00	4.30		ug/Kg		86	50 - 135	6	25
trans-Chlordane			5.00	5.28		ug/Kg		106	50 - 135	0	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*87*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*85*		*20 - 155*

Lab Sample ID: 720-100032-1 MS
Matrix: Solid
Analysis Batch: 99900

Client Sample ID: EB-8 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 99546

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Aldrin	ND		6.04	4.51	p	ug/Kg	☼	75	50 - 135
Dieldrin	ND	F1	6.04	8.91	F1	ug/Kg	☼	147	50 - 135
Endrin aldehyde	ND	F2	6.04	5.15		ug/Kg	☼	85	50 - 135
Endrin	ND	F2	6.04	6.97		ug/Kg	☼	115	50 - 135
Endrin ketone	ND	F1 F2	6.04	13.5	E F1	ug/Kg	☼	223	50 - 135
Heptachlor	ND		6.04	5.57		ug/Kg	☼	92	50 - 135
Heptachlor epoxide	ND		6.04	6.61		ug/Kg	☼	109	50 - 135
4,4'-DDT	ND	F1	6.04	8.98	F1	ug/Kg	☼	149	50 - 135
4,4'-DDE	ND		6.04	8.29	F1	ug/Kg	☼	137	50 - 135
4,4'-DDD	ND		6.04	7.26		ug/Kg	☼	120	50 - 135
Endosulfan I	ND		6.04	7.44		ug/Kg	☼	123	50 - 135
Endosulfan II	ND		6.04	4.97	p	ug/Kg	☼	82	50 - 135
alpha-BHC	ND		6.04	5.02		ug/Kg	☼	83	50 - 135
beta-BHC	ND		6.04	5.33		ug/Kg	☼	88	50 - 135
gamma-BHC (Lindane)	ND		6.04	5.33		ug/Kg	☼	88	50 - 135
delta-BHC	ND		6.04	5.16		ug/Kg	☼	85	50 - 135
Endosulfan sulfate	ND	F1	6.04	12.5	E F1	ug/Kg	☼	207	50 - 135
Methoxychlor	ND	F1	6.04	10.1	E p F1	ug/Kg	☼	168	50 - 135

Method: 8081A - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: 720-100032-1 MS
Matrix: Solid
Analysis Batch: 99900

Client Sample ID: EB-8 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 99546

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-Chlordane	ND		6.04	6.53		ug/Kg	☼	108	50 - 135
trans-Chlordane	ND		6.04	8.77	F1	ug/Kg	☼	145	50 - 135

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Tetrachloro-m-xylene	*73*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*99*		*20 - 155*

Lab Sample ID: 720-100032-1 MSD
Matrix: Solid
Analysis Batch: 99900

Client Sample ID: EB-8 (0'-0.5')
Prep Type: Total/NA
Prep Batch: 99546

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aldrin	ND		6.23	4.72	p	ug/Kg	☼	76	50 - 135	5	25
Dieldrin	ND	F1	6.23	11.3	E p F1	ug/Kg	☼	182	50 - 135	24	25
Endrin aldehyde	ND	F2	6.23	3.28	p F2	ug/Kg	☼	53	50 - 135	44	25
Endrin	ND	F2	6.23	11.0	E F1 F2	ug/Kg	☼	177	50 - 135	45	25
Endrin ketone	ND	F1 F2	6.23	9.75	p F1 F2	ug/Kg	☼	157	50 - 135	32	25
Heptachlor	ND		6.23	5.59		ug/Kg	☼	90	50 - 135	0	25
Heptachlor epoxide	ND		6.23	7.80	p	ug/Kg	☼	125	50 - 135	16	25
4,4'-DDT	ND	F1	6.23	10.1	E p F1	ug/Kg	☼	163	50 - 135	12	25
4,4'-DDE	ND		6.23	7.45	p	ug/Kg	☼	120	50 - 135	11	25
4,4'-DDD	ND		6.23	12.2	E F1 F2	ug/Kg	☼	196	50 - 135	51	25
Endosulfan I	ND		6.23	6.00	p	ug/Kg	☼	96	50 - 135	22	25
Endosulfan II	ND		6.23	10.8	E F1 F2	ug/Kg	☼	173	50 - 135	74	25
alpha-BHC	ND		6.23	5.26		ug/Kg	☼	85	50 - 135	5	25
beta-BHC	ND		6.23	5.29		ug/Kg	☼	85	50 - 135	1	25
gamma-BHC (Lindane)	ND		6.23	5.73		ug/Kg	☼	92	50 - 135	7	25
delta-BHC	ND		6.23	5.58		ug/Kg	☼	90	50 - 135	8	25
Endosulfan sulfate	ND	F1	6.23	11.9	E p F1	ug/Kg	☼	191	50 - 135	5	25
Methoxychlor	ND	F1	6.23	10.6	E p F1	ug/Kg	☼	170	50 - 135	5	25
cis-Chlordane	ND		6.23	6.04	p	ug/Kg	☼	97	50 - 135	8	25
trans-Chlordane	ND		6.23	7.47	p	ug/Kg	☼	120	50 - 135	16	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*78*		*25 - 126*
DCB Decachlorobiphenyl (Surr)	*126*	*p*	*20 - 155*

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 570-99546/1-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99546

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1
Aroclor-1221	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1
Aroclor-1232	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1
Aroclor-1242	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: MB 570-99546/1-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99546

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1248	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1
Aroclor-1254	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1
Aroclor-1260	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1
Aroclor-1262	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1
Aroclor-1268	ND		10		ug/Kg		10/05/20 15:00	10/07/20 11:22	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*107*		*20 - 155*	*10/05/20 15:00*	*10/07/20 11:22*	*1*
Tetrachloro-m-xylene (Surr)	*93*		*25 - 126*	*10/05/20 15:00*	*10/07/20 11:22*	*1*

Lab Sample ID: LCS 570-99546/6-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99546

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aroclor-1016			20.0	21.0		ug/Kg		105	50 - 150		
Aroclor-1260			20.0	21.8		ug/Kg		109	50 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*100*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*93*		*25 - 126*

Lab Sample ID: LCSD 570-99546/7-A
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99546

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor-1016			20.0	22.7		ug/Kg		113	50 - 150	8	30
Aroclor-1260			20.0	22.3		ug/Kg		111	50 - 150	2	25

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*100*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*94*		*25 - 126*

Lab Sample ID: 720-100029-D-1-J MS
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99546

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Aroclor-1016	ND		20.6	17.2		ug/Kg	☼	84	20 - 180		
Aroclor-1260	ND		20.6	12.1		ug/Kg	☼	59	20 - 180		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*71*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*68*		*25 - 126*

Method: 8082 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: 720-100029-D-1-K MSD
Matrix: Solid
Analysis Batch: 99888

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 99546

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Aroclor-1016	ND		20.8	15.0		ug/Kg	☼	72	20 - 180	14	40
Aroclor-1260	ND		20.8	17.5		ug/Kg	☼	84	20 - 180	37	40

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*67*		*20 - 155*
Tetrachloro-m-xylene (Surr)	*62*		*25 - 126*

Method: 6010B - Metals (ICP)

Lab Sample ID: MB 570-99847/1-A
Matrix: Solid
Analysis Batch: 100146

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 99847

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	ND		0.25		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Arsenic	ND		0.74		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Barium	ND		0.49		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Beryllium	ND		0.25		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Cadmium	ND		0.49		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Cobalt	ND		0.25		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Chromium	ND		0.25		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Copper	ND		0.49		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Molybdenum	ND		0.25		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Nickel	ND		0.25		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Antimony	ND		0.74		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Selenium	ND		0.74		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Thallium	ND		0.74		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Vanadium	ND		0.25		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Zinc	ND		0.99		mg/Kg		10/06/20 16:00	10/07/20 14:30	1
Lead	ND		0.49		mg/Kg		10/06/20 16:00	10/07/20 14:30	1

Lab Sample ID: LCS 570-99847/2-A
Matrix: Solid
Analysis Batch: 100146

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99847

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	12.6	13.1		mg/Kg		104	80 - 120
Arsenic	25.1	25.5		mg/Kg		102	80 - 120
Barium	25.1	26.3		mg/Kg		104	80 - 120
Beryllium	25.1	24.6		mg/Kg		98	80 - 120
Cadmium	25.1	25.4		mg/Kg		101	80 - 120
Cobalt	25.1	26.1		mg/Kg		104	80 - 120
Chromium	25.1	25.4		mg/Kg		101	80 - 120
Copper	25.1	26.6		mg/Kg		106	80 - 120
Molybdenum	25.1	24.4		mg/Kg		97	80 - 120
Nickel	25.1	27.3		mg/Kg		109	80 - 120
Antimony	25.1	26.1		mg/Kg		104	80 - 120
Selenium	25.1	23.5		mg/Kg		94	80 - 120
Thallium	25.1	25.6		mg/Kg		102	80 - 120

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCS 570-99847/2-A
Matrix: Solid
Analysis Batch: 100146

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 99847

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vanadium	25.1	24.9		mg/Kg		99	80 - 120
Zinc	25.1	26.4		mg/Kg		105	80 - 120
Lead	25.1	26.3		mg/Kg		105	80 - 120

Lab Sample ID: LCSD 570-99847/3-A
Matrix: Solid
Analysis Batch: 100146

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 99847

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver	12.6	13.1		mg/Kg		104	80 - 120	0	20
Arsenic	25.3	24.8		mg/Kg		98	80 - 120	3	20
Barium	25.3	26.2		mg/Kg		104	80 - 120	0	20
Beryllium	25.3	24.7		mg/Kg		98	80 - 120	0	20
Cadmium	25.3	25.6		mg/Kg		102	80 - 120	1	20
Cobalt	25.3	26.3		mg/Kg		104	80 - 120	1	20
Chromium	25.3	25.4		mg/Kg		101	80 - 120	0	20
Copper	25.3	26.7		mg/Kg		106	80 - 120	0	20
Molybdenum	25.3	24.9		mg/Kg		99	80 - 120	2	20
Nickel	25.3	27.7		mg/Kg		110	80 - 120	1	20
Antimony	25.3	25.4		mg/Kg		101	80 - 120	2	20
Selenium	25.3	25.8		mg/Kg		102	80 - 120	9	20
Thallium	25.3	26.8		mg/Kg		106	80 - 120	4	20
Vanadium	25.3	25.0		mg/Kg		99	80 - 120	0	20
Zinc	25.3	26.6		mg/Kg		106	80 - 120	1	20
Lead	25.3	26.3		mg/Kg		104	80 - 120	0	20

Lab Sample ID: 720-100031-A-1-J MS
Matrix: Solid
Analysis Batch: 100146

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 99847

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	ND		12.6	14.1		mg/Kg		111	75 - 125
Arsenic	11		25.1	35.1		mg/Kg		94	75 - 125
Barium	130		25.1	155	4	mg/Kg		92	75 - 125
Beryllium	0.45		25.1	25.7		mg/Kg		101	75 - 125
Cadmium	ND		25.1	24.8		mg/Kg		99	75 - 125
Cobalt	10		25.1	33.6		mg/Kg		94	75 - 125
Chromium	47	F1	25.1	85.3	F1	mg/Kg		154	75 - 125
Copper	76	F1	25.1	119	F1	mg/Kg		169	75 - 125
Molybdenum	ND		25.1	24.5		mg/Kg		98	75 - 125
Nickel	92	F1	25.1	134	F1	mg/Kg		167	75 - 125
Antimony	ND	F1	25.1	6.40	F1	mg/Kg		25	50 - 115
Selenium	ND	L	25.1	19.8		mg/Kg		79	75 - 125
Thallium	ND		25.1	24.6		mg/Kg		98	75 - 125
Vanadium	34		25.1	60.3		mg/Kg		103	75 - 125
Zinc	160		25.1	195	4	mg/Kg		134	75 - 125
Lead	270	F2	25.1	281	4	mg/Kg		38	75 - 125

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 720-100031-A-1-K MSD — **Client Sample ID: Matrix Spike Duplicate**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 100146 — **Prep Batch: 99847**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver	ND		12.3	14.4		mg/Kg		115	75 - 125	2	20
Arsenic	11		24.5	36.0		mg/Kg		100	75 - 125	2	20
Barium	130		24.5	154	4	mg/Kg		88	75 - 125	1	20
Beryllium	0.45		24.5	25.5		mg/Kg		102	75 - 125	1	20
Cadmium	ND		24.5	24.3		mg/Kg		99	75 - 125	2	20
Cobalt	10		24.5	33.8		mg/Kg		97	75 - 125	1	20
Chromium	47	F1	24.5	79.0	F1	mg/Kg		132	75 - 125	8	20
Copper	76	F1	24.5	119	F1	mg/Kg		175	75 - 125	0	20
Molybdenum	ND		24.5	24.3		mg/Kg		99	75 - 125	1	20
Nickel	92	F1	24.5	130	F1	mg/Kg		155	75 - 125	3	20
Antimony	ND	F1	24.5	6.48	F1	mg/Kg		26	50 - 115	1	20
Selenium	ND	L	24.5	18.6		mg/Kg		76	75 - 125	6	20
Thallium	ND		24.5	23.5		mg/Kg		96	75 - 125	4	20
Vanadium	34		24.5	60.4		mg/Kg		106	75 - 125	0	20
Zinc	160		24.5	175	4	mg/Kg		55	75 - 125	11	20
Lead	270	F2	24.5	188	4 F2	mg/Kg		-341	75 - 125	40	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 570-99848/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 100092 — **Prep Batch: 99848**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.082		mg/Kg		10/06/20 16:00	10/07/20 13:06	1

Lab Sample ID: LCS 570-99848/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 100092 — **Prep Batch: 99848**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury			0.794	0.682		mg/Kg		86	85 - 121		

Lab Sample ID: LCSD 570-99848/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 100092 — **Prep Batch: 99848**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury			0.847	0.730		mg/Kg		86	85 - 121	7	10

Lab Sample ID: 720-100031-A-1-M MS — **Client Sample ID: Matrix Spike**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 100092 — **Prep Batch: 99848**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Mercury	0.12	F1	0.806	0.669	F1	mg/Kg		68	71 - 137		

Method: 7471A - Mercury (CVAA) (Continued)

Lab Sample ID: 720-100031-A-1-N MSD
Matrix: Solid
Analysis Batch: 100092

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 99848

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.12	F1	0.862	0.706	F1	mg/Kg		68	71 - 137	5	14

GC/MS VOA

Prep Batch: 417925

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	5035	
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	5035	
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	5035	

Analysis Batch: 417964

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	8260B	417925
MB 320-417964/11	Method Blank	Total/NA	Solid	8260B	
LCS 320-417964/8	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 320-417964/9	Lab Control Sample Dup	Total/NA	Solid	8260B	

Analysis Batch: 417966

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	8260B/CA_LUFT MS	417925
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	8260B/CA_LUFT MS	417925
MB 320-417966/11	Method Blank	Total/NA	Solid	8260B/CA_LUFT MS	
LCS 320-417966/4	Lab Control Sample	Total/NA	Solid	8260B/CA_LUFT MS	
LCSD 320-417966/5	Lab Control Sample Dup	Total/NA	Solid	8260B/CA_LUFT MS	

Analysis Batch: 418322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	8260B	417925
MB 320-418322/10	Method Blank	Total/NA	Solid	8260B	
LCS 320-418322/7	Lab Control Sample	Total/NA	Solid	8260B	
LCSD 320-418322/8	Lab Control Sample Dup	Total/NA	Solid	8260B	

GC/MS Semi VOA

Prep Batch: 99354

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	3546	
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	3546	
MB 570-99354/1-A	Method Blank	Total/NA	Solid	3546	
LCS 570-99354/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 570-99354/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
720-100029-D-1-A MS	Matrix Spike	Total/NA	Solid	3546	
720-100029-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	

Analysis Batch: 99758

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	8270C SIM	99354
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	8270C SIM	99354
MB 570-99354/1-A	Method Blank	Total/NA	Solid	8270C SIM	99354
LCS 570-99354/2-A	Lab Control Sample	Total/NA	Solid	8270C SIM	99354
LCSD 570-99354/3-A	Lab Control Sample Dup	Total/NA	Solid	8270C SIM	99354
720-100029-D-1-A MS	Matrix Spike	Total/NA	Solid	8270C SIM	99354
720-100029-D-1-B MSD	Matrix Spike Duplicate	Total/NA	Solid	8270C SIM	99354

GC Semi VOA

Analysis Batch: 99406

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	8015B	99490
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	8015B	99490
MB 570-99490/1-A	Method Blank	Total/NA	Solid	8015B	99490
LCS 570-99490/2-A	Lab Control Sample	Total/NA	Solid	8015B	99490
LCSD 570-99490/3-A	Lab Control Sample Dup	Total/NA	Solid	8015B	99490
720-100029-D-1-D MS	Matrix Spike	Total/NA	Solid	8015B	99490
720-100029-D-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	8015B	99490

Prep Batch: 99490

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	3550C	
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	3550C	
MB 570-99490/1-A	Method Blank	Total/NA	Solid	3550C	
LCS 570-99490/2-A	Lab Control Sample	Total/NA	Solid	3550C	
LCSD 570-99490/3-A	Lab Control Sample Dup	Total/NA	Solid	3550C	
720-100029-D-1-D MS	Matrix Spike	Total/NA	Solid	3550C	
720-100029-D-1-E MSD	Matrix Spike Duplicate	Total/NA	Solid	3550C	

Prep Batch: 99546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	3546	
MB 570-99546/1-A	Method Blank	Total/NA	Solid	3546	
LCS 570-99546/2-A	Lab Control Sample	Total/NA	Solid	3546	
LCS 570-99546/6-A	Lab Control Sample	Total/NA	Solid	3546	
LCSD 570-99546/3-A	Lab Control Sample Dup	Total/NA	Solid	3546	
LCSD 570-99546/7-A	Lab Control Sample Dup	Total/NA	Solid	3546	
720-100029-D-1-J MS	Matrix Spike	Total/NA	Solid	3546	
720-100029-D-1-K MSD	Matrix Spike Duplicate	Total/NA	Solid	3546	
720-100032-1 MS	EB-8 (0'-0.5')	Total/NA	Solid	3546	
720-100032-1 MSD	EB-8 (0'-0.5')	Total/NA	Solid	3546	

Analysis Batch: 99888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	8082	99546
MB 570-99546/1-A	Method Blank	Total/NA	Solid	8082	99546
LCS 570-99546/6-A	Lab Control Sample	Total/NA	Solid	8082	99546
LCSD 570-99546/7-A	Lab Control Sample Dup	Total/NA	Solid	8082	99546
720-100029-D-1-J MS	Matrix Spike	Total/NA	Solid	8082	99546
720-100029-D-1-K MSD	Matrix Spike Duplicate	Total/NA	Solid	8082	99546

Analysis Batch: 99900

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	8081A	99546
MB 570-99546/1-A	Method Blank	Total/NA	Solid	8081A	99546
LCS 570-99546/2-A	Lab Control Sample	Total/NA	Solid	8081A	99546
LCSD 570-99546/3-A	Lab Control Sample Dup	Total/NA	Solid	8081A	99546
720-100032-1 MS	EB-8 (0'-0.5')	Total/NA	Solid	8081A	99546
720-100032-1 MSD	EB-8 (0'-0.5')	Total/NA	Solid	8081A	99546

Metals

Prep Batch: 99847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	3050B	
720-100032-2	EB-8 (3'-3.5')	Total/NA	Solid	3050B	
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	3050B	
MB 570-99847/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 570-99847/2-A	Lab Control Sample	Total/NA	Solid	3050B	
LCSD 570-99847/3-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
720-100031-A-1-J MS	Matrix Spike	Total/NA	Solid	3050B	
720-100031-A-1-K MSD	Matrix Spike Duplicate	Total/NA	Solid	3050B	

Prep Batch: 99848

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	7471A	
720-100032-2	EB-8 (3'-3.5')	Total/NA	Solid	7471A	
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	7471A	
MB 570-99848/1-A	Method Blank	Total/NA	Solid	7471A	
LCS 570-99848/2-A	Lab Control Sample	Total/NA	Solid	7471A	
LCSD 570-99848/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	
720-100031-A-1-M MS	Matrix Spike	Total/NA	Solid	7471A	
720-100031-A-1-N MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	

Analysis Batch: 100092

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	7471A	99848
720-100032-2	EB-8 (3'-3.5')	Total/NA	Solid	7471A	99848
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	7471A	99848
MB 570-99848/1-A	Method Blank	Total/NA	Solid	7471A	99848
LCS 570-99848/2-A	Lab Control Sample	Total/NA	Solid	7471A	99848
LCSD 570-99848/3-A	Lab Control Sample Dup	Total/NA	Solid	7471A	99848
720-100031-A-1-M MS	Matrix Spike	Total/NA	Solid	7471A	99848
720-100031-A-1-N MSD	Matrix Spike Duplicate	Total/NA	Solid	7471A	99848

Analysis Batch: 100146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	6010B	99847
720-100032-2	EB-8 (3'-3.5')	Total/NA	Solid	6010B	99847
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	6010B	99847
MB 570-99847/1-A	Method Blank	Total/NA	Solid	6010B	99847
LCS 570-99847/2-A	Lab Control Sample	Total/NA	Solid	6010B	99847
LCSD 570-99847/3-A	Lab Control Sample Dup	Total/NA	Solid	6010B	99847
720-100031-A-1-J MS	Matrix Spike	Total/NA	Solid	6010B	99847
720-100031-A-1-K MSD	Matrix Spike Duplicate	Total/NA	Solid	6010B	99847

General Chemistry

Analysis Batch: 99304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	Total/NA	Solid	Moisture	
720-100032-2	EB-8 (3'-3.5')	Total/NA	Solid	Moisture	
720-100032-3	EB-8 (9'-9.5')	Total/NA	Solid	Moisture	
720-100022-A-1 DU	Duplicate	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (0'-0.5')
Date Collected: 09/30/20 09:00
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	99304	10/03/20 15:57	B4PP	ECL 1

Client Sample ID: EB-8 (0'-0.5')
Date Collected: 09/30/20 09:00
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-1
Matrix: Solid
Percent Solids: 80.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			417925	10/01/20 19:40	SO1	TAL SAC
Total/NA	Analysis	8260B		1	418322	10/03/20 11:41	SS	TAL SAC
Total/NA	Prep	5035			417925	10/01/20 19:40	SO1	TAL SAC
Total/NA	Analysis	8260B/CA_LUFTMS		1	417966	10/02/20 17:52	AP1	TAL SAC
Total/NA	Prep	3546			99354	10/05/20 08:01	F7UI	ECL 1
Total/NA	Analysis	8270C SIM		1	99758	10/06/20 16:44	N8CZ	ECL 1
Total/NA	Prep	3550C			99490	10/05/20 12:04	N5Y3	ECL 1
Total/NA	Analysis	8015B		1	99406	10/05/20 19:39	I9H5	ECL 1
Total/NA	Prep	3546			99546	10/05/20 15:00	OM8W	ECL 1
Total/NA	Analysis	8081A		1	99900	10/07/20 10:38	UHHN	ECL 1
Total/NA	Prep	3546			99546	10/05/20 15:00	OM8W	ECL 1
Total/NA	Analysis	8082		1	99888	10/07/20 12:49	UHHN	ECL 1
Total/NA	Prep	3050B			99847	10/06/20 16:00	SP7J	ECL 1
Total/NA	Analysis	6010B		1	100146	10/07/20 15:50	OYW3	ECL 1
Total/NA	Prep	7471A			99848	10/06/20 16:00	SP7J	ECL 1
Total/NA	Analysis	7471A		1	100092	10/07/20 15:46	MD3A	ECL 1

Client Sample ID: EB-8 (3'-3.5')
Date Collected: 09/30/20 09:20
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	99304	10/03/20 15:57	B4PP	ECL 1

Client Sample ID: EB-8 (3'-3.5')
Date Collected: 09/30/20 09:20
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-2
Matrix: Solid
Percent Solids: 87.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			99847	10/06/20 16:00	SP7J	ECL 1
Total/NA	Analysis	6010B		1	100146	10/07/20 15:52	OYW3	ECL 1
Total/NA	Prep	7471A			99848	10/06/20 16:00	SP7J	ECL 1
Total/NA	Analysis	7471A		1	100092	10/07/20 15:49	MD3A	ECL 1

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Client Sample ID: EB-8 (9'-9.5')

Date Collected: 09/30/20 09:45
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture		1	99304	10/03/20 15:57	B4PP	ECL 1

Client Sample ID: EB-8 (9'-9.5')

Date Collected: 09/30/20 09:45
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-3
Matrix: Solid
Percent Solids: 83.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			417925	10/01/20 19:40	SO1	TAL SAC
Total/NA	Analysis	8260B		1	417964	10/02/20 18:16	AP1	TAL SAC
Total/NA	Prep	5035			417925	10/01/20 19:40	SO1	TAL SAC
Total/NA	Analysis	8260B/CA_LUFTMS		1	417966	10/02/20 18:16	AP1	TAL SAC
Total/NA	Prep	3546			99354	10/05/20 08:01	F7UI	ECL 1
Total/NA	Analysis	8270C SIM		1	99758	10/06/20 15:13	N8CZ	ECL 1
Total/NA	Prep	3550C			99490	10/05/20 12:04	N5Y3	ECL 1
Total/NA	Analysis	8015B		1	99406	10/05/20 19:59	I9H5	ECL 1
Total/NA	Prep	3050B			99847	10/06/20 16:00	SP7J	ECL 1
Total/NA	Analysis	6010B		1	100146	10/07/20 15:54	OYW3	ECL 1
Total/NA	Prep	7471A			99848	10/06/20 16:00	SP7J	ECL 1
Total/NA	Analysis	7471A		1	100092	10/07/20 15:51	MD3A	ECL 1

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Laboratory: Eurofins Calscience LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	2944	09-30-21

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture

Laboratory: Eurofins TestAmerica, Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2897	01-31-22

Method Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAC
8260B/CA_LUFTMS	Volatile Organic Compounds by GC/MS	SW846	TAL SAC
8270C SIM	Semivolatile Organic Compounds (GC/MS SIM)	SW846	ECL 1
8015B	Diesel Range Organics (DRO) (GC)	SW846	ECL 1
8081A	Organochlorine Pesticides (GC)	SW846	ECL 1
8082	Polychlorinated Biphenyls (PCBs) (GC)	SW846	ECL 1
6010B	Metals (ICP)	SW846	ECL 1
7471A	Mercury (CVAA)	SW846	ECL 1
Moisture	Percent Moisture	EPA	ECL 1
3050B	Preparation, Metals	SW846	ECL 1
3546	Microwave Extraction	SW846	ECL 1
3546	Microwave Extraction (Low Level)	SW846	ECL 1
3550C	Ultrasonic Extraction	SW846	ECL 1
5035	Closed System Purge and Trap	SW846	TAL SAC
7471A	Preparation, Mercury	SW846	ECL 1

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
720-100032-1	EB-8 (0'-0.5')	Solid	09/30/20 09:00	09/30/20 16:50	
720-100032-2	EB-8 (3'-3.5')	Solid	09/30/20 09:20	09/30/20 16:50	
720-100032-3	EB-8 (9'-9.5')	Solid	09/30/20 09:45	09/30/20 16:50	

CORNERSTONE EARTH GROUP

Chain of Custody Record

720-100032

19741?

	Project Manager: Chris Heiny	Site Sampler: Everett Allen	Date: 9/30/2020
Cornerstone Earth Group, Inc.	Tel/Fax: 925-988-9500 ext. 217	Lab Contact:	Lab:
1220 Oakland Blvd. Suite 220	Analysis Turnaround Time		
Walnut Creek, CA 94596			
(925)-988-9500 Phone	TAT if different from Below _____		
(925)-988-9501 FAX	■ 1 week		
Project Name: Darrell Water Tank	☐ 3 days		
Site: 549 Darrell Road, Hillsborough,CA	☐ 2 days		
Project Number: 996-2-2	☐ 1 day		

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	CAM 17 Metals (EPA Test Method 6010B/7471)	PCBs (EPA Test Method 8082)	OCPs (EPA Test Method 8081)	PAHs (EPA Test Method 8270SIM)	TPHd/TPHo (EPA Test Method 8015)	VOCs/TPHg (EPA Test Method 8260B)	Laboratory's Sample Specific Notes:
EB-8 (0'-0.5')	9/30/2020	9:00	Liner/CNO	Soil	4		X	X	X	X	X	X	Report all on a dry weight basis
EB-8 (3'-3.5')	9/30/2020	9:20	Liner	Soil	1		X						
EB-8 (9'-9.5')	9/30/2020	9:45	Liner/CNO	Soil	4		X			X	X	X	

720-100032 Chain of Custody

Laboratory's Job No.

COC No: _____ of _____ COCs

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Special Instructions/QC Requirements & Comments: If additional sample is needed, please use the liner.

Please email results to: cheiny@cornerstoneearth.com;
eallen@cornerstoneearth.com
dlin@cornerstoneearth.com

12?

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Cornerstone Earth Group	9/30/20 15:30		DCS	9-30-20 1545
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
9-30-20	DCS	9-30-20 1650		EAPS	9-30-2020 1650
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919 Fax: 925-600-3002

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Salimpour, Afsaneh F	Carrier Tracking No(s):	COC No: 720-49996.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Afsaneh.Salimpour@Eurofinset.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State - California; State Program - California		Job #: 720-100032-1
Address: 880 Riverside Parkway,	Due Date Requested: 10/7/2020			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Darrell Water Tank	Project #: 72007780			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B/5035LP_Calc (MOD) VOCs	8260B/CA_LUFTMS/5035LP_Calc GRO C4-C12	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
EB-8 (0'-0.5') (720-100032-1)	9/30/20	09:00 Pacific		Solid			X	X	3	
EB-8 (9'-9.5') (720-100032-3)	9/30/20	09:45 Pacific		Solid			X	X	3	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		10-1-2020 1630	RIS		10-1-20 1630	DCS
2		10/01 1830			10/1/20 1820	EDF
3		Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.9

Ver: 01/16/2019

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Phone: 925-484-1919 Fax: 925-600-3002

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Salimpour, Afsaneh F	Carrier Tracking No(s):	COC No: 720-49997.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Afsaneh.Salimpour@Eurofinset.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Calscience LLC		Accreditations Required (See note): State - California; State Program - California		Job #: 720-100032-1
Address: 7440 Lincoln Way, ,	Due Date Requested: 10/5/2020			
City: Garden Grove	TAT Requested (days):			
State, Zip: CA, 92841				
Phone: 714-895-5494(Tel) 714-894-7501(Fax)	PO #:			
Email:	WO #:			
Project Name: Darrell Water Tank	Project #: 72007780			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6010B/3050B California Administrative Manual List	7471A/7471A_Prep Mercury	8081A_LL/3546_LL (MOD) Local Method	8082_LL/3546_LL Routine PCBs	8270C_SIM/3546 Routine List SIM	Moisture/ Percent Moisture Only	8015B_DRO/3550C (MOD) DRO (C10-C28) - No Silica Gel Surr							Total Number of containers	Special Instructions/Note:
			Preservation Code:																		
EB-8 (0'-0.5') (720-100032-1)	9/30/20	09:00 Pacific		Solid			X	X	X	X	X	X	X							1	
EB-8 (3'-3.5') (720-100032-2)	9/30/20	09:20 Pacific		Solid			X	X				X								1	
EB-8 (9'-9.5') (720-100032-3)	9/30/20	09:45 Pacific		Solid			X	X			X	X	X							1	

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins TestAmerica.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For _____ Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 10/1/20 1600	Company: EPAPCS	Received by: [signature]	Date/Time: 10/2/2020 1030	Company: E
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 3.7/2.9.5.6		

Ver: 01/16/2019

10/9/2020

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Sacramento Sample Receiving Notes

720-100032 Field Sheet

Tracking # : N/A

Job: _____

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier

GSO / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Therm. ID: L-02 Corr. Factor: (+ / -) 0 °C

Ice ✓ Wet ✓ Gel _____ Other _____

Cooler Custody Seal: —

Cooler ID: _____

Temp Observed: 1.9 °C Corrected: 1.9 °C

From: Temp Blank ☐ Sample ☐

Opening/Processing The Shipment	Yes	No	NA
Cooler compromised/tampered with?	☐	☑	☐
Cooler Temperature is acceptable?	☑	☐	☐

Initials: SL Date: 10/1/20

Unpacking/Labeling The Samples	Yes	No	NA
CoC is complete w/o discrepancies?	☑	☐	☐
Samples compromised/tampered with?	☐	☑	☐
Sample containers have legible labels?	☑	☐	☐
Sample custody seal?	☐	☑	☐
Containers are not broken or leaking?	☑	☐	☐
Sample date/times are provided?	☑	☐	☐
Appropriate containers are used?	☑	☐	☐
Sample bottles are completely filled?	☑	☐	☐
Sample preservatives verified?	☐	☐	☑
Samples w/o discrepancies?	☑	☐	☐
Zero headspace?*	☐	☐	☑
Alkalinity has no headspace?	☐	☐	☑
Perchlorate has headspace? (Methods 314, 331, 6850)	☐	☐	☑
Multiphasic samples are not present?	☑	☐	☐

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: SL Date: 10/1/20

Notes: _____

Trizma Lot #(s): _____

Login Completion	Yes	No	NA
Receipt Temperature on COC?	☑	☐	☐
Samples received within hold time?	☑	☐	☐
NCM Filed?	☐	☑	☐
Log Release checked in TALS?	☐	☐	☑

Initials: SL Date: 10/1/20

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100032-1

Login Number: 100032
List Number: 1
Creator: Mullen, Joan

List Source: Eurofins TestAmerica, Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100032-1

Login Number: 100032
List Number: 3
Creator: Ramos, Maribel

List Source: Eurofins Calscience
List Creation: 10/02/20 10:51 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100032-1

Login Number: 100032
List Number: 2
Creator: Guzman, Juan

List Source: Eurofins TestAmerica, Sacramento
List Creation: 10/01/20 07:13 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

Laboratory Job ID: 720-100032-2
Client Project/Site: Darrell Water Tank

For:
Cornerstone Earth Group
1220 Oakland Blvd
Suite 220
Walnut Creek, California 94085

Attn: Mr. Chris Heiny

Authorized for release by:
10/19/2020 11:17:53 AM

Afsaneh Salimpour, Senior Project Manager
(925)484-1919
Afsaneh.Salimpour@Eurofinset.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.eurofinsus.com/Env

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job ID: 720-100032-2

Laboratory: Eurofins TestAmerica, Pleasanton

Narrative

Job Narrative
720-100032-2

Comments
No additional comments.

Receipt
The samples were received on 9/30/2020 4:50 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 12.0º C.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Client Sample ID: EB-8 (0'-0.5') — Lab Sample ID: 720-100032-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nickel	3.8		0.50		mg/L	1		6010B	STLC Citrate

Client Sample ID: EB-8 (9'-9.5') — Lab Sample ID: 720-100032-3

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Client Sample ID: EB-8 (0'-0.5')

Lab Sample ID: 720-100032-1

Date Collected: 09/30/20 09:00

Matrix: Solid

Date Received: 09/30/20 16:50

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.50		mg/L		10/13/20 12:56	10/17/20 11:26	1

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.50		mg/L		10/14/20 15:07	10/17/20 10:47	1
Nickel	**3.8**		0.50		mg/L		10/14/20 15:07	10/17/20 10:47	1

Client Sample Results

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Client Sample ID: EB-8 (9'-9.5')

Date Collected: 09/30/20 09:45
Date Received: 09/30/20 16:50

Lab Sample ID: 720-100032-3

Matrix: Solid

Method: 6010B - Metals (ICP) - TCLP

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.50		mg/L		10/13/20 12:56	10/17/20 11:28	1

Method: 6010B - Metals (ICP) - STLC Citrate

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.50		mg/L		10/14/20 15:07	10/17/20 10:49	1

Method: 6010B - Metals (ICP)

Lab Sample ID: LB 570-101259/1-B
Matrix: Solid
Analysis Batch: 102724

Client Sample ID: Method Blank
Prep Type: TCLP
Prep Batch: 101425

Analyte	LB Result	LB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.50		mg/L		10/13/20 12:56	10/17/20 10:56	1

Lab Sample ID: LCS 570-101259/2-B
Matrix: Solid
Analysis Batch: 102724

Client Sample ID: Lab Control Sample
Prep Type: TCLP
Prep Batch: 101425

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			5.00	5.45		mg/L		109	80 - 120		

Lab Sample ID: LCSD 570-101259/3-B
Matrix: Solid
Analysis Batch: 102724

Client Sample ID: Lab Control Sample Dup
Prep Type: TCLP
Prep Batch: 101425

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium			5.00	5.44		mg/L		109	80 - 120	0	20

Lab Sample ID: 570-38559-A-1-L MS
Matrix: Solid
Analysis Batch: 102724

Client Sample ID: Matrix Spike
Prep Type: TCLP
Prep Batch: 101425

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium	ND		5.00	5.35		mg/L		107	86 - 122		

Lab Sample ID: 570-38559-A-1-M MSD
Matrix: Solid
Analysis Batch: 102724

Client Sample ID: Matrix Spike Duplicate
Prep Type: TCLP
Prep Batch: 101425

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	ND		5.00	5.35		mg/L		107	86 - 122	0	8

Lab Sample ID: LB4 570-101260/1-B
Matrix: Solid
Analysis Batch: 102543

Client Sample ID: Method Blank
Prep Type: STLC Citrate
Prep Batch: 101809

Analyte	LB4 Result	LB4 Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		0.50		mg/L		10/14/20 15:07	10/16/20 17:19	1
Nickel	ND		0.50		mg/L		10/14/20 15:07	10/16/20 17:19	1

Lab Sample ID: LCS 570-101260/2-B
Matrix: Solid
Analysis Batch: 102543

Client Sample ID: Lab Control Sample
Prep Type: STLC Citrate
Prep Batch: 101809

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium			5.00	5.54		mg/L		111	80 - 120		
Nickel			5.00	5.37		mg/L		107	80 - 120		

Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: LCSD 570-101260/3-B
Matrix: Solid
Analysis Batch: 102543

Client Sample ID: Lab Control Sample Dup
Prep Type: STLC Citrate
Prep Batch: 101809

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium			5.00	5.54		mg/L		111	80 - 120	0	20
Nickel			5.00	5.35		mg/L		107	80 - 120	0	20

Lab Sample ID: 570-40417-B-1-I MS
Matrix: Solid
Analysis Batch: 102459

Client Sample ID: Matrix Spike
Prep Type: STLC Citrate
Prep Batch: 101809

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chromium	3.2		5.00	8.66		mg/L		109	86 - 122		
Nickel	4.3		5.00	9.47		mg/L		103	84 - 120		

Lab Sample ID: 570-40417-B-1-J MSD
Matrix: Solid
Analysis Batch: 102459

Client Sample ID: Matrix Spike Duplicate
Prep Type: STLC Citrate
Prep Batch: 101809

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chromium	3.2		5.00	8.73		mg/L		110	86 - 122	1	8
Nickel	4.3		5.00	9.60		mg/L		106	84 - 120	1	7

Metals

Leach Batch: 101259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	TCLP	Solid	1311	
720-100032-3	EB-8 (9'-9.5')	TCLP	Solid	1311	
LB 570-101259/1-B	Method Blank	TCLP	Solid	1311	
LCS 570-101259/2-B	Lab Control Sample	TCLP	Solid	1311	
LCSD 570-101259/3-B	Lab Control Sample Dup	TCLP	Solid	1311	
570-38559-A-1-L MS	Matrix Spike	TCLP	Solid	1311	
570-38559-A-1-M MSD	Matrix Spike Duplicate	TCLP	Solid	1311	

Leach Batch: 101260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	STLC Citrate	Solid	CA WET Citrate	
720-100032-3	EB-8 (9'-9.5')	STLC Citrate	Solid	CA WET Citrate	
LB4 570-101260/1-B	Method Blank	STLC Citrate	Solid	CA WET Citrate	
LCS 570-101260/2-B	Lab Control Sample	STLC Citrate	Solid	CA WET Citrate	
LCSD 570-101260/3-B	Lab Control Sample Dup	STLC Citrate	Solid	CA WET Citrate	
570-40417-B-1-I MS	Matrix Spike	STLC Citrate	Solid	CA WET Citrate	
570-40417-B-1-J MSD	Matrix Spike Duplicate	STLC Citrate	Solid	CA WET Citrate	

Prep Batch: 101425

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	TCLP	Solid	3010A	101259
720-100032-3	EB-8 (9'-9.5')	TCLP	Solid	3010A	101259
LB 570-101259/1-B	Method Blank	TCLP	Solid	3010A	101259
LCS 570-101259/2-B	Lab Control Sample	TCLP	Solid	3010A	101259
LCSD 570-101259/3-B	Lab Control Sample Dup	TCLP	Solid	3010A	101259
570-38559-A-1-L MS	Matrix Spike	TCLP	Solid	3010A	101259
570-38559-A-1-M MSD	Matrix Spike Duplicate	TCLP	Solid	3010A	101259

Prep Batch: 101809

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	STLC Citrate	Solid	Dilution	101260
720-100032-3	EB-8 (9'-9.5')	STLC Citrate	Solid	Dilution	101260
LB4 570-101260/1-B	Method Blank	STLC Citrate	Solid	Dilution	101260
LCS 570-101260/2-B	Lab Control Sample	STLC Citrate	Solid	Dilution	101260
LCSD 570-101260/3-B	Lab Control Sample Dup	STLC Citrate	Solid	Dilution	101260
570-40417-B-1-I MS	Matrix Spike	STLC Citrate	Solid	Dilution	101260
570-40417-B-1-J MSD	Matrix Spike Duplicate	STLC Citrate	Solid	Dilution	101260

Analysis Batch: 102459

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-40417-B-1-I MS	Matrix Spike	STLC Citrate	Solid	6010B	101809
570-40417-B-1-J MSD	Matrix Spike Duplicate	STLC Citrate	Solid	6010B	101809

Analysis Batch: 102543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LB4 570-101260/1-B	Method Blank	STLC Citrate	Solid	6010B	101809
LCS 570-101260/2-B	Lab Control Sample	STLC Citrate	Solid	6010B	101809
LCSD 570-101260/3-B	Lab Control Sample Dup	STLC Citrate	Solid	6010B	101809

QC Association Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Metals

Analysis Batch: 102724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-100032-1	EB-8 (0'-0.5')	STLC Citrate	Solid	6010B	101809
720-100032-1	EB-8 (0'-0.5')	TCLP	Solid	6010B	101425
720-100032-3	EB-8 (9'-9.5')	STLC Citrate	Solid	6010B	101809
720-100032-3	EB-8 (9'-9.5')	TCLP	Solid	6010B	101425
LB 570-101259/1-B	Method Blank	TCLP	Solid	6010B	101425
LCS 570-101259/2-B	Lab Control Sample	TCLP	Solid	6010B	101425
LCSD 570-101259/3-B	Lab Control Sample Dup	TCLP	Solid	6010B	101425
570-38559-A-1-L MS	Matrix Spike	TCLP	Solid	6010B	101425
570-38559-A-1-M MSD	Matrix Spike Duplicate	TCLP	Solid	6010B	101425

Lab Chronicle

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Client Sample ID: EB-8 (0'-0.5')

Lab Sample ID: 720-100032-1

Date Collected: 09/30/20 09:00

Matrix: Solid

Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			101260	10/12/20 11:00	QZW6	ECL 3
STLC Citrate	Prep	Dilution			101809	10/14/20 15:07	QZW6	ECL 1
STLC Citrate	Analysis	6010B		1	102724	10/17/20 10:47	OYW3	ECL 1
TCLP	Leach	1311			101259	10/12/20 18:03	QZW6	ECL 3
TCLP	Prep	3010A			101425	10/13/20 12:56	QZW6	ECL 1
TCLP	Analysis	6010B		1	102724	10/17/20 11:26	OYW3	ECL 1

Client Sample ID: EB-8 (9'-9.5')

Lab Sample ID: 720-100032-3

Date Collected: 09/30/20 09:45

Matrix: Solid

Date Received: 09/30/20 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
STLC Citrate	Leach	CA WET Citrate			101260	10/12/20 11:00	QZW6	ECL 3
STLC Citrate	Prep	Dilution			101809	10/14/20 15:07	QZW6	ECL 1
STLC Citrate	Analysis	6010B		1	102724	10/17/20 10:49	OYW3	ECL 1
TCLP	Leach	1311			101259	10/12/20 18:03	QZW6	ECL 3
TCLP	Prep	3010A			101425	10/13/20 12:56	QZW6	ECL 1
TCLP	Analysis	6010B		1	102724	10/17/20 11:28	OYW3	ECL 1

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 3 = Eurofins Calscience LLC Knott, 11380 Knott Street, Garden Grove, CA 92841, TEL (714)895-5494

Accreditation/Certification Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Laboratory: Eurofins Calscience LLC

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2944	09-30-21

Method Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Method	Method Description	Protocol	Laboratory
6010B	Metals (ICP)	SW846	ECL 1
1311	TCLP Extraction	SW846	ECL 3
3010A	Preparation, Total Metals	SW846	ECL 1
CA WET Citrate	California - Waste Extraction Test with Citrate Leach	CA-WET	ECL 3
Dilution	Preparation / Dilution Process	None	ECL 1

Protocol References:

CA-WET = California Waste Extraction Test, from Title 22

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 3 = Eurofins Calscience LLC Knott, 11380 Knott Street, Garden Grove, CA 92841, TEL (714)895-5494

Sample Summary

Client: Cornerstone Earth Group
Project/Site: Darrell Water Tank

Job ID: 720-100032-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
720-100032-1	EB-8 (0'-0.5')	Solid	09/30/20 09:00	09/30/20 16:50	
720-100032-3	EB-8 (9'-9.5')	Solid	09/30/20 09:45	09/30/20 16:50	

Reply all Delete Junk Block ...

720-100032-2

FW: Eurofins TestAmerica report and EDD files from 720-100030-1 Darrell Water Tank

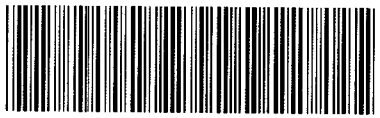
Hi Afsaneh,

Can you please run the following analyses on a standard TAT.

TCLP Chromium:

EB-7 (0'-0.5')
EB-7 (3'-3.5')
EB-7 (9.5'-10')
EB-8 (0'-0.5')
EB-8 (9-9.5)

STLC chromium on the following samples:


720-100032 Chain of Custody

EB-8 (0'-0.5')
EB-8 (9-9.5)

AND STLC nickel on the following sample:

EB-8 (0'-0.5')

Thank you,

Daysi Nemecio
Senior Staff Geologist
1220 Oakland Boulevard, Suite 220 | Walnut Creek, CA 94596
T 925.988.9500, Ext. 216 | C 408.769.8490
E dnemecio@cornerstoneearth.com
CORNERSTONE EARTH GROUP

Login Sample Receipt Checklist

Client: Cornerstone Earth Group

Job Number: 720-100032-2

Login Number: 100032
List Number: 1
Creator: Mullen, Joan

List Source: Eurofins TestAmerica, Pleasanton

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

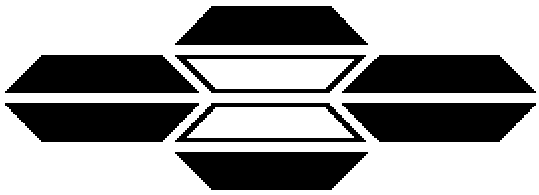
Client: Cornerstone Earth Group

Job Number: 720-100032-2

Login Number: 100032
List Number: 3
Creator: Ramos, Maribel

List Source: Eurofins Calscience
List Creation: 10/02/20 10:51 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



ASBESTOS TEM LABORATORIES, INC.

CARB Method 435
Polarized Light Microscopy
Analytical Report

Laboratory Job # 1355-00168

3431 Ettie St.
Oakland, CA 94608
(510) 704-8930
FAX (510) 704-8429

ASBESTOS TEM LABORATORIES, INC

CA DPH ELAP
Lab No. 1866

NVLAP Lab Code: 101891-0
Oakland, CA

Oct/08/2020

Chris Heiny
Cornerstone Earth Group
1270 Springbrook Road, Suite 101
Walnut Creek, CA 94597

RE: LABORATORY JOB # 1355-00168
Polarized light microscopy analytical results for 4 bulk sample(s).
Job Site: 996-2-2
Job No.: Darrell Water Tank

Enclosed please find the bulk material analytical results for one or more samples submitted for asbestos analysis. The analyses were performed in accordance with the California Air Resources Board (ARB) Method 435 for the determination of asbestos in serpentine aggregate samples.

Prior to analysis, samples are logged-in and all data pertinent to the sample recorded. The samples are checked for damage or disruption of any chain-of-custody seals. A unique laboratory ID number is assigned to each sample. A hard copy log-in sheet containing all pertinent information concerning the sample is generated. This and all other relevant paper work are kept with the sample throughout the analytical procedures to assure proper analysis.

Sample preparation follows a standard CARB 435 prep method. The entire sample is dried at 135-150 C and then crushed to ~3/8" gravel size using a Bico Chipmunk crusher. If the submitted sample is >1 pint, the sample was split using a 1/2" riffle splitter following ASTM Method C-702-98 to obtain a 1 pint aliquot. The entire 1 pint aliquot, or entire original sample, is then pulverized in a Bico Braun disc pulverizer calibrated to produce a nominal 200 mesh final product. If necessary, additional homogenization steps are undertaken using a 3/8" riffle splitter. Small aliquots are collected from throughout the pulverized material to create three separate microsope slide mounts containing the appropriate refractive index oil. The prepared slides are placed under a polarizing light microscope where standard mineralogical techniques are used to analyze the various materials present, including asbestos. If asbestos is identified and of less than 10% concentration by visual area estimate then an additional five sample mounts are prepared. Quantification of asbestos concentration is obtained using the standard CAL ARB Method 435 point count protocol. For samples observed to contain visible asbestos of less than 10% concentration, a point counting techinique is used with 50 points counted on each of eight sample mounts for a total of 400 points. The data is then compiled into standard report format and subjected to a thorough quality assurance check before the information is released to the client.

While the CARB 435 method has much to commend it, there are a number of situations where it fails to provide sufficient accuracy to make a definitive determination of the presence/absence of asbestos and/or an accurate count of the asbestos concentration present in a given sample. These problems include, but are not limited to, 1) statistical uncertainty with samples containing <1% asbestos when too few particles are counted, 2) definitive identification and discrimination between various fibrous amphibole minerals such as tremolite/actinolite/hornblende and the "Libby amphiboles" such as tremolite/winchite/richterite/arfvedsonite, and C) small asbestiform fibers which are near or below the resolution limit of the PLM microscope such as those found in various California coast range serpentine bodies. In these cases, further analysis by transmission electron microscopy is recommended to obtain a more accurate result.

Sincerely Yours,

Lab Manager
ASBESTOS TEM LABORATORIES, INC.

--- These results relate only to the samples tested and must not be reproduced, except in full, without the approval of the laboratory. ---

POLARIZED LIGHT MICROSCOPY
CARB 435 ANALYTICAL REPORT

Contact: Chris Heiny

Address: Cornerstone Earth Group
1270 Springbrook Road, Suite
Walnut Creek, CA

Samples Submitted: 4

Samples Analyzed: 4

Job Site / No. Darrell Water Tank
996-2-2

Report No. **370902**
Date Submitted: Oct-05-20
Date Reported: Oct-08-20

SAMPLE ID	POINTS COUNTED	ASBESTOS %	ASBESTOS TYPE	LOCATION / DESCRIPTION
EB-7(0'-0.5')		**<0.25%**	**None Detected**	No Asbestos Detected
Lab ID # 1355-00168-001	**400** - Total Points			
EB-7(3'-4')		**<0.25%**	**None Detected**	No Asbestos Detected
Lab ID # 1355-00168-002	**400** - Total Points			
EB-8(0'-0.5')		**<0.25%**	**None Detected**	No Asbestos Detected
Lab ID # 1355-00168-003	**400** - Total Points			
EB-8(9'-9.5')		**<0.25%**	**None Detected**	No Asbestos Detected
Lab ID # 1355-00168-004	**400** - Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			
Lab ID #	- Total Points			

QC Reviewer _____ **Analys** _____

370902

ASBESTOS TEM LABORATORIES CHAIN OF CUSTODY – *www.asbestostemlabs.com*

CALIFORNIA: 600 Bancroft Way, Ste. A, Berkeley, CA 94710 Phone (510) 704-8930 Fax (510) 704-8429
NEVADA: 1350 Freeport Blvd. #104, Sparks, NV 89431 Phone (775) 359-3377 Fax (775) 359-2798

Please print and send completed CoC with your samples. If you wish to email CoC, send the form as an attachment to Berkeley <coc@asbestostemlabs.com > or Reno <sehrlich@asbestostemlabs.com>

Company: Cornerstone Earth Group	*Contact:* Chris Heiny	*Phone/Fax:* 925-988-9500	*Email:* cheiny@cornerstoneearth.com
Address: 1270 Springbrook Road	*City:* Walnut Creek	*State:* CA *Zip:* 94596	*Country:* United States
Job Site: Darrell Water Tank		*Job No:* 996-2-2	*P.O. No.*

Reporting	☐ Fax	☐ Phone	■ Email	☐ Mail	☐ FTP	☐ EDD/State Form	☐ Verbal	☐ Pickup	**Billing**	☐ Fax	■ Email	☐ Mail	☐ Pre-Paid	☐ 3rd Party

Results Due:*	☐ 2 hr ☐ 4 hr ☐ 6 hr ☐ 8 hr ☐ 24 hr ☐ 48 hr ☐ 3 day ☐ 4 day ■ 5 day ☐ 10 day ☐ Time due:_____ * Contact lab to confirm TAT
Asbestos Air	☐ PCM (NIOSH 7400A ☐ TEM AHERA ☐ TEM CARB Mod. AHERA ☐ TEM EPA Yamate Level ☐ TEM NIOSH 7402, Issue 2 ☐ ISO 10312 ☐ ISO 13794
Asbestos Bulk	☐ PLM Standard (EPA 600/R-93-1 ☐ PLM 400 PC ☐ PLM 1000 PC ☐ PLM 400 PC Grav. Red. ☐ PLM 1000 PC Grav. Red. ☐ TEM EPA Qualitative ☐ TEM EPA Quantitatve
	☐ TEM Chatfield (Semi-Quant) ☐ PLM Vermiculite Attic Insulation ☐ **Custom Analysis:** Type:
Asbestos Soils	☐ CARB 435 Prep Only ■ CARB 435 PLM 400 PC ☐ CARB 435 PLM 1000 PC ☐ EPA Soil Screening Qualitative ☐ TEM EPA/CARB Quantitative
Asbestos Dust	☐ ASTM D-5755 Fiber Count ☐ ASTM D-5756 Wt. % ☐ ASTM D-5756 Mass ☐ ASTM D-6840-99 Dust Wipe ☐ Total Particulates (Grav.)
Asbestos Water	☐ 100.2 Potable Drinking Water ☐ 100.1 Non Potable Water
Lead	☐ Paint Chips ☐ Dust Wipe ☐ Air Cassette ☐ Soil **Lead Waste Characterization:** ☐ TTLC ☐ STLC ☐ TCLP
Sample Storage	*☐ No Test, Hold Sample Until:_____ *☐ Post Test, Hold Sample Until:_____
Custom Order	☐ Reanalysis by:_____ ☐ Sensitivity:_____ ☐ Composite ☐ Other:

Sample #	Sample Type	Date Collected	Time On	Time Off	Total Time (min)	Flow Rate (lpm) On	Flow Rate (lpm) Off	Flow Rate (lpm) Average	Volume or Area Sampled	8 Hour TWA Requested	Description
EB-7 (0'-0.5')	Soil	9/29/20								☐	
EB-7 (3'-4')	Soil	9/29/20								☐	
EB-8 (0'-0.5')	Soil	9/30/20								☐	
EB-8 (9'-9.5')	Soil	9/30/20								☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	
										☐	

Submitted By	Everett Allen	**Received By**	MTZ
Date/Time Submitted	10/01/20 11:00am	**Date/Time Received**	
Submitted By		**Received By**	
Date/Time Submitted		**Date/Time Received**	

*All samples will be held for 3 months from the date of receipt at ATEM. Additional sample storage time may be obtained through ATEM Customer Service

P. O. Box 801357
Santa Clarita, CA 91380
Phone: 877.274.2422
Fax: 661.775.7628
www.CSIServices.biz

Providing Quality Technical Services to the Coating Industry

October 16, 2020 ***Via Email***

Mr. Rob Weber, PE
Infrastructure Eng Corp.
14271 Danielson Street
Poway, CA 92064

Phone: 858-413-2400x140
Email: rweber@iecorporation.com

Subject: **Results - Paint Sample Analysis**

Re: **Darrell Water Tank #1 and #2**

Dear Mr. Weber:

Please find attached the results of the analysis performed on the 8 (eight) paint samples obtained from the designated area to be disturbed on the above referenced facility.

The samples were collected on October 8, 2020 by Tim Grady of CSI Services, Inc. (CSI) and transmitted to Schneider Laboratories, Richmond, VA using proper chain-of-custody protocol. Each of the paint samples was analyzed for the heavy metals lead (Pb), chromium (Cr), and cadmium (Cd). The certified laboratory tested each paint sample in accordance with EPA 3050B/Method 6010B. A Summary Data Table and Photo Summary are attached.

Thank you for your confidence in CSI Services, Inc., and please give us a call with any questions.

Sincerely,
CSI Services, Inc.

Chris Sweeney
Project Coordinator

Summary Data Table

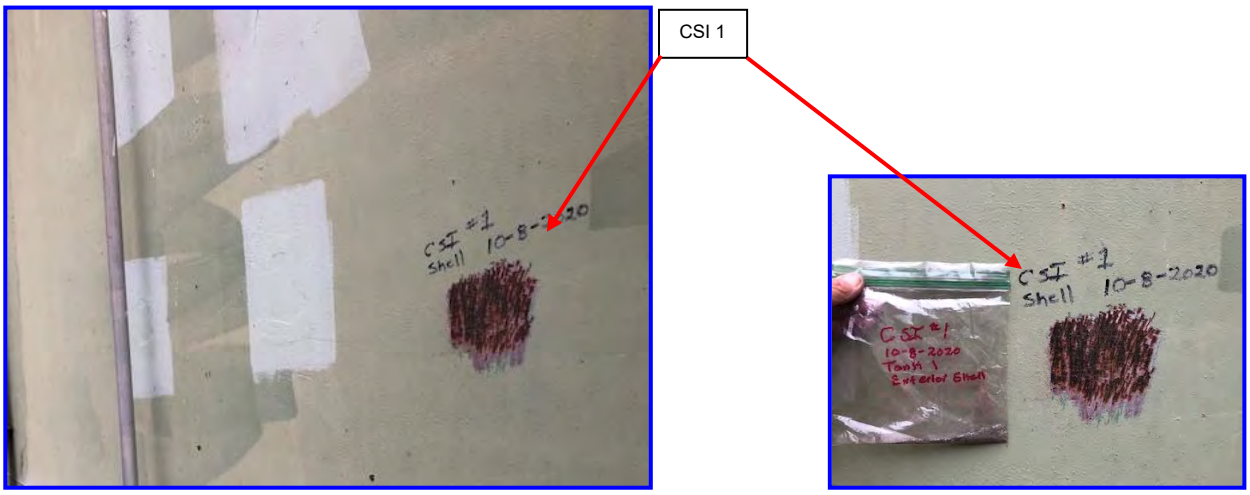
Darrell Water Tank #1				
Paint Sample	**Description**	**Total Cadmium (Cd) (PPM)**	**Total Chromium (Cr) (PPM)**	**Total Lead (Pb) (PPM)**
CSI 1	Exterior Shell	<6.08	4460	37200
CSI 2	Exterior Roof	<6.65	4210	4170
CSI 3	Interior Roof	<6.22	<15.6	17.5
CSI 4	Interior Shell	<5.80	24.9	6.17

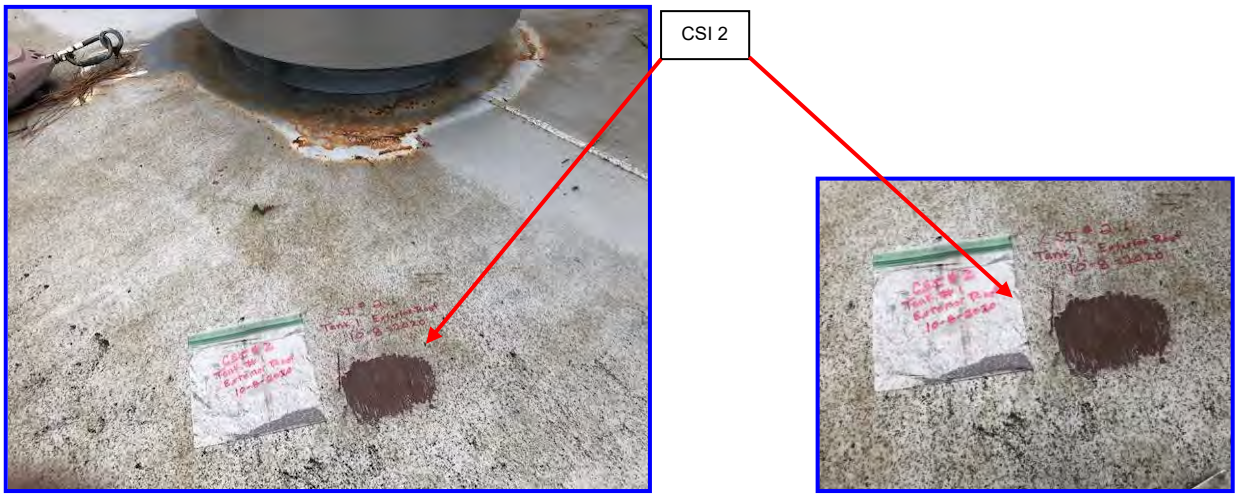
Darrell Water Tank #2				
Paint Sample	**Description**	**Total Cadmium (Cd) (PPM)**	**Total Chromium (Cr) (PPM)**	**Total Lead (Pb) (PPM)**
CSI 5	Exterior Shell	<5.72	1490	2570
CSI 6	Exterior Roof	<6.33	2210	2160
CSI 7	Interior Roof	<6.16	55.4	<6.16
CSI 8	Interior Shell	<5.90	36.3	6.17

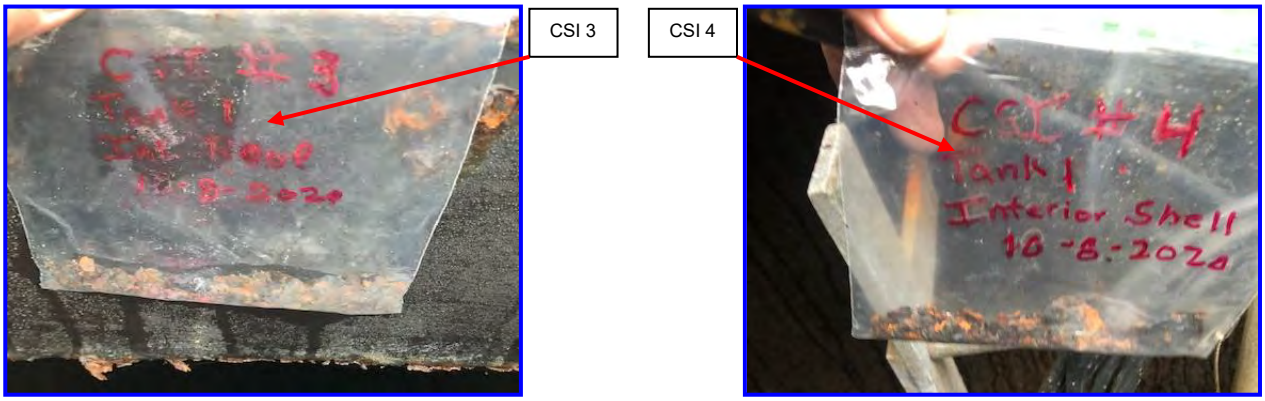
Notes:

NT – Not determined
1 – Lead Based Paint contains 0.5% lead by Weight per Federal statute
2 – The OSHA Lead in Construction Standard, 29 CFR 1926.62 is invoked if ***any*** lead is present in the sample.

Darrell Water Tank #1

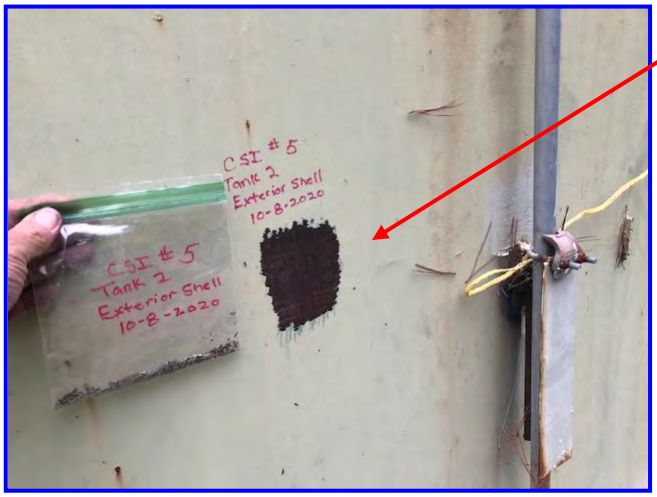




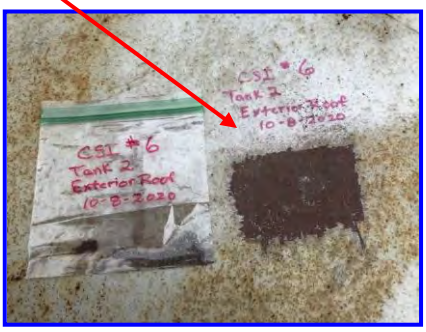


Darrell Water Tank #2

CSI 5

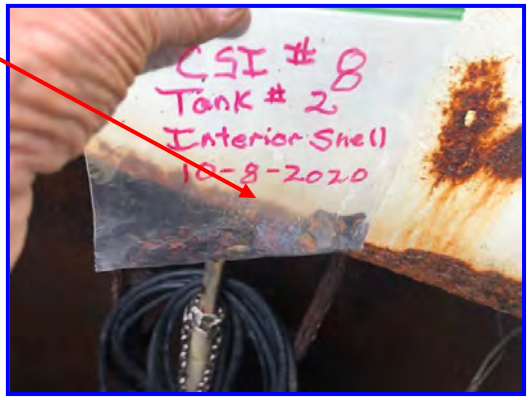


CSI 6



CSI 7

CSI 8



NOTICE: This report represents the opinion of CSI Services, Inc. This report is issued in conformance with generally acceptable industry practices. While customary precautions were taken to insure that the information gathered and presented is accurate, complete and technically correct, it is based on the information, data, time, and materials afforded.

Appendix F:

Arborist Report

Walter Levison
CONSULTING ARBORIST

ISA Qualified Tree Risk Assessor ASCA Registered Consulting Arborist #401 ISA Certified Arborist #WE-3172A

Initial Assessment of and Recommendations for Seventy-Six (76) Trees at Town of Hillsborough Water Tanks 550 Darrell Road Hillsborough, California

Prepared at the Request of:

Ms. Lori Trottier
IEC Corp.
300 Spectrum Center Drive, Suite 400
Irvine, CA 92618

Site Visit:

Walter Levison, Consulting Arborist (WLCA)

Fall, 2020

Report:

WLCA

2/10/2021

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Registered Member, American Society of Consulting Arborists and Member of the International Society of Arboriculture

Cell (415) 203-0990 Email walterslevisonjr@yahoo.com

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Registered Member, American Society of Consulting Arborists and Member of the International Society of Arboriculture

Cell (415) 203-0990 Email walterslevisonjr@yahoo.com

1.0 Background & Assignment

Walter Levison (WLCA) was requested by IEC Corp. to perform an initial site survey of 76 trees measuring 4 inches diameter or greater, located roughly within the proposed area controlled by the Town as its Darrell Road water tank facility, which includes an asphaltic access road from Darrell Road, and a buffer strip along its northern long edge, all fenced with barbed wire.

WLCA's initial assignment was to tag, map, photograph, and assess the 76 tree specimens, and include them in a formalized Excel tree data spreadsheet and PDF map markup in February, 2021 for use by the project team.

WLCA prepared an Excel tree data table which includes basic tree data as well as notes on visually apparent conditions. These data charts are attached to the end of this report. The data chart right hand column boxes contain recommended tree protection and maintenance items based on current arboriculture Best Management Practices (BMP) to optimize the survival of each tree. The maintenance and protection recommendations are also spelled out in detail in the Recommendations (section 4.0) of this report as a numbered list that can be referred to as a formal "punchlist" of to-do items both during the pre-project phase and the during-project phase of the water tank project.

Digital images of existing pre-project tree conditions archived by WLCA in October, 2020 as section 8.0 are located near the end of this report as a visual reference.

Critical Root Zone

The Excel tree data table also includes a new column called "Critical Root Zone" (CRZ) (i.e. 6 X trunk diameter): a spreadsheet calculation of minimum offset suggested for construction, as a horizontal distance between the edge of the trunk at grade elevation and proposed new construction excavation cut locations, The CRZ represents a structural root plate "minimum radius" considered "safe" to maintain tree stability. [1] Note however that the CRZ only takes into account structural stability, and does not consider maintenance of tree vigor (i.e. "health") over the long term. Therefore, the CRZ numbers typically do not allow for enough root zone preservation to guarantee a tree's long term survival and viability. A more comprehensive number might be (8 X diameter or 10 X diameter) as a reasonable offset for better long term tree survival in terms of both health and root plate structural stability.

Per standard arboriculture protocol in the United States, tree measurements were made at 4.5 feet (54 inches) above grade. Trees with multiple mainstems were shown in the tree data table with both the individual stem diameters, plus a total amalgamation diameter, to indicate the total sum of all stem diameters. For purposes of creating the Critical Root Zone calculation, which is (6 X trunk diameter) as a radius offset from the trunk edge of a tree measured along grade from the buttress root edges, the author's tree data table calculated the CRZ using only the largest mainstem diameter. Trees with two or more mainstems may have a larger mainstem diameter at a lower elevation below the mainstem fork elevation. Those multi-stem trees may have a CRZ of longer offset radius than noted in the WLCA Excel tree data table. For the purposes of this initial report presentation, however, the use of only the largest mainstem in calculating the CRZ was deemed sufficient.

Tree Map Markup

A tree location map markup was prepared by WLCA as a marked-up overlay onto a bird's eye view topographic plan sheet, and provided to the team in Fall, 2020, for their use in creating a master sheet overlay that includes existing site conditions, proposed site work, and the tree tag number and trunk locations for all 76 survey trees,

[1] Costello, Watson, and Smiley. 2017. *Best Management Practices / Root Management: Special Companion Publication to the ANSI A300 Part 8: Tree, Shrub, and Other Woody Plant Management-Standard Practices (Root Management).* ISA Publications. USA.

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shown all on a single plan sheet. This tree map overlay was then prepared by the team, and remarked up by WLCA to include tree protection fence routing as the "Best Management Practice" for tree root zone preservation of roots extended from specimens expected to be preserved in place (PIP).

Note that landscape plan sheets, irrigation plan sheets, utility plan sheets, etc. were not available for review at the time of writing, and will therefore have to be assessed at a later date as part of a different "follow-up" assignment (if any of these sheets are applicable to the proposed new construction project).

2.0 Summary

The following table 2.0 summarizes most tree issues on this site, regarding the 76 survey trees #1 through #76:

Ref. Code	Disposition (per available plan sheets)	Tree Tag Numbers	Summary of Protection and/or Maintenance Items (If Trees Are Retained)	Totals
RET1	RETAIN TREE PROTECT IN PLACE (PIP) Impacts from proposed new tank work and work staging areas expected to be null, minor, or moderate. **Trunk edges are approximately 10 feet or more offset from proposed new work.**	#1, 2, 3, 4, 5, 6, 7, 12, 20, 21, 22, 23, 24, 26, 33, 35, 36, 37, 38, 39, 41, 42, 43, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, (60?), 61, 64, 65, 66, 67, 68, 69, (70?), 73, 74, 75, 76.	Use chain link tree protection zone (TPZ) fence panels or rolled chain link hung on 2 inch diameter iron tube posts minimum 5 feet in height. Use trunk buffer wraps consisting of a single roll of orange plastic snow fencing for each single tree, overlaid with 2X4 wooden boards standing vertically, side by side, and affixed with duct tape to hold them in place over the plastic snow fencing.	**51**
RET2	RETAIN TREE AS "IMPACTED" PROTECT IN PLACE (PIP) Possible severe impacts from proposed tank-related work and/or staging areas. **Trunk edges are less than or equal to approximately 5 linear feet from proposed new work.**	#10, 11, 13.	Use chain link tree protection zone (TPZ) fence panels or rolled chain link hung on 2 inch diameter iron tube posts minimum 5 feet in height. Use trunk buffer wraps consisting of a single roll of orange plastic snow fencing for each single tree, overlaid with 2X4 wooden boards standing vertically, side by side, and affixed with duct tape to hold them in place over the plastic snow fencing. Possible need for periodic heavy irrigation water applied via a water truck or tow-behind spray tank. Volume and application per month: to be determined. Typical irrigation for a native oak under severe impact status at a construction site is 200 gallons, 1x/month (per each single tree).	**3**

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Ref. Code	Disposition (per available plan sheets)	Tree Tag Numbers	Summary of Protection and/or Maintenance Items (If Trees Are Retained)	Totals
REM1	REMOVAL DUE TO CONFLICTS WITH PROPOSED NEW WORK Trees will require removal, due to unmitigable impacts from proposed tank-related work, as direct-conflicts and/or indirect conflicts from staging and haul routes.	#9, 14, 15, 16, 17, 18, 19, 27, 28, 29, 30, 31, 71.	**Removal permits required for eleven (11) of these trees which are considered to be Town of Hillsborough protected-status (trees #9, 14, 15, 16, 17, 19, 27, 28, 29, 30, 71).**	**13**
REM2	AUTHOR SUGGESTS REMOVAL OF THESE "OTHER TREES" DEEMED HIGH RISK AND/OR POOR OVERALL CONDITION RATING Remove tree per author's suggestion, due to tree condition of roughly 25% overall condition rating or less, and/or elevated risk of tree part failure and impact with ground targets within 1 year per TRAQ risk rating protocols.	#8, 25, 32, 34, 40, 44, 62, 63, 72.	Removal requires a permit from Town of Hillsborough as a "protected tree" based on trunk size of greater than 12 inches diameter. All of these are considered "protected size" trees per the Town tree ordinance, except for tree #25 which exhibits a mainstem of less than the 12 inch diameter threshold.	**9**
Total Number of Trees in Study: 51 + 3 + 13 + 9 = 76				**76**

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Ref. Code	Disposition (per available plan sheets)	Tree Tag Numbers	Summary of Protection and/or Maintenance Items (If Trees Are Retained)	Totals
PRUNE	PRUNING & OTHER RELATED MAINTENANCE RECOMMENDED Trees that require pruning (mainly endweight reduction pruning) to remove the outermost sections of over-extended limbs and branches to reduce risk of limb failures.	(#55)	Endweight reduction pruning to remove outermost sections of branches/limb systems to reduce weights of over-extended systems:	**(1)**
(IVY)	REMOVE IVY AT BASE OF TRUNK BY SEVERING VINES.	(#66, 73, 74)	Remove ivy at base of trunk, to kill vines and prevent ivy growth from covering the entire photosynthetic canopy of the tree.	**(3)**
MON	Monitor for changes in tree condition over time. These are trees that have issues and may need to be removed prematurely at some point.	(#60, 70)	Monitor	**(2)**

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3.0 Discussion & Analysis

3a: Top Pruning in Blue Gum Eucalyptus

Many of the Tasmanian blue gum eucalyptus (*Eucalyptus globulus*) specimens at this site, concentrated as a grove in the west half of the property, were noted by WLCA to have been top pruned multiple times in the past. This non-standard form of pruning has been documented scientifically to result in new branch architecture consisting of stems that are relatively weak when compared to original “whorled attachment” type stems.

The stems that arise from top pruning cuts are known as epicormic shoots, which elongate from dormant buds that are activated when a tree is top pruned. The base of an epicormic shoot (stem) is not whorled like an original natural branch. Rather, the attachment point is a shallow-oriented dormant bud just beneath the bark. As the stems grow into large diameter, long woody vertical members, the canopy of the tree then consists of relatively weak vertical stems that are far more likely to break out than an original canopy of original branches.

There is arborist and scientific debate ongoing as to what type of relative strength the attachment points of epicormic shoots can actually achieve over time, as the stem bases thicken and become “buttressed”. It is thought that the epicormic shoots may actually achieve “acceptable” strength, though this may take 5 to 10 years after the stems arise from the top pruning cut points. Also, in many instances, decay from the top pruning cut points in the tree will allow for development of decay causing pathogens, which then advances through the original cut areas in such a manner as to destabilize the areas surrounding the stem bases, leaving them highly susceptible to wind caused breakage. The only way to analyze the situation is to have a climber or an arborist in a bucket truck or Drone flying up in the tree to closely inspect the situation for signs of visible decay progression. Without a close-up inspection in the tree canopy, arborists have to simply assume that the canopies of epicormics shoots in these previously top-pruned trees are “structurally compromised” to some degree, whether it be severely compromised or moderately compromised, and that an “elevated level of risk of tree part failure” exists above the normal, background “low” rating for risk of tree part failure.

3b: Targets vs. Trees

The blue gums with elevated levels of risk of tree part failure are a concern at this site, because the targets that would be potentially damaged or destroyed by a total tree failure or a tree part failure and impact include existing PG&E power facilities, existing residential water tank structures, proposed water tank structures, associated utility buildings, and Hillsborough Town personnel and/or other utility personnel working at the site. This means that the targets are of high value, because their loss or damage would shut down normal electrical and water supplies for the Town of Hillsborough residents and Town Staff operations, as well possibly other residences and facilities in nearby towns, which elevates the tree risk ratings significantly in terms of ranking the tree failure consequences.

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3c: Branch Length Reduction Pruning

The Best Management Practice for pruning is almost always the removal of branch endweight, aka “branch length reduction pruning”, which involves removal of the outermost and uppermost live wood, in order to shorten the extension length of lankly long limb systems, thereby reducing load forces acting on the attachment points of those limb systems.

See photo at right for an example of how endweight reduction (length reduction) pruning works to shorten the canopy of the tree in the center of the image, while retaining live wood and foliage in the outermost area. The dark green upper left side of the canopy of this tree in the center of the image had not yet been pruned as of the moment this image was taken by WLCA.

You can see how the length/height of the canopy is literally reduced as much as 5 or 10 feet or more, by cutting the outermost and uppermost material back to branch laterals that were previously part of the tree’s inner canopy, which is exactly the type of wood that is removed during poor pruning practices such as liontail pruning.

Note how the other eucalyptus tree specimen in the foreground at the upper right corner of this image was incorrectly top-pruned by a different tree care company, leaving a residual tree that will develop hundreds or thousands of epicormic shoots arising from the dormant buds near to the top-pruning cut points. The image actually does show initial elongation of those epicormics shoots at the cut ends of the mainstems at the upper right corner of the image.

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3d: Water Tank Work Encroachment vs. Maintaining Critical Root Zone (CRZ) Offset from Trunks

The critical root zone (CRZ) provides a minimum offset for construction that is based on maintaining structural stability of the root plate.

Below are some examples of proposed new work encroachment distances expected at the water tank site, versus the WLCA-calculated Critical Root Zone offset distance suggested to be maintained on the south sides of four (4) oaks that will be in closest proximity to the work. These trees are expected to be "impacted" by proposed new tank-related work:

TABLE 3d: Minimum Offsets

Oak Specimen Tag Number	Diameter / Common Name Trees That May be Retainable "With Impacts"	Critical Root Zone (CRZ)[2] (Min. required offset from trunk edge to deep excavation, for structural stability)	Project Work Offset Distance from Trunk Edge (Estimated, Rough)	Proposed Work Encroaches Into CRZ?	Severity of Work-Related Impacts
67	24 inch diameter coast live oak	12 feet	10 feet	Yes	Moderate
68	24 inch diameter coast live oak	12 feet	4 feet	Yes	Severe
69	13 inch diameter coast live oak	6.5 feet	4 feet	Yes	Severe
70	21 inch diameter coast live oak	10.5 feet	8 feet	Yes	Moderate

Work that occurs within the CRZ distance of a tree, on one side of the tree, is more likely to cause structural instability than would work that remains outside of the calculated CRZ.

[2] (SAME CITATION AS REFERENCE #1) 2017. *Root Management (Best Management Practices* series of booklets).

Note that the words "Critical Root Zone" are not mentioned in the text. However, the diagram on page 21 clearly indicates that a cut at 6 times the diameter as a distance offset from the trunk edge of a tree results in root loss of approximately 25% of the total root system of the tree. Page 21 goes on to state that "Cutting roots at six times the trunk diameter minimizes the likelihood of affecting both health and stability."

This implies that if one were to cut on multiple sides of a tree at this distance of six times diameter as an offset from trunk, the result would be "unacceptable" in terms of tree health and/or structural stability.

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4.0 Recommendations

1. PROJECT ARBORIST (IF APPLICABLE):

The applicant shall retain a project arborist ("PA") with an ASCA registered consulting arborist credential, such as WLCA or another professional consultant. The following items may or may not be required to be performed by the project arborist (if applicable):

a. Verification of tree protection and maintenance: The project arborist shall verify in writing that all pre-construction conditions of approval for the project have been met (tree fencing, trunk buffer, temporary irrigation, etc. and are in place. Written verification may or may not need to be approved by the local governing planning department prior to demolition, grading, or building permit issuance.

b. Pre-construction meeting: The construction superintendent and other pertinent personnel are required to meet with the project arborist at the site prior to beginning work to review root pruning protocols, tree protection and maintenance measures, and establish staging areas, supplemental irrigation around trees, etc. as applicable.

c. Monthly monitoring reports: If required by the local governing authority, the project arborist shall be responsible for visiting the site on at least a once-monthly basis throughout the life of the project, during which the status of trees and tree protection measures and maintenance shall be inspected and commented on in a brief letter report with digital images and tree location maps, sent to the Town of Hillsborough, per Town requirement.

During these monthly inspections, the project arborist may require that supplemental irrigation be provided to certain trees, advise on and monitor root pruning activities, etc.

PRE-PROJECT ITEMS

2. TREE REMOVAL PERMITTING:

Prior to removal of regulated trees, obtain a valid Town of Hillsborough tree removal permit.

Protected-status trees initially expected to be removed are **(list subject to change):**

Project-required removals: #9, 14, 15, 16, 17, 19, 27, 28, 29, 30, 71

Additional suggested per WLCA: #8, 32, 34, 40, 44, 62, 63, 72.

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3. PRUNING & OTHER TREE MAINTENANCE (ALL PHASES OF SITE WORK):

All pruning (if necessary) shall be performed by an ISA Certified Arborist using ANSI A300 pruning standards to perform branch and limb removal, and/or branch and limb reduction pruning (i.e. endweight reduction pruning) on trees being retained to reduce endweight and provide clearance between canopies and proposed work airspace.

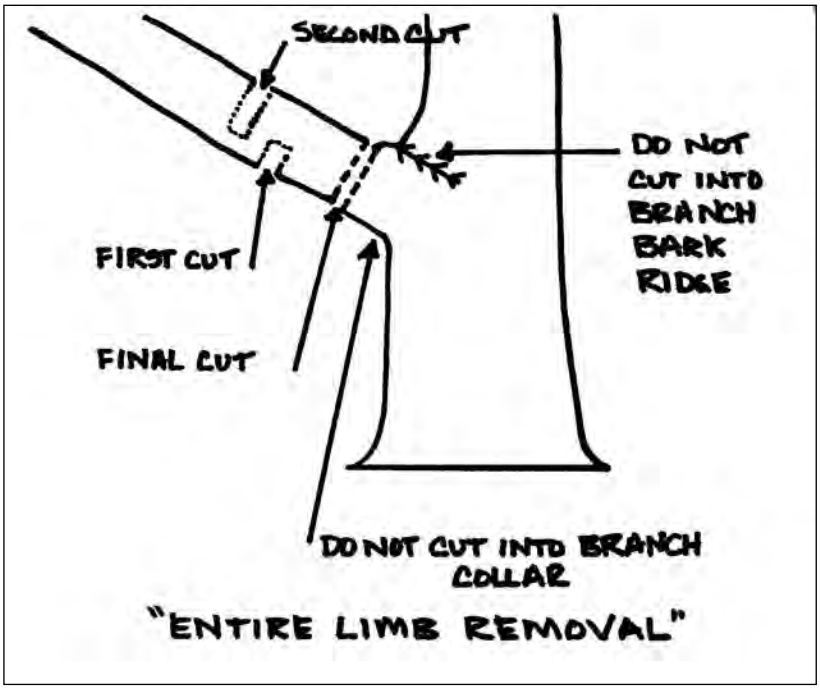
The two images at right is are WLCA-representations for reference, showing an ANSI A300-compliant pruning cut sequence used during entire limb removal, and an ANSI A300-compliant reduction pruning cut which is typically used for endweight reduction pruning to shorten extended limb lengths.

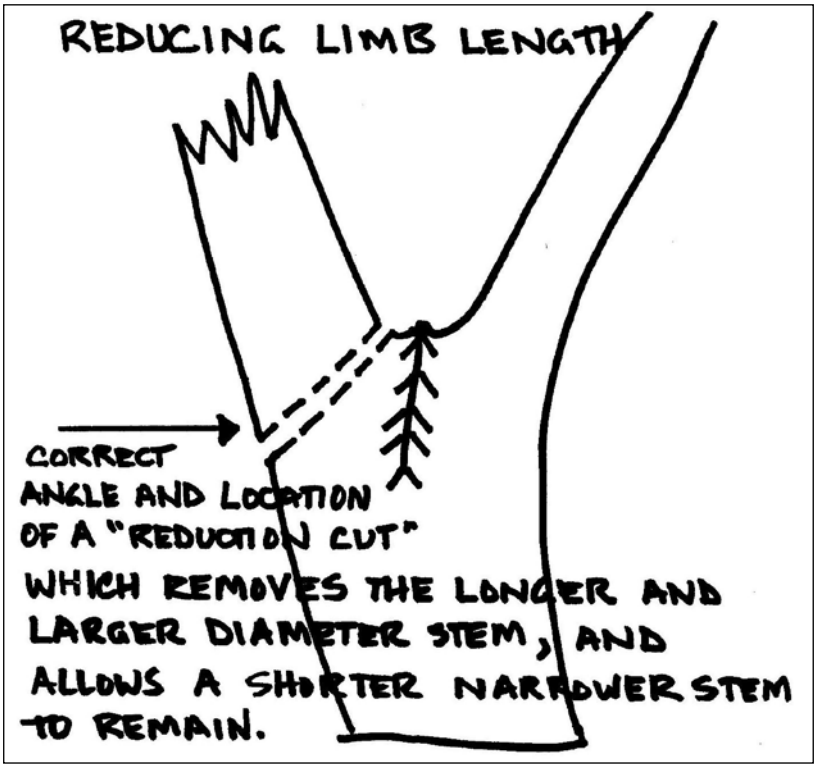
Monitoring:

Call WLCA 48 hours prior to performing crown raising pruning, branch endweight reduction pruning, and other types of pruning so that the PA can monitor portions of this work at site.

Standards:

All pruning cuts shall be in compliance with *ANSI A300 Part 1 Tree Shrub and Other Woody Plant Maintenance – Standard Practices, Pruning*, and *Best Management Practices: Tree Pruning – Companion publication to the ANSI A300 Part Tree Shrub and Other Woody Plant Maintenance – Standard Practices, Pruning*
(2019. ISA Publications, Champaign, IL. www.isa-arbor.com).





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Tree Maintenance Prescriptions for 550 Darrell Road:

1. **Endweight reduction pruning (EWRP) (aka "branch length reduction pruning")** to shorten over-extended limb and branch lengths:

   EWRP should be performed on **tree #55.**

   EWRP may or may not also need to be performed on various trees within very close offset distance of proposed new work, such as coast live oaks **#67, 68, 69, 70.**

   RISK REDUCTION PRUNING IN THE EUCALYPTUS GROVE
   WEST AND NORTH OF TANK #3:

   Many of the eucalyptus in this area west and north of tank #3 were top pruned in the past, resulting in epicormic shoot growth at or near the historical cut points (see photos below in this report). Epicormic shoots arising from shallow dormant buds breaking near to top pruning cut wounds are inherently less stable than original type stems, and are relatively more likely to split out from the shallow attachment points. Therefore, many of the trees in the areas west and north of tank #3 will need to be evaluated in detail to determine specific pruning prescriptions to reduce risk of individual stem failure and impact with tank #3 and associated nearby facilities.

   This topic (risk reduction pruning) is completely outside the scope of WLCA's initial tank construction impact analysis assignment, and would be involve preparation of a separate pruning plan report.

2. **Ivy removal:** Remove ivy vines from **trees #66, 73, and #74** by cutting them at the base of the tree trunks to kill the entire ivy plant(s). Once the vines and foliage die and desiccate, pull them completely out of the trees to prevent the trees' photosynthetic capabilities from being significantly reduced.

   Tree Care Company Vendors:

   "Arborist Now" of San Francisco.

   WLCA approves this vendor for tree care work, when the crew is under direct on-site supervision by ISA Certified Arborist Remi Hummer: a current employee of Arborist Now (Remy@arboristnow.com) Cell (415) 310-7781.

4. FENCING / ROOT PROTECTION ZONE ENCLOSURES (RPZ):

   Install chain link fencing, minimum 5-feet in height, mounted on 2-inch diameter iron tube posts minimum 7-feet long pounded 24-inches into the ground. Spacing for tube posts must be less than or equal to 10-feet on center. The author recommends max. 6 feet O.C. spacing. *

   The areas between chain link fencing and tree trunk edges shall be known as the tree protection zones or root protection zones (TPZ or RPZ). No soil disturbances are allowed within these protected zones unless authorized by the local governing authority.

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No substances, materials, tools, supplies, liquids, wastes, etc. are to be dumped or stored within the TPZ, even temporarily.

The TPZ fencing must not be moved or altered without the authorization of the Project Arborist.

Fencing shall be completely installed before site plan-related activity commences on site.

Locations: TBD. Fencing should be mounted as far as possible offset from the trunk edges of trees being retained, in order to optimize preservation of laterally extended woody roots.

See the Red Dashed Lines indicating the optimal alignment of TPZ fences, on the tree map markup by WLCA embedded in this report as section 9.0.

Duration of Fencing: Fencing shall remain in place until final signoff inspection of the project.

All work in the RPZs shall be performed under project arborist supervision.

*Tree protection fencing may be required to be inspected by the County Arborist and/or Building Inspector prior to issuance of building permits.

5. TRUNK BUFFER WRAPS:

Wrap the lowermost six feet of trunk with one (1) entire roll of orange plastic snow fencing per each of the following trees being protected in place (PIP) on site in very close proximity to the chain link RPZ fencing routes.

Cover the orange plastic with 2X4 wooden boards standing vertically, side by side (see image at right showing buffer built around a large redwood specimen, with the boards flared out to avoid damaging the large buttress roots at the mainstem base).

Duct tape around the boards to affix the wraps in place. Do not use wires or ropes, as they tend to injur the tree due to the fact that they do not stretch and will not allow the wraps to expand over time as the tree growths in diameter.

Trees to protect with trunk buffer wraps:

Around all trees that are within 10 horizontal feet from the limits of demolition, new construction, staging, storage, haul routes, laydown, etc.

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6. SIGNAGE:

Affix Root Protection Zone signage to the chain link RPZ using zip ties or wires. These signs must be waterproofed, minimum 8X11 size, and affixed approximately once every 20 to 30-linear feet of RPZ fenced distance. Below is a sample of fence signage (change wordage if needed):

ROOT PROTECTION ZONE FENCE
ZONA DE PROTECCION PARA ARBOLES

NO ENTRE SIN PERMISO
LLAME EL ARBORISTA DE LA CIUDAD DE HILLSBOROUGH

DO NOT MOVE OR REMOVE WITHOUT AUTHORIZATION FROM TOWN OF HILLSBOROUGH PLANNING DIVISION
TELEFONO / EMAIL: (650) 375-7422
www.hillsborough.net/planning

PROJECT ARBORIST:_____
TELEFONO:_____

TELEPHONE OR EMAIL 48-HRS ADVANCE FOR PERMISSION

Note: Walter Levison (WLCA) is not the "Project Arborist" for this project unless he is retained formally to prepare this construction phase scope of work.

DURING PROJECT ITEMS

7. (OPTIONAL) ARBORIST INSPECTIONS DURING EXCAVATION/GRADING & 1X/MONTH MINIMUM:

Call Walter Levison (or the arborist assigned as the "Project Arborist" PA) at least 48 hours advance to schedule as-needed.

It is suggested that the designated project arborist (PA) perform site visits at least 1x/month minimum and during certain phases of the project, such as during initial rough grading in the site vicinity surrounding the proposed new residence footprint, etc. in order to advise on possible root pruning needs, temporary irrigation needs, pruning for vertical and/or horizontal airspace clearances, staging and storage area adjustments, haul routes, maintenance of RPZ fences, and elevated-risk situations regarding certain oak specimens.

The PA will archive digital images record status of site tree and tree protection conditions, and record information for monthly inspection report preparation, as applicable.

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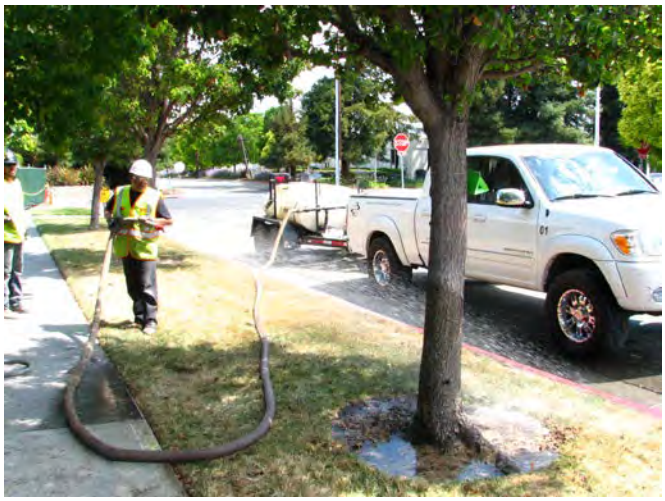
8. (OPTIONAL) IRRIGATION TEMPORARY:



Utilize supplemental irrigation via one or more various methods such as garden hose, fire hose, soaker hose, netafim emitter line, tow-behind tank, water truck, over-grade PVC piping with risers affixed to a piece of rebar (see photo at right showing tow-behind tank method), at a frequency, volume, and duration to be determined by Project Arborist through soil moisture probing with a Lincoln moisture probe on a 1x/month basis (as applicable).

Temporary areas to be irrigated are to be determined by the Project Arborist.

Initial irrigation: (To be determined).

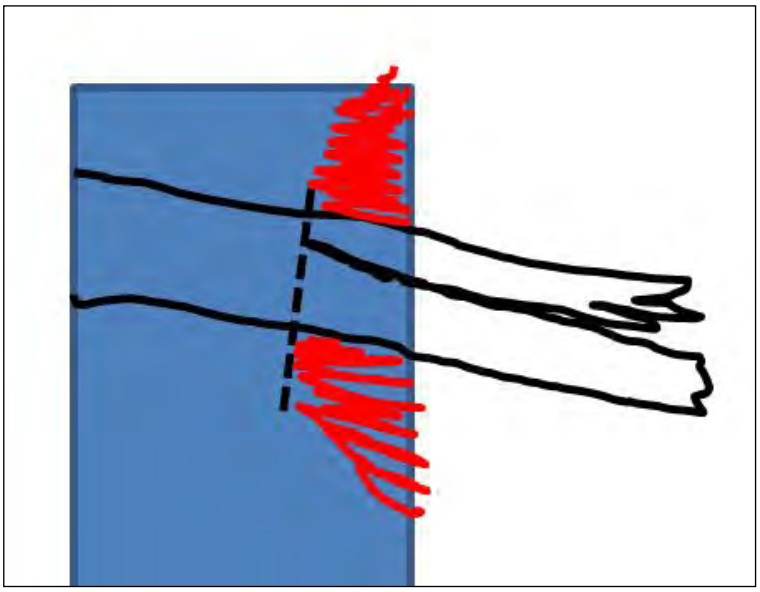
Water tank site native oak specimens are sensitive to irrigation water applied out-of-season, such as during the summer period. Therefore, special caution is advised when applying supplemental water during the construction project, in order to avoid causing overly moist soil conditions that favor the growth of soil-born tree wood decay fungi advancement into the trees' root systems and lower trunk areas.

9. IRRIGATION PERMAMENT:

Where possible, keep all landscape irrigation pipe trenching at least 25 to 30 horizontal feet offset from the trunk edges of all native oaks being retained.

Use over-grade bubblers on flex tubing for irrigation of planting areas within 25 feet of trees (arboriculture Best Management Practice would be to eliminate irrigation plans for any area within 25 feet of native oak specimens).

10. ROOT SEVERING & ROOT PRUNING:



Back-digging by hand using small hand tools will be required prior to root severing, if roots measuring 1 inch diameter or larger are encountered during site plan-related work (see images at right).

If roots 1.0 inches diameter or larger are encountered, call the PA immediately so that the PA can direct and monitor root pruning activity such that roots are severed at right angles to the direction of root growth using sharp hand tools such as professional grade loppers, hand shears, chain saw, A/C sawzall, or other tools.

Root pruning shall occur only under his/her direct supervision and only after digital

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images of the roots are archived by the PA and a hand sketch of root locations, depths, sizes is complete (i.e. a "root map").

Woody roots shall not be shattered or broken in any way as a result of site activities. Shattered or broken areas shall be hand-dug back into clear healthy root tissue and severed at right angles to root growth direction under the direct supervision of the project arborist. This is referred to as "back-digging" (see sample images at right, showing a black dashed line as the correct location to sever the root, after first backdigging out the soil area shown in red). A photo of the author performing backdigging root pruning is also included at right.

Backfill around roots immediately (same day) or smear wet mud over the end of each root.

Where possible, also over each root cut end with 5 to 10 layers of wet, muddy burlap material to avoid root desiccation.

Keep roots moist until backfilled.

Do not compact soil around roots. Backfill using existing parent soil.

11. PRUNING DURING PROJECT:

All "during project" pruning at this site shall be performed by or under direct supervision of an ISA-Certified Arborist only, and shall conform to the latest version of "ANSI A300 standard for tree care operations, tree, shrub, and other woody plant maintenance – standard practices (pruning)". See approved vendor list below in this report.

Call the PA prior to commencing pruning, so that the PA can meet with the chosen tree care vendor to determine specific branches and/or limbs to be removed, and specific pruning cut locations.

Do NOT thin, lion-tail, shear, top, pollard, or otherwise perform pruning that is non-compliant with the most current iterations of ANSI-A300 standards for tree care operations.

All pruning is suggested to be performed by Arborist Now, San Francisco, with Mr. Remy Hummer remaining on-site throughout all of the work as an on-site ISA Certified Arborist monitor and advisor.
(Remy@arboristnow.com) Cell (415) 310-7781.

Note that most pruning should be restricted to branch endweight removal pruning (length reduction pruning), which removes the outermost ends of branch systems and limb systems to effectively reduce loading of the limb attachment points. The result is a reduction in risk of stem failure rates.

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12. WATER SPRAY:

If and where standard pressure water is available on site, spray off foliage of all trees being retained on a 1x/month basis using a high power garden hose to wash both the upper and lower surfaces of the foliage. This helps keep the gas portals (stomata) unclogged for better gas exchange which is crucial for normal tree function (see image at right showing a fire hose being used to wash fifty redwood specimens being retained at a WLCA project demolition site).

13. UTILITY, IRRIGATION PIPING, AND DRAIN LINE TRENCHING:

Establish and maintain offsets of at least **25 to 30 horizontal feet, where possible, between all trench route edges and all tree trunk edges of trees being retained** (e.g. storm drain, area drain boxes, gas, water, sewer, cable, electrical, etc., including irrigation piping).

If the offset distance of any trench is required to be less than the above recommended radius from a tree being retained, contact WLCA to consult on alignment options for optimal tree root retention at that location.

Use of on-grade “floating” flex tubing that can be laid on the ground as alternative irrigation piping is the Best Management Practice for avoidance of trenching and root loss commonly associated when using schedule 40 and other “rigid piping”. However, the tubing has to be Salco or Jain brand or equivalent UV-resistant ultra-thick walled material. These pipes are available in the irrigation supply house trade, but are not used nearly as commonly as they should be, given their superior flexibility, rodent resistance, and UV-resistance. The Salco and Jain flex tubes are actually flexible PVC, which means the tubes can be solvent welded to any standard white schedule 40 material. See image below.

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5.0 Consultant's Qualifications

- Contract Town Arborist to the Town of Los Gatos Community Development Department (Planning Division) 11/15-present
- ISA Qualified Tree Risk Assessor (TRAQ)
- ISA Qualified Tree Risk Assessor Course (TRAQ), Palo Alto, CA. 2013
- PNW-ISA Certified Tree Risk Assessor Course graduate, 2009
  Vancouver, B.C., Canada
- ASCA Registered Consulting Arborist (RCA) #401
- Millbrae Community Preservation Commission (Tree Board)
  2001-2006
- ASCA Arboriculture Consulting Academy graduate, class of 2000
- ISA Certified Arborist (CA) #WC-3172A
- B.A. Environmental Studies/Soil and Water Resources
  UC Santa Cruz, Santa Cruz, California 1990

  UC Santa Cruz Chancellor's Award (Environmental Studies), 1990.
- U.S. Peace Corps Soil and Water Conservation Extension Agent
  Chiangmai Province, Thailand 1991-1993
- Associate Consulting Arborist
  Barrie D. Coate and Associates
  4/99-8/99
- Contract City Arborist to the City of Belmont Department of Planning and Community Development
  5/99-4/20 (21 Years)
- Continued education through attendance of arboriculture lectures and forums sponsored by The American Society of Consulting Arborists, The International Society of Arboriculture (Western Chapter), and various governmental and non-governmental entities.

(My full curriculum vitae is available upon request)

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6.0 Assumptions and Limiting Conditions

Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownership to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised and evaluated as through free and clean, under responsible ownership and competent management.

It is assumed that any property is not in violation of any applicable codes, ordinance, statutes, or other government regulations.

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.

The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

Unless required by law otherwise, the possession of this report or a copy thereof does not imply right of publication or use for any other purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.

Unless required by law otherwise, neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the prior expressed conclusions, identity of the consultant/appraiser, or any reference to any professional society or institute or to any initiated designation conferred upon the consultant/appraiser as stated in his qualifications.

This report and any values expressed herein represent the opinion of the consultant/appraiser, and the consultant's/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

Sketches, drawings, and photographs in this report, being intended for visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise. The reproduction of any information generated by engineers, architects, or other consultants on any sketches, drawings, or photographs is for the express purpose of coordination and ease of reference only. Inclusion of said information on any drawings or other documents does not constitute a representation by Walter Levison to the sufficiency or accuracy of said information.

Unless expressed otherwise:
information contained in this report covers only those items that were examined and reflects the conditions of those items at the time of inspection; and
the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

Loss or alteration of any part of this report invalidates the entire report.

Arborist Disclosure Statement:

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Tree are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborist cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

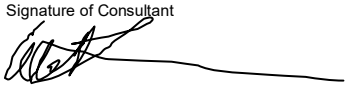
Treatment, pruning, and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate the trees.

7.0 Certification

I hereby certify that all the statements of fact in this report are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Signature of Consultant



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DIGITAL BADGES (REAL-TIME):

ISA CERTIFIED ARBORIST CREDENTIAL:
https://certificates.isa-arbor.com/d180515f-ab75-440b-9c66-106005e3cf10?record_view=true#gs.hpaw8u

ISA TREE RISK ASSESSMENT QUALIFIED (TRAQ):
https://certificates.isa-arbor.com/d180515f-ab75-440b-9c66-106005e3cf10?record_view=true#gs.hpb30w

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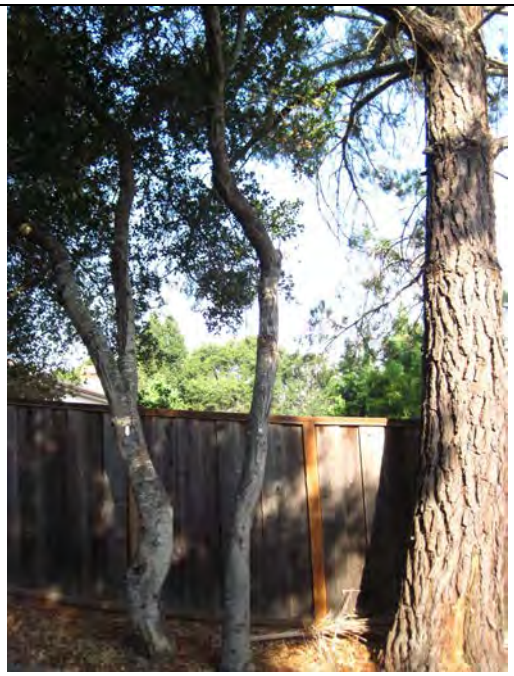
8.0 Digital Images / Pre-Project Reference / 2020

(Images Organized by Numeric Tag Numbers #1 Through #76)

1		2	
3		4	

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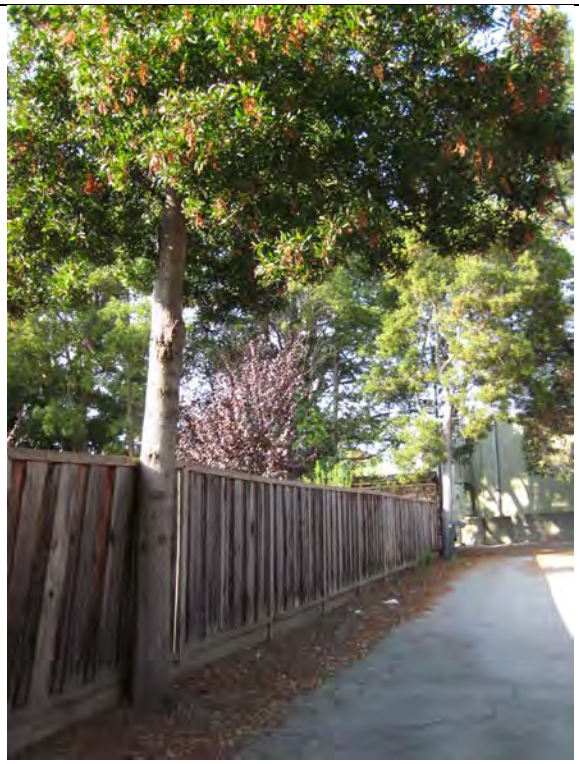
5		6	
7		8	

Site Address: 550 Darrell Road (Water Tank Property), Hillsborough, CA Version: 2/10/2021

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8		8	
9		10	

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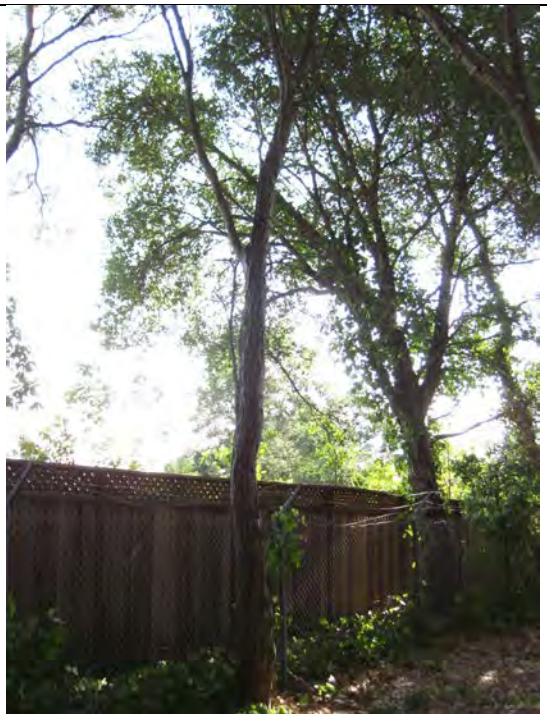
11		12	
13		14	

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15		16	
17		18	

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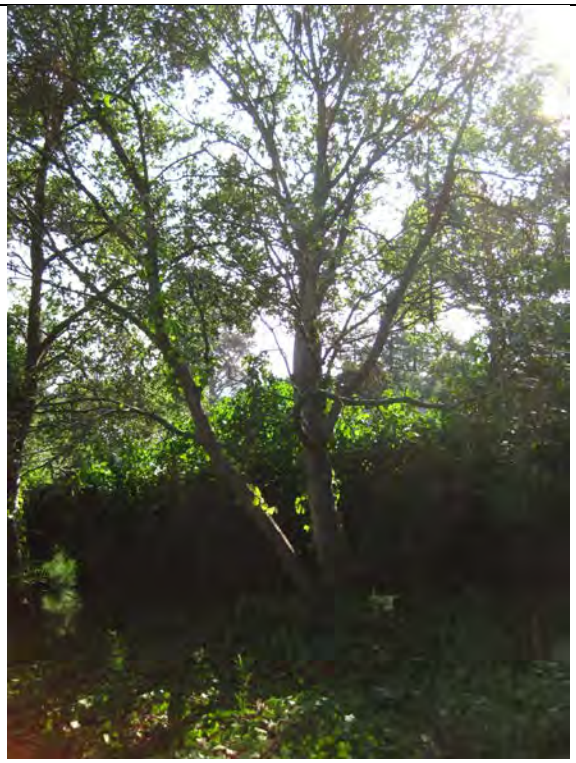
19		20	
21		22	Note the canopy consisting of epicormic shoots that arose from the top pruning cut area. The shoots enlarge in diameter over time, but may or may not still remain “structurally compromised” in terms of attachment strength, when compared to normal original stems.

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23	Note the canopy of epicormics shoots arising from the top pruning cut point.	24	Note canopy of epicormic shoots arising from the top pruning cut point.
25		26	

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27		28	
29		30	

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31		32	
33, 34, 35, 36		34	Note the very large vertically-oriented cavity below the historical top pruning cut, where it appears one or more of the epicormics shoots peeled out (failed), resulting in formation of a long decay column. The decay column may have increased risk of stem failure and impact with site targets to “high” risk.

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35	(Not Shown)		----------
36		37	Tree previously topped.
38	Tree previously topped.	39	

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40		41	
42		43	

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44		----	----------
45	Tree previously topped.	46	Tree previously topped.

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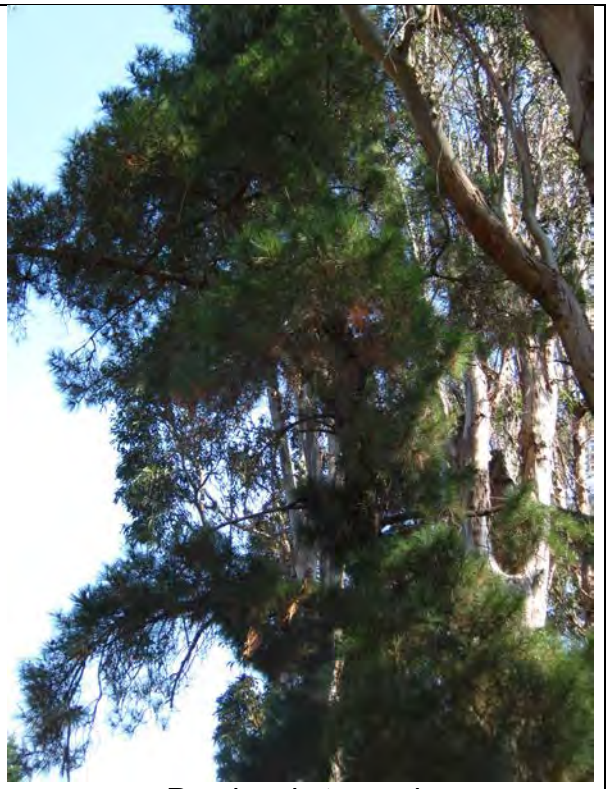
47	Previously topped.	48	 Previously topped.
49		50	Previously topped.

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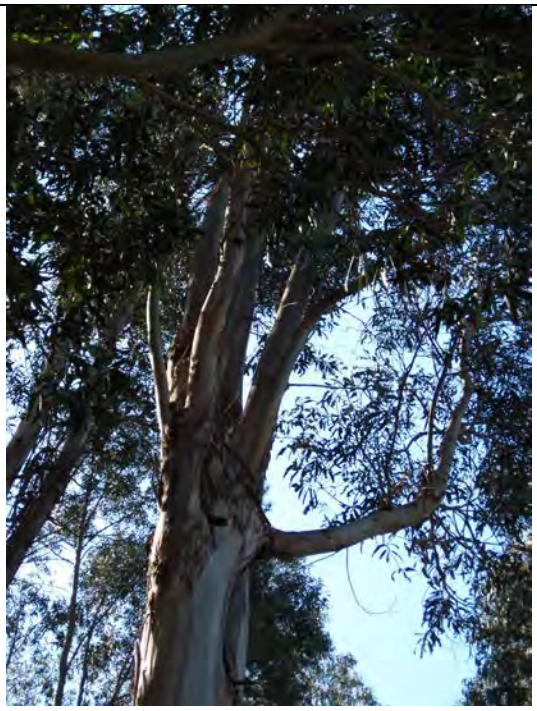
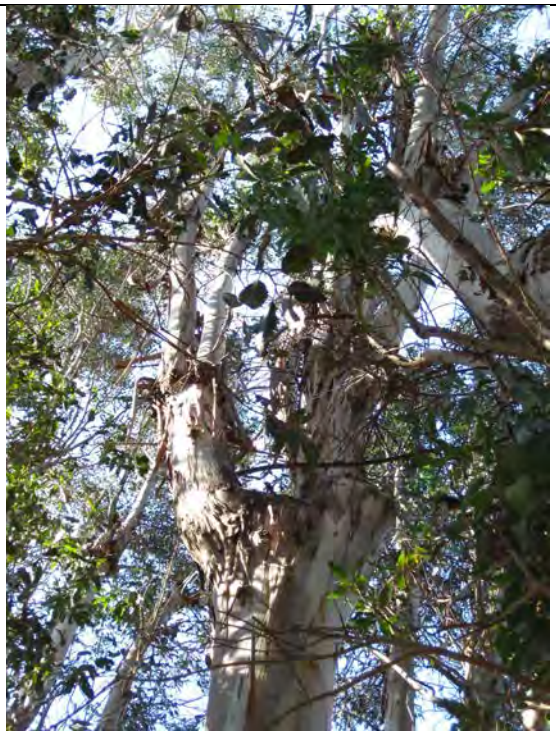
51	Previously topped.	52	 Previously topped.
53	 Previously topped.	54	Previously topped.

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55	 Tree recommended for removal, due to threat of stem failure and impact with PG&E facilities.	56	

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57		58	
59		60	

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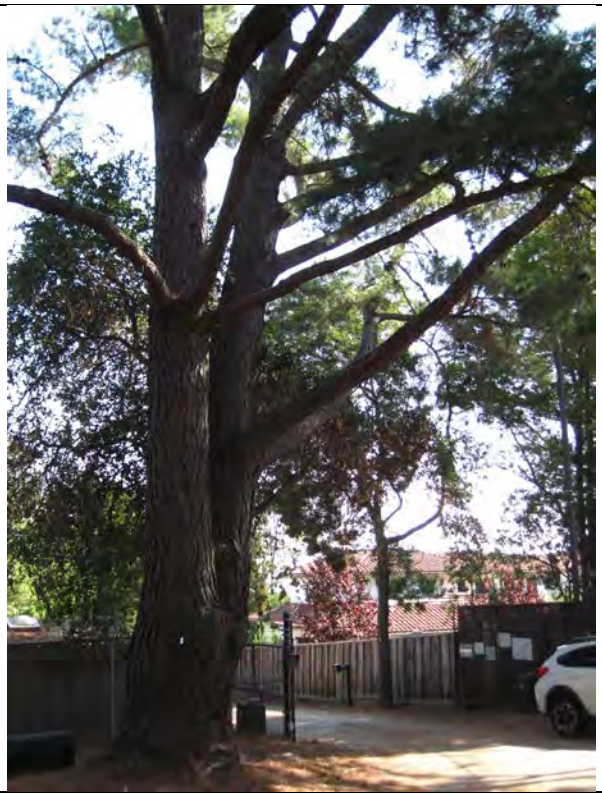
61		62	
63		64	

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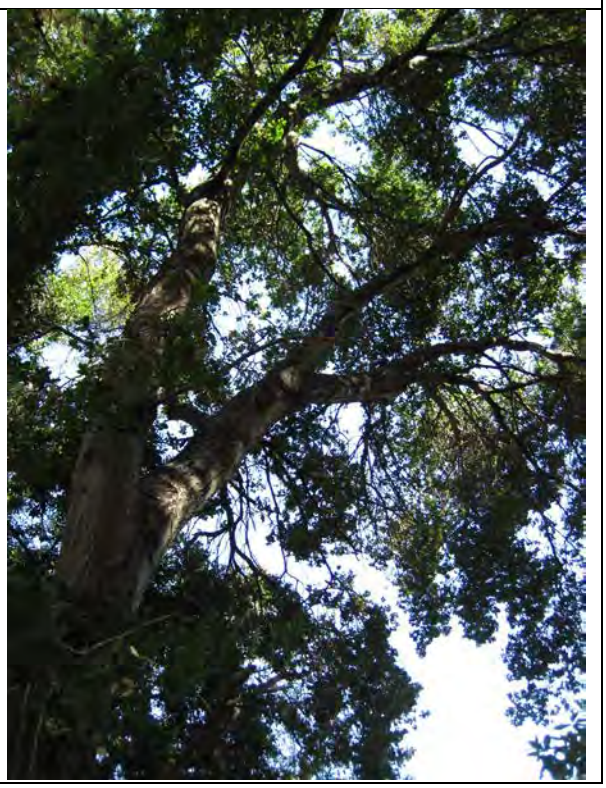
65		66	
67		68	

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69		70	
71		72	

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73		74	
74	Above image shows extensive ivy growth over the upper canopy of tree #74, which threatens photosynthetic capability by blocking the foliage directly.	75	Lower elevation view.

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75	Upper elevation view.	76	

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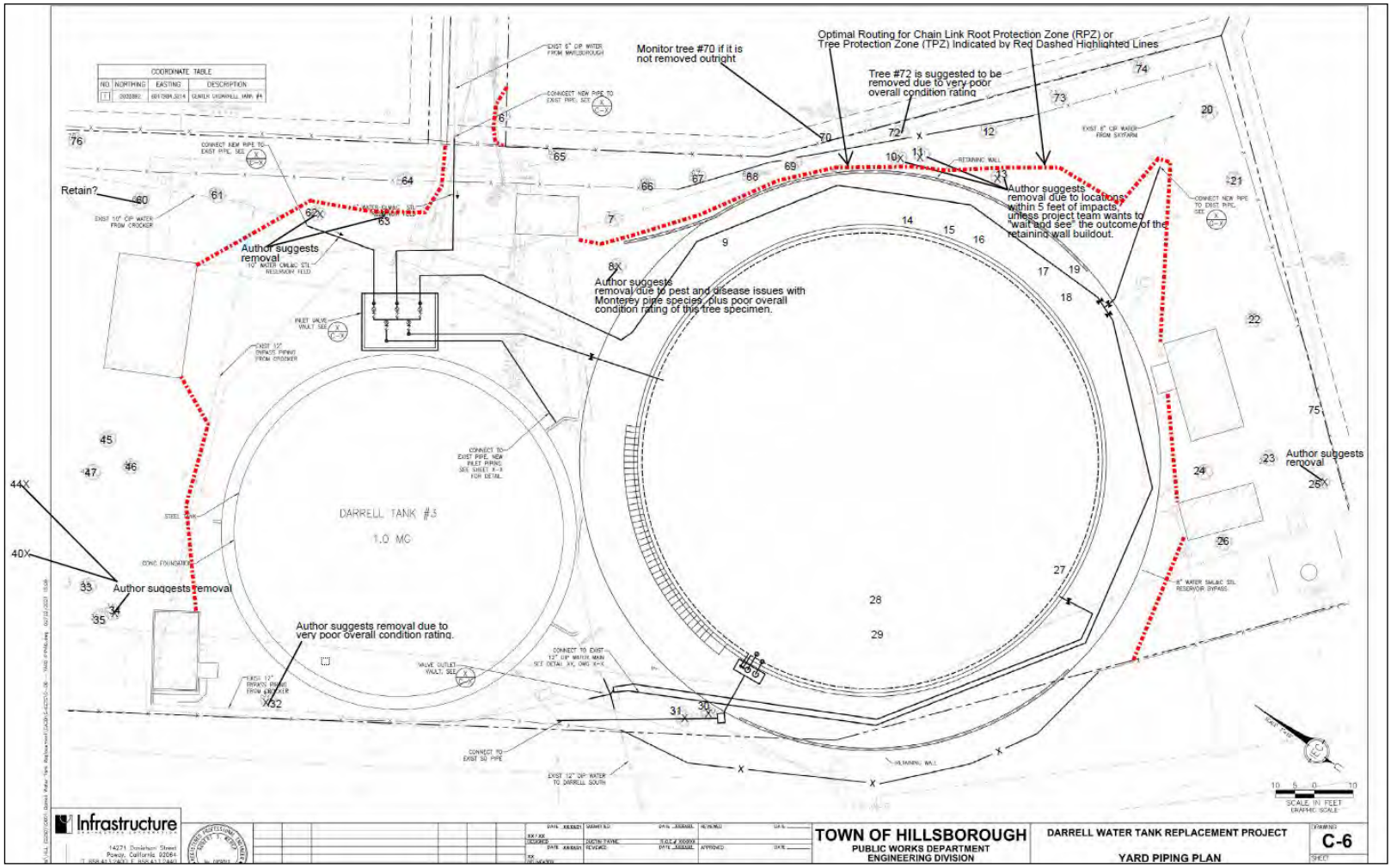
9.0 Tree Disposition Map Markup with Protective Fencing (WLCA)



10.0 Attached, Tree Location Map Markup on Topo (WLCA)

11.0 Attached, Excel Tree Data Charts (WLCA)

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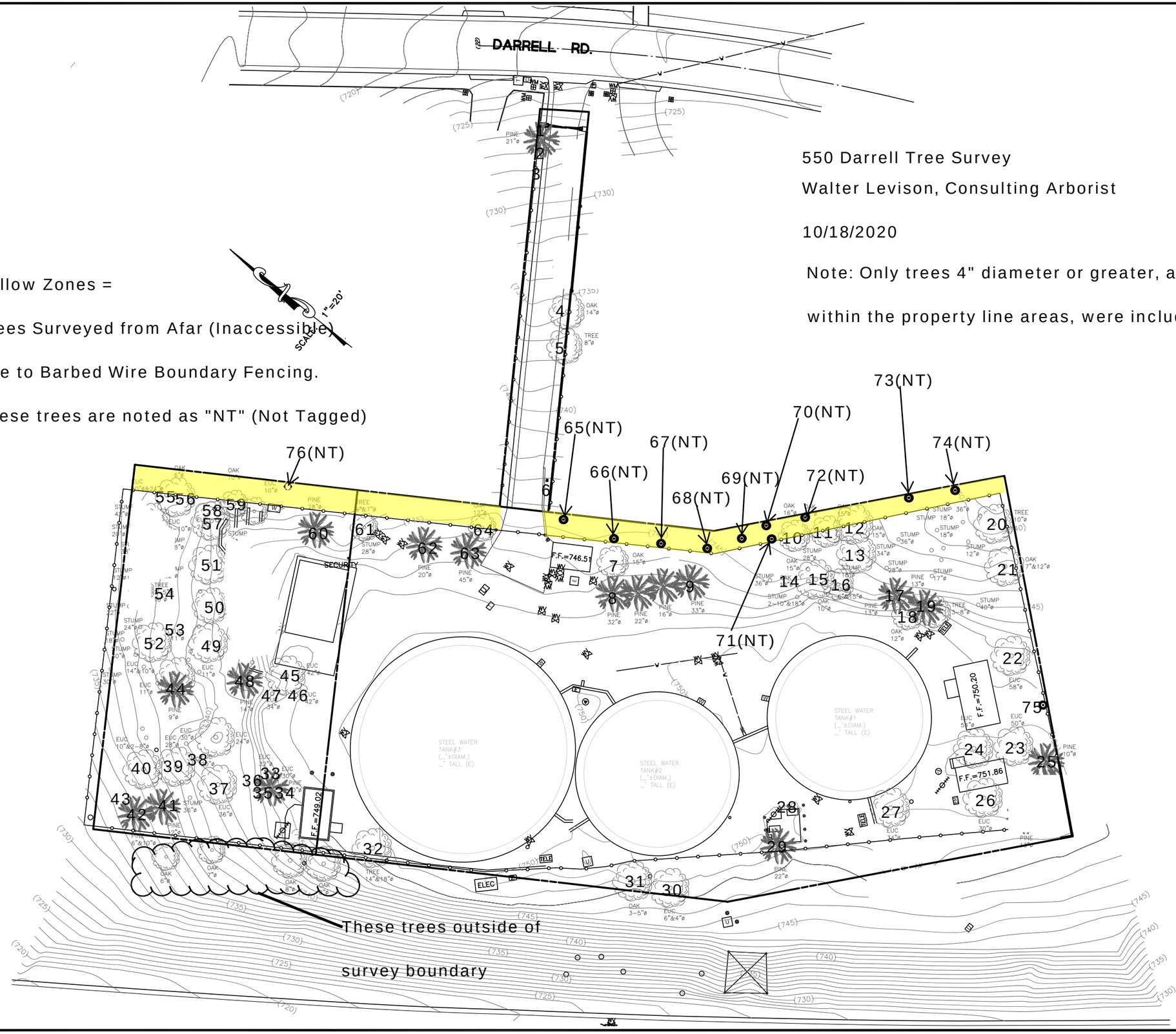

550 Darrell Tree Survey

Walter Levison, Consulting Arborist

10/18/2020

Note: Only trees 4" diameter or greater, and located within the property line areas, were included in this survey.

Yellow Zones =

Trees Surveyed from Afar (Inaccessible)

Due to Barbed Wire Boundary Fencing.

These trees are noted as "NT" (Not Tagged)

NO.	REVISIONS	DATE

DESIGNED: ES/ML
DRAWN: EB
APPROVED:

PREPARED BY:
CSG Consultants Inc.
1700 South Amphlett Boulevard, 3rd Floor
San Mateo, CA 94402
Phone (650)522-2500 Fax (650)522-2599

PREPARED FOR:
TOWN OF HILLSBOROUGH
1600 FLORIBUNDA AVE.
HILLSBOROUGH, CA. 94010

TITLE:
TOPOGRAPHIC SURVEY/EXIST UTILITIES
DARRELL WATER TANKS
WATER TANK REPLACEMENT
TOWN OF HILLSBOROUGH CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
EDWARD T. SLINTAK
No.C 39925
Exp. 12-31-09
CIVIL
STATE OF CALIFORNIA

PRELIMINARY DESIGN
__/__/07

SHEET 2
OF
_

DATE : 02/23/08
JOB#: 07.016

TREE DATA
550 Darrell Water Tanks
Hillsborough, California
Revised 2/10/21

Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 54" A.G. (ATD May Represent 5 or 6 Total Stems)	To Be Removed Per Plan	Protect In Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft.)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Splitout Evidance (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, liontailing, shearing, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twig, Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) (Distance as Lateral Offset in FEET from Trunk Edge, for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
1	25.2	0.0	0.0	25.2		X	X	Monterey pine	*Pinus radiata*	40/30	50/45	48% Fair											12.6	24 inch scar noted between 6 inches and 30 inches above grade on driveway side of trunk. Note that shear pressure from trunk expansion is causing lateral displacement of the existing curbwork.
2	7.0	0.0	0.0	7.0		X		coast live oak	*Quercus agrifolia*	20/15	75/50	59% Fair		South									3.5	Trunk has a "bow" arc to the south over the existing road, down to 14 feet elevation above grade.
3	8.9	0.0	0.0	8.9		X		coast live oak	*Quercus agrifolia*	22/20	75/60	65% Good	Mod	West	West	Yes. At 10 to 14 feet.							4.45	Stem splitout scar between 10 and 14 feet.
4	14.2	0.0	0.0	14.2		X	X	coast live oak	*Quercus agrifolia*	25/20	55/60	57% Fair	Poor to Mod	North	North								7.1	
5	9.9	0.0	0.0	9.9		X		blackwood acacia	*Acacia melanoxylon*	28/16	85/55	65% Good	Good	North						Yes. At 15 feet.			4.95	This tree species is often considered to be a junk tree, given its propensity for structural failure. This reputation is probably due to the fact that the tree develops narrow angles of stem attachment that then leads to premature structural failure. However, the species is considered a true survivor in the Bay Area, and is literally one of the best species known to date in terms of its ability to withstand salt air, pollution, clay based soil, prolonged droughty soil conditions, and other "urban" situations.
6	12.1	0.0	0.0	12.1		X	X	blackwood acacia	*Acacia melanoxylon*	32/18	50/50	50% Fair	Poor to Mod										6.1	This tree species is often considered to be a junk tree, given its propensity for structural failure. This reputation is probably due to the fact that the tree develops narrow angles of stem attachment that then leads to premature structural failure. However, the species is considered a true survivor in the Bay Area, and is literally one of the best species known to date in terms of its ability to withstand salt air, pollution, clay based soil, prolonged droughty soil conditions, and other "urban" situations.
7	16.6	0.0	0.0	16.6		X	X	coast live oak	*Quercus agrifolia*	28/20	75/75	75% Good	Mod										8.3	
8	37.3	0.0	0.0	37.3	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	70/60	30/25	28% Poor	Poor	West					GR of large dia.			X	18.7	Canopy overhangs the driveways at this site. Very large diameter girdling root noted on southeast side of root crown. Red turpentine bark beetle feeding activity noted. Suggest consider removal of tree within 1 to 5 years. Possible infection by pine pitch canker fungus: a pathogen for which there is no cure or treatment, other than regular heavy irrigation of the root zone.
9	35.5	0.0	0.0	35.5	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	65/55	25/25	25% Poor	Poor to Mod	South and West								X	17.8	Red turpentine bark beetle feeding activity noted, evidenced by sap flux in bark furrows. Suggest consider removal of tree within 1 to 2 years. Possible infection by pine pitch canker fungus: a pathogen for which there is no cure or treatment, other than regular heavy irrigation of the root zone.
10	13.3	0.0	0.0	13.3		X (Can wait and see impacts after retaining wall buildout)	X	coast live oak	*Quercus agrifolia*	45/18	50/30	33% Poor	Mod	West									6.7	ISSUE: Structure of tree may have been severely compromised due to chain link fence embedded in it, through the entire cross section of lower trunk. Barrie Coate consulting arborist used to lecture on this issue in the 90's and 2000's, given that most people were not aware of the fact that embedded fencing can literally "girdle" the trunk, causing actual structural stability loss.
11	13.1	0.0	0.0	13.1		X (Can wait and see impacts after retaining wall buildout)	X	coast live oak	*Quercus agrifolia*	45/25	75/65	69% Good	Mod	South east	South east								6.6	
12	10.8	0.0	0.0	10.8				coast live oak	*Quercus agrifolia*	35/20	55/60	58% Fair	Poor to Mod	Sweeps from west, then upright.									5.4	

TREE DATA
550 Darrell Water Tanks
Hillsborough, California
Revised 2/10/21

Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 54" A.G. (ATD May Represent 5 or 6 Total Stems)	To Be Removed Per Plan	Protect In Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft.)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Splitout Evidence (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, lionstailing, shearing, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twig, Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) (CRZ Generally a Lateral Offset In FEET from Trunk Edge, for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
13	15.8	0.0	0.0	15.8		X (Can wait and see impacts after retaining wall buildout)	X	coast live oak	*Quercus agrifolia*	40/20	55/55	55% Fair	Poor to Mod	South east									7.9	
14	15.1	0.0	0.0	15.1	X		X	coast live oak	*Quercus agrifolia*	40/25	75/75	75% Good	Mod										7.6	
15	15.7	0.0	0.0	15.7	X		X	coast live oak	*Quercus agrifolia*	40/30	35/40	38% Poor	Very Poor to Poor										7.9	Note dead twig buildup in canopy is significant.
16	16.7	0.0	0.0	16.7	X		X	coast live oak	*Quercus agrifolia*	40/25	45/45	45% Fair	Poor to Mod	South				BRC					8.4	Buried root crown under years of rubble and waste buildup on floor of forest. Suggest perform a Root Crown Excavation to carefully dig out the buttress root flares by hand and reestablish original soil grade elevation.
17	20.0	0.0	0.0	20.0	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	60/25	40/30	35% Poor	Mod (in uppermost 20% of canopy elevation only)							BI at 45 feet elevation is an elevated risk of splitout situation.				10.0	Given the bark inclusion type fork situation at 45 feet, this tree is an elevated risk status specimen in terms of stem failure and impact with site targets, and is recommended to be removed within the next few years.
18	7.7	0.0	0.0	7.7	X			coast live oak	*Quercus agrifolia*	16/16	30/25	28% Poor	Poor					BRC in rubble.					3.9	Buried root crown under years of rubble and waste buildup on floor of forest. Suggest perform a Root Crown Excavation to carefully dig out the buttress root flares by hand and reestablish original soil grade elevation. Also note the scar on lower 2 feet of trunk.
19	20.0	0.0	0.0	20.0	X (Author recommends removal for safety purposes as well).		X	Monterey pine	*Pinus radiata*	60/28	25/25	25% Poor	Poor to Mod	North west.	North west.						X		10.0	Tree exhibits symptoms of infection by pine pitch canker fungus (PPCF), for which there is no cure or treatment other than heavy regular irrigation. WLCA suggests removal of this tree now due to poor condition and PPCF infection.
20	12.5	0.0	0.0	12.5		X	X	coast live oak	*Quercus agrifolia*	28/22	75/70	72% Good	Mod										6.3	
21	12.7	7.3	0.0	20.0		X	X	coast live oak	*Quercus agrifolia*	25/28	60/70	65% Good	Poor to Mod										9.0	
22	72.0	0.0	0.0	Est. 72		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/55	50/40	44% Fair	Mod				Topped in past.		See notes at right.				36.0	Tree was previously top pruned (poor practice) at 35 feet above grade, resulting in a profusion of epicormic shoot growth from near those cut points. The shoots then enlarged and grew woundwood around their bases, buttressing the attachment points, which at first are relatively "weak" in terms of breakage strength at the bases of epicormics arising from top pruning cut wounds. As of now, the stems appear to be stable, though structural stability is reduced to an unknown degree, given that the entire canopy of the tree now consists essentially of epicormic shoots with decay compartmentalized inside the cross sections of the shoot attachment points where historical pruning cut wounds were made. Over time, woundwood formation at epicormic shoot bases by a vigorous tree can increase attachment point strength very significantly to the point where the shoots are considered "stable".
23	45.5	0.0	0.0	45.5		X	X	Tasmanian blue gum	*Eucalyptus globulus*	95/30	40/30	35% Poor	Poor to Mod				Topped in past.		See tree #22 notes.				22.8	(Same notes as per tree #22).
24	43.6	0.0	0.0	43.6		X	X	Tasmanian blue gum	*Eucalyptus globulus*	105/30	50/30	38% Poor	Poor to Mod				Topped in past.		See tree #22 notes.				21.8	

TREE DATA
550 Darrell Water Tanks
Hillsborough, California
Revised 2/10/21

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25	9.8	0.0	0.0	9.8	Author recommends removal due to very poor condition.	(X)		Monterey pine	*Pinus radiata*	25/4	10/10	10% Very Poor	Very Poor					BRC	X		X		4.9	Root crown buried under rubble. North side of trunk is vandalized. Recommend removal of tree due to very poor condition.
26	35.0	0.0	0.0	Est. 35 (Not the diameter of the bulbous swelling)		X	X	Tasmanian blue gum	*Eucalyptus globulus*	65/20	30/20	26% Poor					Topped in past.		See notes for tree #22				18.0	Tree previously topped at 20 feet most likely. Note bulbous swelling of mainstem (trunk) between 0 and 5 feet elevation above grade, which is not likely associated with internal tissue decay. Swellings such as this one are common on older, larger diameter eucalyptus specimens. Diameter of 35 inches was "estimated", and is not representative of the bulbous swelling's actual diameter at 4.5 feet elevation.
27	35.5	0.0	0.0	35.5	X		X	Tasmanian blue gum	*Eucalyptus globulus*	70/45	50/30	37% Poor	Poor to Mod				Topped in past.		See notes for tree #22				17.8	(Same notes as per tree #22). Prevously topped at 25 feet elevation.
28	26.3	0.0	0.0	26.3	X		X	Monterey pine	*Pinus radiata*	65/40	40/40	40% Poor	Poor to Mod								X		13.2	Sap in bark furrows indicates likely infestation/feeding activity by red turpentine bark beetles (a serious pest that affects this tree species).
29	12.0	10.0	9.0	39.0	X Author suggests removal for safety purposes as well.		X	Tasmanian blue gum	*Eucalyptus globulus*	25/9	30/20	25% Poor	Poor				Topped recently by PG&E transmission line clearance contractors.						10.0	Topped recently by PG&E transmission line clearance contractors. Tree has four mainstems each arising from grade.
30	20 per topo	0.0	0.0	20 per topographic survey sheet.	X		X	Monterey pine	*Pinus radiata*	45/30	35/35	35% Poor	Poor						South side of canopy declining and dying.		?		10.0	Recent tree removal from the south side of this tree appears to have caused the this south side of tree #30 to decline/die in terms of live twig density. The dieback of twigs and needles could also be associated with pine pitch canker infection. Trunk diameter was not verified by WLCA.
31	10.0	6.0	6.0	28.0	X			coast live oak	*Quercus agrifolia*	18/16	60/40	46% Fair	Mod					BRC					10.0	Canopy growth is stunted in shade of limbs of tree #30. Root crown not visible and not assessed.
32	28.0	13.6	0.0	41.6	Author suggests removal of tree for safety purposes.	(X)	X	blackwood acacia	*Acacia melanoxylon*	28/30	30/0	5% Very Poor	Poor to Mod						X	Yes. Active split occurring at the fork between 0 and 2 feet above grade. High Risk Tree.			15.0	Given this tree's active split at the mainstem fork, this is considered a high risk specimen in terms of risk of mainstem failure and impact with various site targets. WLCA recommends immediately removal of this tree for safety purposes.
33	Est. 35	0.0	0.0	Est. 35		X	X	Tasmanian blue gum	*Eucalyptus globulus*	85/30	40/30	34% Poor	Poor to Mod				Topped in the past.		See notes for tree #22				17.5	See notes for tree #22 for full explanation epicormic shoot growth, and risk issues associated with them. Tree was topped at 25 feet, resulting in epicormic shoot growth to 85 feet above grade.
34	Est. 27	0.0	0.0	Est. 27	Author suggests removal of tree for safety purposes.	(X)	X	Tasmanian blue gum	*Eucalyptus globulus*	80/25	20/10	15% Very Poor	Very Poor	West		Epicormic shoot splitouts at 20 to 30 feet above grade.	Topped in the past.		See notes for tree #22				13.5	See notes for tree #22 for full explanation epicormic shoot growth, and risk issues associated with them. Tree was topped at 25 to 30 feet, resulting in epicormic shoot growth to 80 feet above grade. The interesting this about this specimen is that some of the epicormic shoots actually split out at 20 to 30 feet, which demonstrates that the shoots are in fact structurally compromised in tems of stability, even with massive woundwood growth around the attachment points where they arise from the topping pruning cut areas (although it is difficult to confirm when exactly the failed epicormic shoot split out. It may have been just a few years after the topping pruning, prior to when the shoot's attachment point (base) became nicely buttressed with woundwood layering). WLCA suggests removal of the tree for safety purposes.
35	13.6	0.0	0.0	13.6		X	X	Canary Island pine	*Pinus canariensis*	40/20	60/50	53% Fair	Mod	South									6.8	
36	5.7	0.0	0.0	5.7		X		coast live oak	*Quercus agrifolia*	15/12	70/70	70% Good											2.9	Tree growing in shade of surrounding larger trees #35 and #37.

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550 Darrell Water Tanks
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37	Est. 45 to 50	0.0	0.0	Est. 45 to 50		X	X	Tasmanian blue gum	*Eucalyptus globulus*	85/45	55/40	45% Fair	Mod				Topped in past.		See notes for tree #22.				25.0	See notes for tree #22 for full explanation of epicormic shoot growth and structural stability. This tree was topped at 30 feet in the past, resulting in epicormic shoot growth from those cut points. The tree also appears to have been topped at 40 to 45 feet elevation in the past.
38	34.0	0.0	0.0	34.0		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/35	55/40	47% Fair	Mod				Topped in past.		See notes for tree #22.				17.0	See notes for tree #22 for full explanation of epicormic shoot growth and stability. This tree was topped at 35 feet in the past, resulting in epicormic shoot growth to 80 feet.
39	9.4	0.0	0.0	9.4		X		blackwood acacia	*Acacia melanoxylon*	25/18	55/55	55% Fair	Mod										4.7	
40	12.7	0.0	0.0	12.7	Author suggests removal of tree.	(X)	X	Monterey pine	*Pinus radiata*	55/13	30/20	22% Poor	Poor to Mod	West	West				Yes. At 0 to 12 inches, and also at 4 feet to 9 feet above grade.				6.4	The damaged mainstem areas noted (lowermost foot, and between 4 feet and 9 feet) may be due to Western Gall Rust Fungus infection, which sometimes causes cankering, sap flux, and other maladies that eventually cause the tree to decline and die prematurely, or fail structurally.
41	22.2	0.0	0.0	22.2		X	X	Monterey pine	*Pinus radiata*	55/30	45/40	43% Fair	Mod	West							X		11.1	Bark beetle feeding evidence as sap exudation from bark furrows (likely western turpentine bark beetle).
42	12.2	7.9	0.0	20.1		X	X	Canary Island pine	*Pinus canariensis*	50/18	50/40	45% Fair	Poor to Mod	West							X		9.0	The smaller 7.9 inch diameter mainstem appears to have no live twig density, which suggests infection by pine pitch canker (PPC) fungus (not verified).
43	9.7	0.0	0.0	9.7		X		Monterey pine	*Pinus radiata*	35/16	40/50	45% Fair	Poor to Mod	North									4.9	
44	12.1	0.0	0.0	12.1	Author suggests removal due to risk of failure and impact with PG&E substation facility.	(X)	X	Monterey pine	*Pinus radiata*	35/18	40/40	40% Poor	Mod	North west.	North west.						X		6.1	Large scar on lower trunk 2 to 4 feet suggests infection by Western Gall Rust Fungus. Excessive sap flux in bark furrows suggests red turpentine bark beetle infestation. Tree leans toward PG&E substation, with a canopy lopsided in that same direction. WLCA suggests removal of tree for substation safety (to eliminate the risk of failure and impact with the substation components).
45	46.0	0.0	0.0	46.0		X	X	Tasmanian blue gum	*Eucalyptus globulus*	90/30	35/20	26% Poor	Poor			Peelout scar 18 to 23 feet from loss of an epicormic shoot.	Topped at past.		See notes for tree #22. See also notes at right for tree #45.				23.0	See notes for tree #22 for full explanation of epicormic shoots and stability. Peelout scar from loss of an epicormic noted, which suggests that even after good woundwood development at the bases of epicormic shoots growing out of topping pruning cuts, the shoots never really develop "normal" level of stability and are not the same as an original stem in terms of structural stability. Note extensive decay below topping cut wounds between 20 and 30 feet elevation (i.e. below the bases of the epicormic shoots arising from those historical topping cuts).
46	48.7	0.0	0.0	48.7		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/30	50/27	35% Poor	Poor to Mod	South			Topped in past.		Decay at root crown, possibly "bottlebutt" condition.				24.4	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 30 feet and 40 feet heights, with epicormic shoot growth to 80 feet elevation above grade.
47	32.9	0.0	0.0	32.9		X	X	Tasmanian blue gum	*Eucalyptus globulus*	85/25	50/30	40% Poor	Poor to Mod				Topped in past.		See notes for tree #22.				16.5	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 30 feet and 40 feet heights, with epicormic shoot growth to 85 feet elevation above grade.
48	16.4	0.0	0.0	16.4		X	X	Monterey pine	*Pinus radiata*	55/20	35/35	35% Poor	Poor to Mod								X		8.2	Likely red turpentine bark beetle feeding, as evidenced by sap flux in the bark furrows along lower trunk elevations. Growth of tree stunted in shade of various tall blue gum specimens.
49	36.3	0.0	0.0	36.3		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/28	50/30	36% Poor	Poor to Mod				Topped in past.		See notes for tree #22.				18.2	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 35 feet and 60 feet heights, with epicormic shoot growth to 100 feet elevation above grade.

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50	38.2	0.0	0.0	38.2		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/30	50/30	40% Poor	Mod	South			Topped in past.		See notes for tree #22. Mechanical scar noted 1 to 4 feet above grade.					19.1	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 30 feet, with epicormic shoot growth to 100 feet elevation above grade. Mechanical scar between 1 and 4 feet on east side of mainstem. It is not clear as to how this tree was scarred in this area.
51	Est. 40	0.0	0.0	Est. 40		X	X	Tasmanian blue gum	*Eucalyptus globulus*	95/30	55/33	40% Poor	Poor to Mod				Topped in past.		See notes for tree #22.					20.0	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 27 feet, with epicormic shoot growth to 95 feet elevation above grade.
52	24.7	0.0	0.0	24.7		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/30	55/35	47% Fair	Poor to Mod	North			Topped in past.		See notes for tree #22.					12.4	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 35 feet, with epicormic shoot growth to 80 feet elevation above grade.
53	29.9	0.0	0.0	29.9		X	X	Tasmanian blue gum	*Eucalyptus globulus*	100/30	40/35	38% Poor	Poor				Topped in past.		See notes for tree #22.					15.0	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 35 feet and 60 feet elevation above grade, with epicormic shoot growth to 100 feet elevation above grade.
54	29.2	0.0	0.0	29.2		X	X	Tasmanian blue gum	*Eucalyptus globulus*	80/30	50/20	27% Poor	Mod	North			Topped in past.		See notes for tree #22.					14.6	See notes for tree #22 for full explanation of epicormic shoots and stability. Topped in past at 25 feet elevation above grade, with epicormic shoot growth to 80 feet elevation above grade. There is an epicormic shoot splitout at east side of tree where a tear occurred down to 16 feet above grade. This tear/splitout area is now visibly decayed.
55	Est. 35	Est. 15	0.0	Est. 50	(Pruning Issues)	X	X	Tasmanian blue gum	*Eucalyptus globulus*	90/70	60/50	55% Fair	Mod						Barbed wire in mainstem cross section may be a stability issue.					22.0	Barbed wire is starting to girdle the 15 inch diameter stem at 6 feet. Canopy extends northwestward over the PG&E substation airspace, which may be a significant problem in 1 to 3 years from date of this survey. The canopy will likely have to be pruned back to clear the station airspace. Note also that this tree is quite extended in dimensions, and will probably have to be pruned back using "limb length reduction pruning" technique to remove the outermost sections of over-extended and/or endweight-heavy limbs, to reduce loading on the limbs' attachment points.
56	7.0	0.0	0.0	7.0		X		coast live oak	*Quercus agrifolia*	20/25	50/20	30% Poor	Poor to Mod	East					Barbed wire in mainstem cross section may be a stability issue.					3.5	Bark wire and chain link fence materials are becoming embedded in mainstem cross section, effectively girdling the tree and causing a serious stability issue (and reducing the tree's structural rating). Thus, this tree has an elevated risk of mainstem failure due to the embedment issue. Growing in shade of tree #55.
57	30.5	0.0	0.0	30.5		X	X	Tasmanian blue gum	*Eucalyptus globulus*	70/40	55/50	53% Fair	Mod	North and East										15.3	Tree canopy lopsided north and east due to crowding from tree #51. Interestingly, this specimen appears to be one of the only blue gums on site that was not top pruned, and seems to retain its original branch architecture assemblages.
58	9.7	6.5	0.0	16.2		X		coast live oak	*Quercus agrifolia*	20/30	65/60	63% Good	Mod	East										8.0	Lopsided east due to crowding from eucalyptus #57.
59	11.0	7.8	0.0	18.8		X		coast live oak	*Quercus agrifolia*	25/30	75/75	75% Good	Mod											8.0	
60	33.7	0.0	0.0	33.7	(Monitor tree if it is retained)	X	X	Monterey pine	*Pinus radiata*	65/45	45/45	45% Fair	Poor to Mod	East	East			See notes.	See notes.					16.9	The compression side of this leaning tree exhibits buckling bark and wood tissue in the mainstem base area, which is somewhat normal for a leaner of this size. It is not clear if the tree is actually increasing in lean, or is structurally "stable" (outside the scope of this arborist reporting assignment). However, I did note a slight upward sweep of the mainstem, which suggests that the lean angle is stable and that the tree has tried to correct its upward growth to vertical over time. If the tree is not removed, then it would be prudent to affix a bubble level to the trunk securely to monitor its lean angle and determine if over time the tree is "increasing in lean angle" off from vertical. Monitor tree if it is not removed outright.

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61	5.5	0.0	0.0	5.5		X		California toyon	*Heteromeles arbutifolia*	15/13	35/35	35% Poor	Poor to Mod				Yes. A 2nd mainstem of 9 inches diameter was removed at grade for unknown reason(s).		Yes. Sunken cankers along trunk with dead bark and xylem wood tissue suggest pathogenic infection.		X		2.8	A 9 inch diameter mainstem was for some unknown reason removed at grade on the east side of base, leaving only a single remnant mainstem of smaller diameter. The tree currently exhibits decayed bark and xylem wood as sunken cankering along the mainstem, possibly caused by a pathogen such as *Botryosphaeria* fungus species (not verified). This infection has reduced the tree's overall condition rating considerably.
62	24.8	0.0	0.0	24.8	Author suggests removal of tree due to likely pine pitch canker fungus infection.		X	Monterey pine	*Pinus radiata*	65/30	30/25	27% Poor	Poor to Mod						Yes. Twig and needle dieback noted, likely due to pine pitch canker fungus.		X		12.4	Subnormal scaffold branch extension, due to unknown cause(s). Twig and needle dieback seen in canopy may be due to pine pitch canker fungus infection (PPC): a pathogen for which there is no cure or treatment other than heavy weekly irrigation year round. WLCA suggests removal of this tree.
63	49.7	0.0	0.0	49.7	Author suggests removal of the tree to remove the existing elevated risk of tree failure and impact with the water tank structures.		X	Monterey pine	*Pinus radiata*	75/90	60/25	37% Poor	Mod					GR on east side of root crown.		BI between 4 and 12 feet is a major structural defect endangering the existing site water tank structures.	X		24.9	Sap flux copious in bark furrows: a likely indication of red turpentine bark beetle infestation. Bark inclusion type fork at 4 to 12 feet is a major structural defect that can only be mitigated through installation of cables and bracing rods, or by removal of the tree. Girdling root noted at east side of root crown. WLCA suggests removal of this tree for safety purposes. WLCA Additional Note: This is one of the largest Monterey pine specimens the author has ever assessed in his 22 year career, in terms of mainstem diameter, canopy height, and canopy spread diameter.
64	12.9	0.0	0.0	12.9		X	X	coast live oak	*Quercus agrifolia*	25/28	35/40	37% Poor	Poor					Likely GR at east side flat area.	Yes. Extensive foliar dieback noted.		X		6.5	Trunk expansion is causing shear pressure against the chain link fencing, resulting in lateral displacement of the fence. East side of root crown is flat, indicating likely presence of a girdling root. Extensive foliar dieback, likely caused by fungal pathogen(s) such as*Cryptocline / Discula.*
65	Est. 11	Est. 10	0.0	Est. 21		X		blackwood acacia	*Acacia melanoxylon*	35/28	30/30	30% Poor	Poor						Bark sluffing off the east mainstem.				10.0	Bark sluffing off the east mainstem may indicate presence of hidden cankers under the bark, caused by unknown pathogen(s).
66	Est. 7	0.0	0.0	Est. 7		X		coast live oak	*Quercus agrifolia*	25/16	25/25	25% Poor	Poor	North	North						X		4.0	Ivy is covering the lowermost 18 feet of trunk up to 18 feet above grade, and could literally kill the tree by blocking photosynthesis capability if it continues growth vertically. WLCA suggests killing the vines by cutting them at grade around the trunk, which will kill the entire plant and cause it to sluff off eventually over time.
67	Est. 24	0.0	0.0	Est. 24			X	coast live oak	*Quercus agrifolia*	45/35	75/75	75% Good	Mod	North east									12.0	This oak specimen has good upright branching architecture. Overall a very nice specimen to retain if possible.
68	Est. 24	0.0	0.0	Est. 24			X	coast live oak	*Quercus agrifolia*	45/45	75/65	70% Good	Mod	East	East								12.0	A nice native oak specimen in good overall condition, which would be an important specimen to retain if possible.
69	Est. 13	0.0	0.0	Est. 13			X	coast live oak	*Quercus agrifolia*	50/25	60/60	60% Fair	Mod	East	East								7.0	Many of these property boundary oaks along the east perimeter are lopsided eastward and/or leaning eastward, mainly due to phototropism. I.e tree growth tends toward the dominant light source. Because of shading from trees and water tanks to the west, the main sunlight source in the case of these east side trees is from the east. Note that the canopy of this tree is narrow, and extends only from the uppermost 30% of the tree mainstem height.
70	Est. 21	0.0	0.0	Est. 21		X	X	coast live oak	*Quercus agrifolia*	45/35	50/40	44% Fair	Mod	East					X		X		10.5	Root crown area appears to be severely infested by sycamore bark moth larvae which feed in the phloem (inner bark) areas of a coast live oak's lower trunk. Interestingly, this oak specimen exhibits a "bottlebutt" condition that is a swelling of the lower trunk to abnormal proportions, typically indicating presence of invisible internal decay of the wood tissue, which forces the tree to add layers of additonal wood to adapt its structure in the weakened area accordingly. What is not known is whether the bottlebutt seen on this tree is due to decay caused by feeding by the sycamore bark moth larvae (which are usually considered innocuous and not dangerous to a tree), or some other more serious pest or disease pathogen. Monitor this tree's health and stuctural condition if it is retained and protected in place.

TREE DATA
550 Darrell Water Tanks
Hillsborough, California
Revised 2/10/21

Tree Tag #	Trunk 1 (in.)	Trunk 2 (in.)	Trunk 3 (in.)	Adjusted Trunk Diameter (ATD) Inches @ 54" A.G. (ATD May Represent 5 or 6 Total Stems)	To Be Removed Per Plan	Protect In Place (PIP)	Protected Status Town of Hillsborough (12 Inch Diameter Regulated Trees in Development Situations)	Common Name	Scientific Name (*Genus, species*)	Height and Canopy Spread (ft.)	Health & Structural Ratings (0-100% each)	Overall Condition Rating (0-100%)	Live Twig Density and Extension (TDE)	Lopsided Canopy (Direction Noted)	Trunk Lean (Direction Noted)	Historical Stem Splitout Evidence (Note Elevation)	Severely Pruned or Root Pruned in Past (topping, lionfalling, shearing, etc.)	Buried Root Crown (BRC) or Girdling Roots (GR)	Twig, Branch, Limb, Mainstem Decay (Note Elevation)	Codominant Mainstems with Severe Bark Inclusion(s) ("BI") (Note Height)	Pest and/or Disease Symptoms Visible	Soil Moisture Deficit	Critical Root Zone (CRZ) (6 X Diameter) as a Lateral Offset in FEET from Trunk Edge, for all New Construction, to Maintain "Structural Stability" of Root Plate	Notes & Recommendations
71	Est. 24	0.0	0.0	Est. 24	X		X	coast live oak	*Quercus agrifolia*	40/30	75/55	63% Good	Mod	West					Fence embedded in westmost stem is a structural stability issue.	BI fork of three mainstems between 3 and 5 feet above grade.			12.0	Bark inclusion type narrow forks noted between 3 and 5 feet above grade where three mainstems arise from the lower trunk bole. The westmost mainstem has property line chain link fence material embedded in the wood cross section. This condition is considered a structural stability issue of major significance, and is synonymous with "girdling" of a mainstem.
72	Est. 22	0.0	0.0	Est. 22	(Author recommends removal due to very poor overall condition)		X	coast live oak	*Quercus agrifolia*	35/25	25/25	25% Poor	Very Poor	Mod									11.0	The author typically recommends that trees in 25% overall condition rating or less are removed from the landscape due to limited safe and useful life expectancy.
73	Est. 23	0.0	0.0	Est. 23		X	X	coast live oak	*Quercus agrifolia*	40/40	75/70	73% Good	Good	Mod	North	North							11.5	Ivy is covering the lowermost 20 feet of trunk up to 20 feet above grade, and could literally kill the tree by blocking photosynthesis capability if it continues growth vertically. WLCA suggests killing the vines by cutting them at grade around the trunk.
74	Est. 22	0.0	0.0	Est. 22		X	X	coast live oak	*Quercus agrifolia*	50/50	80/70	75% Good	Mod to Good										11.0	This is a very important specimen of coast live oak, given its large mainstem diameter and very significant canopy dimensions of 50 feet height and 50 feet total spread diameter. As with a number of other native oak specimens in the narrow fenced off strip area shown on the WLCA tree map markup as yellow highlight, ivy has grown up over the trunk, and threatens to engulf the canopy and reduce or stop photosynthetic function to a very significant degree (the ivy could even kill the tree outright if it were to block all photosynthetic function). WLCA recommends cutting the ivy vines at grade elevation around the base of the oak mainstem, to kill the entire plant massing. The ivy will then simply fall off the tree over time as it dies. This is the simplest method of removing ivy vines that are engulfing trees.
75	22.0	0.0	0.0	Est. 22		X	X	Tasmanian blue gum	*Eucalyptus globulus*	90/20	60/60	60% Fair	Mod										11.0	This tree is essentially located on a neighboring property, though a small portion (roughly 2 horizontal inches of the trunk cross section) encroaches into the water tank lot area. Therefore, the tree can be considered to be jointly-owned by both the Town of Hillsborough and the neighboring property owner.
76	Est. 15	0.0	0.0	Est. 15		X	X	coast live oak	*Quercus agrifolia*	25/25	80/75	78% Good	Good										7.5	Tree located between #59 and #60. Tree noted on the 10/21/2020 civil survey (topo survey) as 12" tree.

NOTES:

1. Heights were measured with a Nikon Forestry Pro hypsometer. Canopies were paced off to determine spread diameter. Trunk diameters were measured with a forester's D-tape which converts actual circumference to an averaged diameter in inches and tenths of inches, at 4.5 feet above grade (trunk diameters of some multi-stem species were simply estimated).

2. Only trees measuring 4.0 inches diameter or greater, when measured at 4.5 feet above grade, and located within the existing lot lines of the water tank property, were including in this study. Trees that were surrounded with poison oak were in some cases not accessible. Trunk diameters for those trees were estimated visually.

3. Trees were tagged by WLCA using racetrack-shaped tags affixed to each tree mainstem between 4 and 6 feet above grade. The tag run for this project was "1" through "76". Trees in the inaccessible strip noted on the WLCA tree map markup as yellow highlighting were not tagged (mainstem diameters for those trees were estimated visually).

4. Critical Root Zone for multi-stem trees was approximated using an estimated lower trunk diameter at 1 to 2 feet elevation above grade (i.e. below the fork where the multiple mainstems or "trunks" originate).

Appendix G:

Noise

March 25, 2021

Ms. Lori Trottier, Vice President of Planning & Development
INFRASTRUCTURE ENGINEERING CORPORATION
300 Spectrum Center Drive, Suite 400
Irvine, California 92618

RE: Darrell Water Tank Replacement Project Noise Technical Memorandum
Project No. 19296

Dear Ms. Trottier:

INTRODUCTION

The firm of Ganddini Group, Inc. is pleased to provide this noise technical memorandum for the proposed Darrell Water Tank Replacement project. The Project Site is located east of the Junipero Serra Freeway and west of Darrell Road between Pullman Road and Ralston Avenue in the Town of Hillsborough, California. A vicinity map showing the project location is provided on Figure 1.

PROJECT DESCRIPTION

The Project Site is currently developed with three existing steel tanks. Tank 1 and Tank 2 each have a 500 million gallon capacity (60 feet diameter and 24 feet height) and Tank 3 has a one million gallon capacity (85 feet diameter and 24 feet height). They were built in 1950 and 1958, respectively.

The proposed project involves demolition of two of the existing (steel tanks) Tank 1 and Tank 2; construction of a single American Water Works Association (AWWA) D110 Type- I pre-stressed concert tank; and installation of ancillary piping, electrical and control systems necessary to integrate the new tank into the existing water network system. The proposed water storage tank shall be designed to hold two million gallons (2 MG) of potable water. It will match the height of the existing Tank 3 that is to remain (24 feet). The new tank and Tank 3 will be used in conjunction with one another or independently. The proposed Project Site plan is illustrated on Figure 2.

Construction of the proposed project is anticipated to begin late 2021 and end in early 2023. Construction will occur in five phases: 1) Mobilization; 2) Demolition; 3) Site Preparation; 4) Tank Construction and 5) Final Site Work and the following activities will occur during each phase:

- Mobilization: Groom temporary access road at Skyline, install construction trailer (one week).
- Demolition: Remove existing tanks and foundations for two steel tanks, approximately 100 cubic yards of material, from the site and cut valves (one month). Site Preparation: Perform tree removals, remedial earthwork and soils stabilization, install column foundation supports, construct retaining walls, install underground inlet/outlet piping and install concrete at grade foundations for tanks. Earthwork quantities are estimated at approximately 3,850 cubic yards. Site soils will be mixed on site with lime and cement; import of base material is estimated at 1,000 cubic yards. Over excavation for tank foundations will be 3 feet to 5 feet below existing ground surface (2 months).

- Tank Construction: Build new tank, concrete work, construction stairs and appurtenances (12 months).
- Final Site Work: Install Pipe and valves, landscaping/trees, paving, clean up, restore site, replace fencing (2 weeks).

Construction Hours

Activity on the Project Site will occur during work hours between 8:00 AM to 5:00 PM, Monday through Friday. Arrival, tailgate training and plan for the day will occur in the morning at approximately 8:00 AM. The Project Site will be cleaned up and locked up by 5:00 PM. Deliveries will occur between 8:00 AM and 4:00 PM. The contractor's crew will be at the site between 8:00 AM and 5:00 PM. The haul route would be via Skyline Boulevard to Hayne Road at the I-280 ramps. No construction vehicle traffic would access the project site using Darrel Road.

Construction Equipment

For purposes of this noise impact analysis, Phase 4 (Tank Construction) and Phase 5 (Final Site Work) is combined into the same final phase. The following types and quantities of equipment will be in use at the Project Site but not limited to:

- Mobilization: Field office trailer, backhoe for potholing, two service trucks.
- Demolition: Cat 235 Excavator with demolition hammer attachment, Front End Loader, Two 15 cubic-yard dump trucks, two service trucks, crane, two chain saws, stump grinder. There will be not more than 1-2 truck trips daily during demolition with not more than 70 total truck trips during demolition.
- Grading: Pug Mill Mixer, Bulldozer, Front End Loader Cat 235 Excavator, two service trucks and haulers. This phase will include up to 50 truck trips using haulers to import 1,000 cubic yards of base material for soils stabilization.
- Tank Construction: Crane, Cat 235 Excavator, up to 5 Concrete Trucks per day maximum over a three-month duration, two service trucks. Concrete delivery for tank and vaults will be approximately 655 cubic yards with an estimated 130 to 140 truck trips occurring during the 12-month construction period.

EXISTING NOISE ENVIRONMENT

Ambient Noise Measurements

Hillsborough is generally a quiet, primarily residential community. However, there are several noise generators that impact Hillsborough residents, including vehicular noise from Interstate 280, major roadways and aircraft noise from the San Francisco International Airport (SFO). While a portion of the Town is within the San Carlos Airport's Area of Influence Boundary A, as discussed in the General Plan Circulation Element, noise from aircraft operations at this airport does not affect Hillsborough (Town of Hillsborough 2005).

In order to document existing noise levels in the project area, an American National Standards Institute (ANSI Section SI4 1979, Type 1) Larson Davis model LxT sound level meter was used to take two (2) 10-minute daytime noise measurements between 9:14 AM and 9:48 AM on October 7, 2020 and one (1) long-term 24-hour noise measurement from October 7, 2020 to October 8, 2020. As shown on Figure 3, the noise measurements were taken near the single-family residential uses located northeast (STNM1), east and southeast (STNM2 and LTNM1) of the Project Site.

Table 1 provides a summary of the short-term ambient noise data and Table 2 provides hourly interval ambient noise data from the long-term noise measurement. Short-term ambient noise levels were measured between 54.9 and 55 dBA L_{eq}. Long-term hourly noise measurement ambient noise levels ranged from 41.5 to 58 dBA L_{eq}. The dominant noise sources were from vehicles traveling along Interstate 280 and aircraft noise associated with San Francisco International Airport. Field worksheets and noise measurement output data are included in Appendix A.

APPLICABLE REGULATION

Town of Hillsborough General Plan

As stated in the Hillsborough General Plan Noise Element, the Land Use and Noise Compatibility Table (Table 3) is to be used to assist in planning and development decisions. The Noise Element also includes the following goals and policies that are applicable to the proposed project.

Goal N-1 Minimize noise levels within neighborhoods so that residents may enjoy the benefits normally associated with residential communities.

Policy N-1.2 Eliminate excessive noise within the community to the extent feasible. When noise cannot be eliminated completely, regulate noise generation to minimize impacts.

Policy N-1.3 Continue to enforce local and State noise regulations to minimize noise impacts associated with construction and public and private activities.

Town of Hillsborough Municipal Code

Chapter 8.32 of the City's Municipal Code establishes base ambient noise levels and maximum noise level limits for stationary noise sources as presented below.

Section 8.32.020 Definitions.

The Town's Ordinance defines a "Noise level" as the maximum continuous sound level or repetitive peak sound level, produced by a source or group of sources as measured with a sound level meter.

Section 8.32.030 Normal noise and discretionary noise.

"Normal noise" consists of the noises of vehicular traffic, household appliances usually used within the living areas of a residential dwelling and similar articles used indoors, human voices, domestic pets, wildlife, weather and other forces of nature, and the other inevitable and ordinary noises of living. "Discretionary noise" consists of the noises of construction heavy machinery, gas-powered gardening devices, electric-powered gardening devices, residential power equipment, and other powered outdoor equipment, and the noises of other activities and devices not included in normal noise.

Section 8.32.040 When Allowed.

A. Normal noise shall be allowed at any time all seven days of the week.

B. Discretionary noise shall be allowed only as follows (or as allowed under the exceptions set forth in Section 8.32.050):

1. Monday through Friday (except holidays observed by the town, meaning that the city clerk's office is closed for observance of the weekday holiday):

    a. Between 8:00 AM and 5:00 PM anyone may perform construction, alteration, demolition or repair, and anyone may operate residential power equipment provided that the noise level from all sources combined (whatever the sources are), as measured twenty-five feet outside the property line, shall not exceed 100 hundred dBA. This standard is the "property plane standard."

    b. Between 5:00 PM and 8:00 PM property owners and residents (and family members of either) may operate (on the owner's or resident's property) residential power equipment if the property plane standard is met.

    c. Between 9:00 AM and 5:00 PM anyone may operate gas-powered or electric-powered gardening devices that do not produce a total combined noise level in excess of 70 dBA when measured from a distance of 25 feet from the loudest operating motor.

2. Saturday:

    a. No leaf blowers at any time;

    b. Between 10:00 AM and 5:00 PM owners and residents (and family members of either) may operate (on the owner's or resident's property) devices, equipment and machines, other than leaf blowers, that do not produce, singly or in combination, a total combined noise level of more than 70 dBA outside of the property plane.

    Anyone may perform construction, alteration, demolition or repair pursuant to a valid building or other applicable permit issued by the town so long as the activities do not produce, singly or in combination, a total combined noise level of more than 70 dBA outside of the property plane; provided, however, that the building permit or other applicable permit may contain restrictions beyond those in this section, in which case, such greater restrictions shall control.

3. Sunday and weekday holiday: no discretionary noise of any kind.

ANALYSIS AND FINDINGS

Construction Noise (On-Site Sources)

Construction noise associated with the proposed project was calculated utilizing methodology presented in the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) together with several key construction parameters including: distance to each sensitive receiver, equipment usage, percent usage factor, and baseline parameters for the project site. Construction noise levels were calculated for each phase.

Existing single-family detached residential dwelling units to the north, south and east may be affected by demolition and construction noise. Construction noise will vary depending on the construction process, type of equipment involved, location of the construction site with respect to sensitive receptors, the schedule proposed to carry out each task (e.g., hours and days of the week) and the duration of the construction work.

The construction phases for the proposed project are anticipated to include mobilization, demolition, tank installation and final site work. A summary of noise level data for a variety of construction equipment compiled by the U.S. Department of Transportation is presented in Table 4. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings.

Section 8.32.040 of the Town's Municipal Code states that construction activities are permitted Monday through Friday between 8:00 AM and 5:00 PM provided that the noise level as measured twenty-five feet outside the property line does not exceed 100 dBA. In addition, if a building or other applicable permit is issued by the town construction activities are also permitted on Saturday between 10:00 AM and 5:00 PM so long as the activities do not produce a noise level of more than 70 dBA outside twenty-five feet outside the property line.

Point noise sources increase by 6 dB with each halving of distance between the noise source and the receptor. Maximum noise levels of all of the proposed equipment at a distance of 25 feet from the property line ranging between 80 and 96 dBA Lmax are presented in Table 4. A mounted impact hammer is the loudest piece of equipment and could result in a 96 dBA Lmax event at a distance of 25 feet. The next loudest single piece of equipment could be a chain saw or a stump grinder, at 90 dBA Lmax. Use of the proposed construction equipment would not exceed the Town's criteria of 100 dBA Lmax at a distance of 25 feet from the property line. Demolition and Construction noise impacts would be less than significant.

The following measures can be implemented to minimize construction noise:

1. The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment.

2. During all Project Site excavation and grading on-site, construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturer standards.

3. The contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the Project Site.

4. Equipment shall be shut off and not left to idle when not in use.

5. The contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the Project Site during all project construction.

6. Jackhammers, pneumatic equipment and all other portable stationary noise sources shall be shielded and noise shall be directed away from sensitive receptors.

7. The project proponent shall mandate that the construction contractor prohibit the use of music or sound amplification on the Project Site during construction.

8. If additional sound attenuation is desired, temporary noise barriers can be erected. To be effective, the barrier must block the line of sight between the equipment noise source and the receiver. The barriers should be solid without and openings or cracks, extending completely to the ground surface.

Construction Noise (Offsite Sources)

Vehicle and truck trips associated with project construction will generate noise in the project area and along the designated truck route. The construction haul route will be via Skyline Boulevard to Hayne Road at the I-280 ramps. No construction vehicles will access the site via Darrel Road. Per the Traffic Assessment prepared for the project (Ganddini 2021), project demolition and/or construction phases would not require more than 12 construction crew members (24 average daily trips [ADTs]). Phase 4 would generate the most truck trips (14 ADTs).

Noise levels associated with project generated vehicular traffic were modeled utilizing a computer program that replicates the FHWA Traffic Noise Prediction Model FHWA-RD-77-108. The FHWA Traffic Noise Prediction Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emissions Levels.[1] Adjustments are then made to the REMEL to account for: total average daily traffic volumes, roadway classification (i.e., collector, secondary, major or arterial), the roadway active width (i.e., distance between the center of the outermost travel lanes on each side of the roadway), travel speed, truck mix (i.e., percentage of automobiles, medium trucks, and heavy trucks in the traffic volume), roadway grade and site conditions (hard or soft ground surface relating to the absorption of the ground, pavement, or landscaping). Research conducted by Caltrans identifies that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model.[2] Therefore, surfaces adjacent to all modeled roadways were assumed to have a "soft site". Possible reductions in noise levels due to intervening topography and buildings were not accounted for in the analysis. FHWA traffic worksheets are provided in Appendix B.

Modeled project construction traffic would result in noise levels of up to 46.5 dBA L_{eq} (peak hour). The quietest measured daytime noise measurement in the project vicinity was 54.0 (Table 2). When added together, project peak hour traffic would result in a 1 dB increase in ambient noise levels in the project area. The low traffic volumes associated with project demolition and construction activities are not anticipated to result readily noticeable increases in ambient noise levels. This impact would be less than significant. No mitigation is required.

CONCLUSION

The proposed project would not exceed the Town of Hillsborough's construction noise thresholds as identified in Section 8.32.040 of the Town's Municipal Code. Therefore, this technical memorandum found that noise impacts are considered to be less than significant. Although measures to reduce construction noise are provided, no mitigation is required.

[1] California Department of Transportation Environmental Program, Office of Environmental Engineering. Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction. September 1995. TAN 95-03.

[2] California Department of Transportation. Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report. June 1995. FHWA/CA/TL-95/23.

Ms. Lori Trottier, Vice President of Planning & Development
INFRASTRUCTURE ENGINEERING CORPORATION
March 25, 2021

It has been a pleasure to assist you on this project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Respectfully submitted,
GANDDINI GROUP, INC.

Roma Stromberg, INCE/MS
Senior Noise Analyst

Table 1
Short-Term Noise Measurement Summary (dBA)

Daytime Measurements[1,2]								
Site Location	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
STNM1	9:38 AM	55.0	60.0	50.7	57.8	56.4	55.6	54.7
STNM2	9:14 AM	54.9	58.0	50.3	57.3	56.8	55.8	54.8

Notes:

(1) See Figure 3 for noise measurement locations. Each noise measurement was performed over a 10-minute duration.

(2) Noise measurements performed on October 7, 2020.

Table 2
Long-Term Noise Measurement Summary (dBA)

24-Hour Ambient Noise[1,2]								
Hourly Measurements	Time Started	Leq	Lmax	Lmin	L(2)	L(8)	L(25)	L(50)
Overall Summary	11:00 AM	54.3	73.9	31.7	58.9	57.5	55.8	53.8
1	11:00 AM	54.4	69.2	46.9	57.2	56.0	55.0	54.1
2	12:00 PM	54.2	60.1	49.4	56.9	55.9	54.9	54.0
3	1:00 PM	54.0	58.5	47.8	56.5	55.5	54.7	53.9
4	2:00 PM	54.9	68.1	48.8	57.6	56.5	55.5	54.6
5	3:00 PM	56.1	65.1	52.0	58.4	57.5	56.7	56.0
6	4:00 PM	57.7	73.9	52.1	59.9	58.8	57.9	57.1
7	5:00 PM	57.8	61.5	52.9	60.0	59.4	58.5	57.7
8	6:00 PM	56.3	63.1	50.9	58.8	58.0	57.1	56.2
9	7:00 PM	55.1	67.6	49.9	58.0	56.8	55.7	54.7
10	8:00 PM	53.3	63.6	44.8	56.8	55.6	54.2	53.0
11	9:00 PM	52.3	61.7	43.6	55.8	54.6	53.1	51.9
12	10:00 PM	50.7	58.0	39.6	54.8	53.4	51.8	50.2
13	11:00 PM	48.7	57.6	36.9	53.4	51.8	49.8	47.9
14	12:00 AM	47.1	55.6	34.3	52.7	50.6	48.3	46.0
15	1:00 AM	44.5	59.2	32.7	51.2	48.4	45.5	41.9
16	2:00 AM	41.5	53.0	31.7	49.0	46.3	42.1	37.0
17	3:00 AM	43.0	54.2	31.7	50.5	47.9	43.8	39.4
18	4:00 AM	47.8	57.8	32.8	54.0	51.6	48.9	46.3
19	5:00 AM	52.1	63.4	36.7	56.3	54.9	53.3	51.4
20	6:00 AM	54.3	62.5	44.5	57.5	56.5	55.3	54.1
21	7:00 AM	56.4	63.8	50.1	59.3	58.2	57.2	56.2
22	8:00 AM	58.0	70.7	51.1	64.6	60.7	57.8	56.6
23	9:00 AM	56.1	68.1	50.4	58.8	57.7	56.7	55.8
24	10:00 AM	55.4	62.0	48.0	57.9	57.1	56.2	55.2

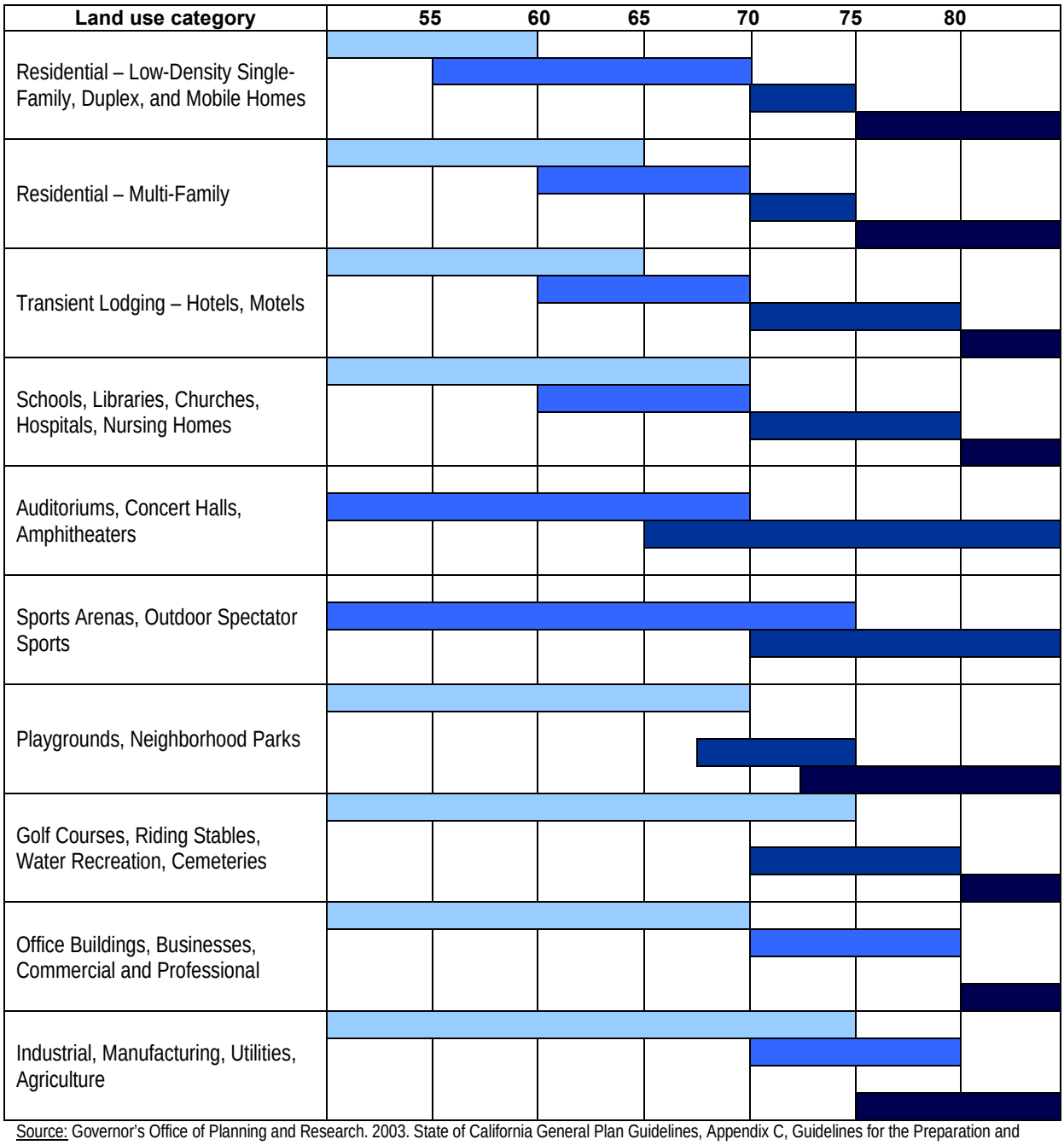
Notes:

(1) See Figure 3 for noise measurement locations. Noise measurement was performed over a 24-hour duration.

(2) Noise measurement performed from October 7, 2020 to October 8, 2020.

Table 3

Land Use and Noise Compatibility (dBA CNEL or L_{dn})



Source: Governor's Office of Planning and Research. 2003. State of California General Plan Guidelines, Appendix C, Guidelines for the Preparation and Content of the Noise Element of the General Plan. October 2017

Key:

Normally Acceptable: Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor environment will seem noisy.

Normally Unacceptable: New construction and development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise insulation features included in the design. Outdoor areas must be shielded.

Clearly Unacceptable: New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

Table 4 (1 of 2)
CA/T Equipment Noise Emission and Acoustical Usage Factor

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	Calculated Noise Measurements @ 25 ft (dBA, slow)[4]
All Other Equipment > 5 HP	No	50	85	-N/A-	79
Auger Drill Rig	No	20	85	84	78
Backhoe	No	40	80	78	72
Bar Bender	No	20	80	-N/A-	74
Blasting	Yes	-N/A-	94	-N/A-	88
Boring Jack Power Unit	No	50	80	83	77
Chain Saw	No	20	85	84	78
Clam Shovel (dropping)	Yes	20	93	87	81
Compactor (ground)	No	20	80	83	77
Compressor (air)	No	40	80	78	72
Concrete Batch Plant	No	15	83	-N/A-	77
Concrete Mixer Truck	No	40	85	79	73
Concrete Pump Truck	No	20	82	81	75
Concrete Saw	No	20	90	90	84
Crane	No	16	85	81	75
Dozer	No	40	85	82	76
Drill Rig Truck	No	20	84	79	73
Drum Mixer	No	50	80	80	74
Dump Truck	No	40	84	76	70
Excavator	No	40	85	81	75
Flat Bed Truck	No	40	84	74	68
Forklift[2,3]	No	50	n/a	61	55
Front End Loader	No	40	80	79	73
Generator	No	50	82	81	75
Generator (<25KVA, VMS signs)	No	50	70	73	67
Gradall	No	40	85	83	77
Grader	No	40	85	-N/A-	79
Grapple (on backhoe)	No	40	85	87	81
Horizontal Boring Hydr. Jack	No	25	80	82	76
Hydra Break Ram	Yes	10	90	-N/A-	84
Impact Pile Driver	Yes	20	95	101	95
Jackhammer	Yes	20	85	89	83
Man Lift	No	20	85	75	69
Mounted Impact hammer (hoe ram)	Yes	20	90	90	84
Pavement Scarafier	No	20	85	90	84
Paver	No	50	85	77	71
Pickup Truck	No	50	85	77	71
Paving Equipment	No	50	85	77	71
Pneumatic Tools	No	50	85	85	79

Table 4 (2 of 2)
CA/T Equipment Noise Emission and Acoustical Usage Factor

Equipment Description	Impact Device?	Acoustical Use Factor (%)	Spec. Lmax @ 50ft (dBA, slow)	Actual Measured Lmax @ 50ft (dBA, slow)	Calculated Noise Measurements @ 25 ft (dBA, slow)[4]
Pumps	No	50	77	81	75
Refrigerator Unit	No	100	82	73	67
Rivit Buster/chipping gun	Yes	20	85	79	73
Rock Drill	No	20	85	81	75
Roller	No	20	85	80	74
Sand Blasting (Single Nozzle)	No	20	85	96	90
Scraper	No	40	85	84	78
Shears (on backhoe)	No	40	85	96	90
Slurry Plant	No	100	78	78	72
Slurry Trenching Machine	No	50	82	80	74
Soil Mix Drill Rig	No	50	80	-N/A-	74
Tractor	No	40	84	-N/A-	78
Vacuum Excavator (Vac-truck)	No	40	85	85	79
Vacuum Street Sweeper	No	10	80	82	76
Ventilation Fan	No	100	85	79	73
Vibrating Hopper	No	50	85	87	81
Vibratory Concrete Mixer	No	20	80	80	74
Vibratory Pile Driver	No	20	95	101	95
Warning Horn	No	5	85	83	77
Welder/Torch	No	40	73	74	68

Notes:

(1) Source: FHWA Roadway Construction Noise Model User's Guide January 2006.

(2) Warehouse & Forklift Noise Exposure - NoiseTesting.info Carl Stautins, November 4, 2014 http://www.noisetesting.info/blog/carl-strautins/page-3/

(3) Data provided Leq as measured at the operator. Sound Level at 50 feet is calculated using Inverse Square Law.

(4) The actual measured volume was utilized where available.

Figure 1
Project Location Map

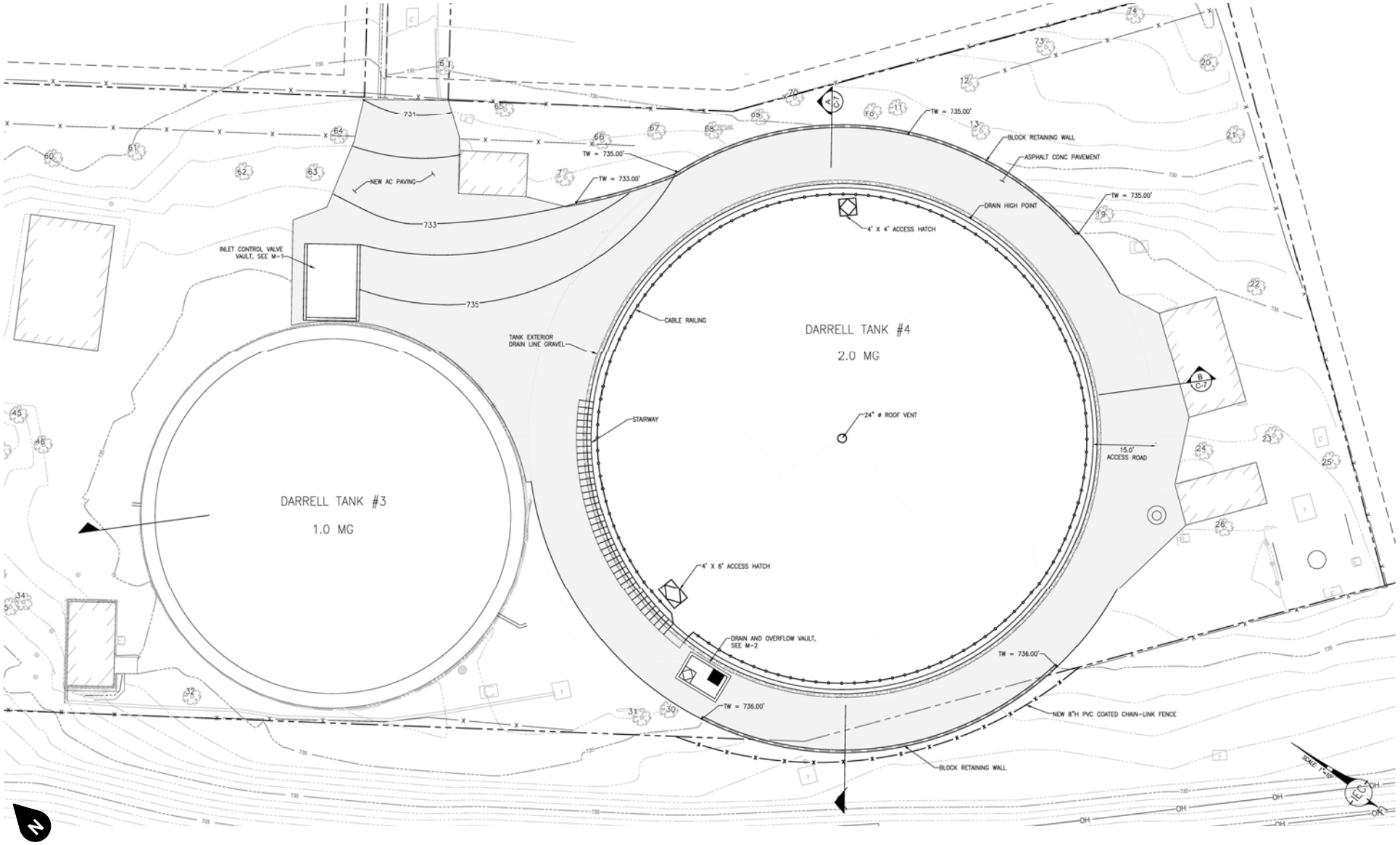


Figure 2
Site Plan

Legend

NM 1 Noise Measurement Location

ST NM Short-Term Noise Measurement

LT NM Long-Term Noise Measurement

Figure 3
Noise Measurement Location Map

APPENDIX A

NOISE MEASUREMENT FIELD WORKSHEETS

Noise Measurement
Field Data

Project Name: Darrell Water Tank Replacement, City of Hillsborough **Date:** October 7, 2020

Project #: JN 19296

Noise Measurement #: STNM1 Run Time: 10 minutes (1 x 10 minutes) **Technician:** Ian Gallagher

Nearest Address or Cross Street: 555 Darrell Road, Hillsborough, California

Site Description (Type of Existing Land Use and any other notable features): Project site: Site is occupied by three water towers and bldgs with cell phone tower/equipment and is surrounded to north/east/south by residential uses and to the west by Skyline Blvd & I-280. Noise Measurement Site: Trees surrounding, small building on site to west, water tanks to southwest with I-280 further to west, and residential uses to east and southwest.

Weather: Filtered sun, patchy fog, 50% cloud. **Settings:** SLOW FAST

Temperature: 55 deg F **Wind:** 5 to10 mph **Humidity:** 90% **Terrain:** Flat

Start Time: 9:14 AM **End Time:** 9:24 AM **Run Time:**

Leq: 54.9 dB **Primary Noise Source:** Traffic noise from many vehicles traveling up & down the Junipero Serra Fwy 280.

Lmax 58 dB San Francisco International Airport ~4.5 miles N of site.

L2 57.3 dB **Secondary Noise Sources:** Overhead jet aircraft, bird song, gentle breeze rustling leaves and vegetation, slight

L8 56.8 dB residential ambiance. No noise sources located on site, other than birds and leaf rustl

L25 55.8 dB

L50 54.8 dB

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2733
FACTORY CALIBRATION DATE:	4/9/2020	**FACTORY CALIBRATION DATE:**	4/2/2020
FIELD CALIBRATION DATE:	10/7/2020		

Noise Measurement
Field Data

PHOTOS:

STNM1 looking NE across chain link fence of site perimeter towards residence 555 Darrell Road, Hillsborough, California.

STNM1 looking SW past vehicle, green storage shed, towards northern most and largest water tower on site.

Summary		
File Name on Meter	LxT_Data.076	
File Name on PC	SLM_0003099_LxT_Data_076.00.ldbin	
Serial Number	0003099	
Model	SoundTrack LxT®	
Firmware Version	2.402	
User	Ian Edward Gallagher	
Location	STNM1 JN 19296 Darrell Rd Water Towers 37°33'8.89"N 122°22'32.83"W	
Job Description	10 minute noise measurement (1 x 10 minutes)	
Measurement		
Start	2020-10-07 09:14:40	
Stop	2020-10-07 09:24:40	
Duration	00:10:00.0	
Run Time	00:10:00.0	
Pause	00:00:00.0	
Pre Calibration	2020-10-07 09:03:04	
Post Calibration	None	
Overall Settings		
RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Low	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	Z Weighting	
OBA Max Spectrum	Bin Max	
Overload	124.1 dB	
Results		
LA_{eq}	54.9	
LAE	82.6	
EA	20.439 µPa²h	
EA8	981.083 µPa²h	
EA40	4.905 mPa²h	
$LZ_{peak\ (max)}$	2020-10-07 09:19:22	94.2 dB
LAS_{max}	2020-10-07 09:19:25	58.0 dB
LAS_{min}	2020-10-07 09:23:40	50.3 dB
SEA	-99.94 dB	

		Statistics	
LC_{eq}	69.7 dB	**LAI2.00**	57.3 dB
LA_{eq}	54.9 dB	**LAI8.00**	56.8 dB
LC_{eq} - LA_{eq}	14.8 dB	**LAI25.00**	55.8 dB
LAI_{eq}	55.4 dB	**LAI50.00**	54.8 dB
LA_{eq}	54.9 dB	**LAI66.60**	53.9 dB
LAI_{eq} - LA_{eq}	0.6 dB	**LAI90.00**	52.4 dB
# Overloads	0		

Noise Measurement
Field Data

Project Name: Darrell Water Tank Replacement, City of Hillsborough **Date:** October 7, 2020

Project #: JN 19296

Noise Measurement #: STNM2 Run Time: 10 minutes (1 x 10 minutes) **Technician:** Ian Gallagher

Nearest Address or Cross Street: 545 Darrell Road, Hillsborough, California

Site Description (Type of Existing Land Use and any other notable features): Project site: Site is occupied by three water towers and bldgs with cell phone tower/equipment and is surrounded to north/east/south by residential uses and to the west by Skyline Blvd & I-280. Noise Measurement Site: Trees surrounding, water tanks to west with I-280 further west, and residential uses to east and southeast.

Weather: Filtered sun, patchy fog, 50% cloud. **Settings:** SLOW FAST

Temperature: 55 deg F **Wind:** 5 to10 mph **Humidity:** 90% **Terrain:** Flat

Start Time: 9:38 AM **End Time:** 9:48 AM **Run Time:**

Leq: 55 dB

Lmax 60 dB

L2 57.8 dB

L8 56.4 dB

L25 55.6 dB

L50 54.7 dB

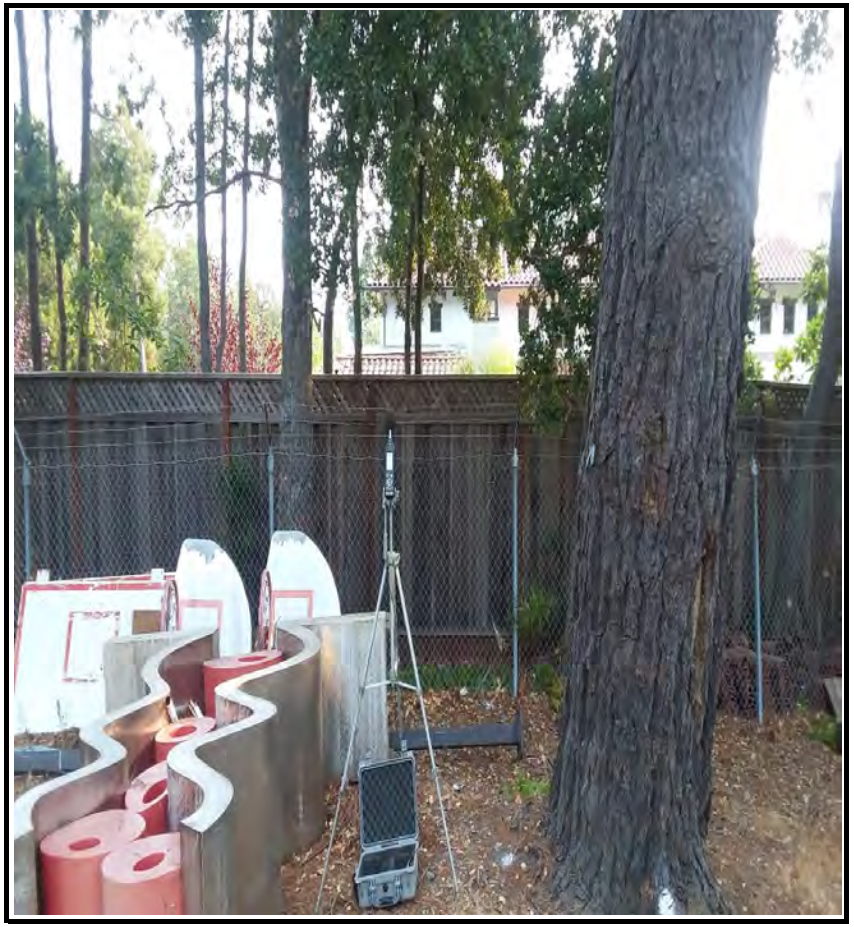
Primary Noise Source: Traffic noise from many vehicles traveling up & down the Junipero Serra Fwy 280. San Francisco International Airport ~4.5 miles north of site.

Secondary Noise Sources: Overhead jet aircraft, bird song, gentle breeze rustling leaves and vegetation, slight residential ambiance. No noise sources located on site, other than birds and leaf rustl

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2733
FACTORY CALIBRATION DATE:	4/9/2020	**FACTORY CALIBRATION DATE:**	4/2/2020
FIELD CALIBRATION DATE:	10/7/2020		

Noise Measurement
Field Data

PHOTOS:



STNM2 looking NE across chain link fence at perimeter of site towards residence 545 Darrell Road, Hillsborough California.

STNM2 looking SW across site towards middle water tower, 280 Freeway behind water tower, immediately SW of site down at bottom of gradient.

Summary			
File Name on Meter	LxT_Data.077		
File Name on PC	SLM_0003099_LxT_Data_077.00.ldbin		
Serial Number	0003099		
Model	SoundTrack LxT®		
Firmware Version	2.402		
User	Ian Edward Gallagher		
Location	STNM2 JN 19296 Darrell Rd Water Towers 37°33'7.90"N 122°22'31.92"W		
Job Description	10 minute noise measurement (1 x 10 minutes)		
Measurement			
Start	2020-10-07 09:38:36		
Stop	2020-10-07 09:48:36		
Duration	00:10:00.0		
Run Time	00:10:00.0		
Pause	00:00:00.0		
Pre Calibration	2020-10-07 09:34:21		
Post Calibration	None		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamp	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Low		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	Z Weighting		
OBA Max Spectrum	Bin Max		
Overload	124.6 dB		
Results			
LA_{eq}	55.0		
LAE	82.7		
EA	20.841 µPa²h		
EA8	1.000 mPa²h		
EA40	5.002 mPa²h		
$LZ_{peak\ (max)}$	2020-10-07 09:45:58	93.1 dB	
LAS_{max}	2020-10-07 09:45:51	60.0 dB	
LAS_{min}	2020-10-07 09:48:23	50.7 dB	
SEA	-99.94 dB		
		Statistics	
LC_{eq}	64.1 dB	**LAI2.00**	57.8 dB
LA_{eq}	55.0 dB	**LAI8.00**	56.4 dB
LC_{eq} - LA_{eq}	9.2 dB	**LAI25.00**	55.6 dB
LAI_{eq}	55.5 dB	**LAI50.00**	54.7 dB
LA_{eq}	55.0 dB	**LAI66.60**	54.2 dB
LAI_{eq} - LA_{eq}	0.5 dB	**LAI90.00**	52.9 dB
# Overloads	0		

Noise Measurement
Field Data

Project Name: Darrell Water Tank Replacement, City of Hillsborough **Date:** October 7 to 8, 2020

Project #: JN 19296

Noise Measurement #: LTNM1 Run Time: 24 hourss (24 x 1 hours) **Technician:** Ian Gallagher

Nearest Address or Cross Street: 545 Darrell Road, Hillsborough, California

Site Description (Type of Existing Land Use and any other notable features): Project site: Site is occupied by three water towers and bldgs with cell phone tower/equipment and is surrounded to north/east/south by residential uses and to the west by Skyline Blvd & I-280. Noise Measurement Site: Trees surrounding, water tanks to west with I-280 further west, and residential uses to east and southeast.

Weather: Filtered sun by day, patchy fog, 50% cloud 10% precipitation. **Settings:** SLOW FAST

Temperature: 65-54 deg F **Wind:** 0 to10 mph **Humidity:** 77-90% **Terrain:** Flat

Start Time: 11:00AM **End Time:** 11:00 AM **Run Time:**

Leq: 54.3 dB

Lmax 73.9 dB

L2 58.9 dB

L8 57.5 dB

L25 55.8 dB

L50 53.8 dB

Primary Noise Source: Traffic noise from many vehicles traveling up & down Junipero Serra Fwy (I-280). San Francisco International Airport ~4.5 miles north of site.

Secondary Noise Sources: Overhead jet aircraft, bird song, gentle breeze rustling leaves and vegetation, slight residential ambiance. No noise sources located on site, other than birds and leaf rustl

NOISE METER:	SoundTrack LXT Class 1	**CALIBRATOR:**	Larson Davis CAL250
MAKE:	Larson Davis	**MAKE:**	Larson Davis
MODEL:	LXT1	**MODEL:**	Cal 250
SERIAL NUMBER:	3099	**SERIAL NUMBER:**	2733
FACTORY CALIBRATION DATE:	4/9/2020	**FACTORY CALIBRATION DATE:**	4/2/2020
FIELD CALIBRATION DATE:	10/7/2020		

Noise Measurement
Field Data

PHOTOS:

LTNM1 looking NE towards residence 545 Darrell Road

LTNM1 looking SW across site towards middle water tower.

Summary			
File Name on Meter	LxT_Data.078		
File Name on PC	SLM_0003099_LxT_Data_078.00.ldbin		
Serial Number	0003099		
Model	SoundTrack LxT®		
Firmware Version	2.402		
User	Ian Edward Gallagher		
Location	LTNM1 JN 19296 Darrell Rd Water Towers 37°33'7.72"N 122°22'31.94"W		
Job Description	24 hour noise measurement (24 x 1 hours)		
Measurement			
Start	2020-10-07 11:00:00		
Stop	2020-10-08 11:00:00		
Duration	24:00:00.0		
Run Time	24:00:00.0		
Pause	00:00:00.0		
Pre Calibration	2020-10-07 10:24:51		
Post Calibration	None		
Overall Settings			
RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Linear		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	Bin Max		
Overload	124.8 dB		
Results			
LA_{eq}	54.3		
LAE	103.7		
EA	2.577 mPa^2h		
EA8	859.098 μPa^2h		
EA40	4.295 mPa^2h		
$LA_{peak\ (max)}$	2020-10-07 11:01:32	106.7 dB	
LAS_{max}	2020-10-07 16:33:38	73.9 dB	
LAS_{min}	2020-10-08 02:37:46	31.7 dB	
SEA	-99.94 dB		

		Statistics	
LC_{eq}	63.2 dB	**LAI2.00**	58.9 dB
LA_{eq}	54.3 dB	**LAI8.00**	57.5 dB
LC_{eq} - LA_{eq}	8.9 dB	**LAI25.00**	55.8 dB
LAI_{eq}	55.3 dB	**LAI50.00**	53.8 dB
LA_{eq}	54.3 dB	**LAI90.00**	42.1 dB
LAI_{eq} - LA_{eq}	1.0 dB	**LAI99.00**	33.6 dB
# Overloads	0		

Record #	Date	Time	Run Duration	Run Time	Pause	LAeq	LASmin	LASmin Time	LASmax	LASmax Time	LAS2.00	LAS8.00	LAS25.00	LAS50.00	LAS90.00	LAS99.00
1	2020-10-07	11:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.4	46.9	11:46:22	69.2	11:01:32	57.2	56.0	55.0	54.1	52.2	49.7
2	2020-10-07	12:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.2	49.4	12:30:37	60.1	12:49:36	56.9	55.9	54.9	54.0	52.2	50.6
3	2020-10-07	13:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.0	47.8	13:56:32	58.5	13:29:15	56.5	55.5	54.7	53.9	52.0	50.2
4	2020-10-07	14:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.9	48.8	14:07:15	68.1	14:46:39	57.6	56.5	55.5	54.6	52.6	50.8
5	2020-10-07	15:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.1	52.0	15:43:34	65.1	15:11:54	58.4	57.5	56.7	56.0	54.3	53.1
6	2020-10-07	16:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.7	52.1	16:27:11	73.9	16:33:38	59.9	58.8	57.9	57.1	55.3	53.8
7	2020-10-07	17:00:00	01:00:00.0	01:00:00.0	00:00:00.0	57.8	52.9	17:08:50	61.5	17:35:57	60.0	59.4	58.5	57.7	55.8	54.4
8	2020-10-07	18:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.3	50.9	18:47:18	63.1	18:46:18	58.8	58.0	57.1	56.2	54.1	52.0
9	2020-10-07	19:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.1	49.9	19:05:19	67.6	19:56:15	58.0	56.8	55.7	54.7	52.6	50.8
10	2020-10-07	20:00:00	01:00:00.0	01:00:00.0	00:00:00.0	53.3	44.8	20:36:43	63.6	20:27:53	56.8	55.6	54.2	53.0	50.0	47.3
11	2020-10-07	21:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.3	43.6	21:54:54	61.7	21:44:15	55.8	54.6	53.1	51.9	48.8	45.9
12	2020-10-07	22:00:00	01:00:00.0	01:00:00.0	00:00:00.0	50.7	39.6	22:53:23	58.0	22:18:37	54.8	53.4	51.8	50.2	46.4	43.6
13	2020-10-07	23:00:00	01:00:00.0	01:00:00.0	00:00:00.0	48.7	36.9	23:35:28	57.6	23:48:24	53.4	51.8	49.8	47.9	42.8	39.4
14	2020-10-08	00:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.1	34.3	00:42:05	55.6	00:29:39	52.7	50.6	48.3	46.0	40.3	36.1
15	2020-10-08	01:00:00	01:00:00.0	01:00:00.0	00:00:00.0	44.5	32.7	01:16:47	59.2	01:24:59	51.2	48.4	45.5	41.9	35.5	33.4
16	2020-10-08	02:00:00	01:00:00.0	01:00:00.0	00:00:00.0	41.5	31.7	02:37:46	53.0	02:09:47	49.0	46.3	42.1	37.0	33.3	32.2
17	2020-10-08	03:00:00	01:00:00.0	01:00:00.0	00:00:00.0	43.0	31.7	03:20:40	54.2	03:10:51	50.5	47.9	43.8	39.4	33.8	32.4
18	2020-10-08	04:00:00	01:00:00.0	01:00:00.0	00:00:00.0	47.8	32.8	04:01:40	57.8	04:55:45	54.0	51.6	48.9	46.3	39.4	33.9
19	2020-10-08	05:00:00	01:00:00.0	01:00:00.0	00:00:00.0	52.1	36.7	05:01:15	63.4	05:34:18	56.3	54.9	53.3	51.4	47.2	41.4
20	2020-10-08	06:00:00	01:00:00.0	01:00:00.0	00:00:00.0	54.3	44.5	06:10:14	62.5	06:12:00	57.5	56.5	55.3	54.1	51.2	48.2
21	2020-10-08	07:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.4	50.1	07:08:32	63.8	07:37:15	59.3	58.2	57.2	56.2	54.0	52.4
22	2020-10-08	08:00:00	01:00:00.0	01:00:00.0	00:00:00.0	58.0	51.1	08:15:51	70.7	08:43:38	64.6	60.7	57.8	56.6	54.6	52.8
23	2020-10-08	09:00:00	01:00:00.0	01:00:00.0	00:00:00.0	56.1	50.4	09:55:49	68.1	09:18:27	58.8	57.7	56.7	55.8	54.0	52.3
24	2020-10-08	10:00:00	01:00:00.0	01:00:00.0	00:00:00.0	55.4	48.0	10:01:05	62.0	10:31:30	57.9	57.1	56.2	55.2	53.4	50.9

APPENDIX B

PROJECT CONSTRUCTION GENERATED TRIPS FHWA WORKSHEETS

FHWA Traffic Noise Prediction Model FHWA-RD-77-108

Future Traffic Noise - Light Mix

	DAYTIME			EVENING			NIGHTTIME				
	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	AUTOS	M.TRUCKS	H.TRUCKS	ADT	38.00
										SPEED	25.00
										DISTANCE	40.00
INPUT PARAMETERS											
Vehicles per hour	1.51	0.00	0.55	1.11	0.00	0.25	0.28	0.00	0.74	% A	63.00
Speed in MPH	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	% MT	0.00
Left angle	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	-90.00	% HT	37.00
Right angle	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	LEFT	-90.00
										RIGHT	90.00
NOISE CALCULATIONS											
Reference levels	59.44	71.09	77.24	59.44	71.09	77.24	59.44	71.09	77.24	CNEL	53.89
ADJUSTMENTS										DAY LEQ	46.48
Flow	-2.50	-52.42	-6.85	-3.82	-59.89	-10.24	-9.83	-51.22	-5.60		
Distance	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	Day hour	0.00
Finite Roadway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Barrier	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Absorbtive?	no
Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Constant	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	-25.00	Use hour?	no
LEQ	32.84	-5.44	46.29	31.52	-12.91	42.89	25.51	-4.23	47.54	GRADE dB	0.00

DAY LEQ	46.48	EVENING LEQ	43.20	NIGHT LEQ	47.57	
CNEL	53.89					

Appendix H:

Traffic

March 12, 2021

Ms. Lori Trottier, Environmental Project Manager
INFRASTRUCTURE ENGINEERING CORPORATION
300 Spectrum Center Drive, Suite 400
Irvine, CA 92618

RE: Darrel Water Tank Replacement Project Traffic Assessment
Project No. 19296

Dear Ms. Trottier:

INTRODUCTION

Ganddini Group, Inc. is pleased to provide this traffic review for the proposed Darrel Water Tank Replacement Project in the Town of Hillsborough, California. This report represents the trip generation forecast for the construction activity, review the parking needs for the construction personnel, and review the haul routes, site access and circulation in the vicinity.

PROJECT DESCRIPTION

The project site is located east of Skyline Boulevard, west of Darrel Road, and approximately 1,800 feet north of Hayne Road in the Town of Hillsborough. The proposed project involves the demolition of two existing steel tanks and the construction of a single pre-stressed concert tank and ancillary piping, electrical, and control systems. The proposed water storage tank shall hold two million gallons of potable water and shall match the height of an existing third tank such that both tanks can be used in conjunction with one another or independently. Appendix A shows the project access plan and other project design plans. The main vehicular access for the site is located on Skyline Boulevard approximately 500 feet south of water tanks where there is an existing gate with a dirt road leading to the site. The second vehicular access is located on Darrel Road where there is an existing gate with a paved path along the two residential property lines for 545 and 555 Darrel Road.

CONSTRUCTION ACTIVITY

Construction Schedule

Construction for the Project is anticipated to begin late 2021 and end in early 2023. Construction will occur in five phases: 1) Mobilization; 2) Demolition; 3) Site Preparation; 4) Tank Construction and 5) Final Site Work and the following activities will occur during each phase:

- Mobilization: Groom temporary access road at Skyline, install construction trailer (one week).
- Demolition: Remove existing tanks and foundations for two steel tanks, approximately 100 cubic yards of material, from the site and cut valves (one month).
- Site Preparation: Perform tree removals, remedial earthwork and soils stabilization, install column foundation supports, construct retaining walls, install underground inlet/outlet piping and install

concrete at grade foundations for tanks. Earthwork quantities are estimated at approximately 3,850 cubic yards. Site soils will be mixed on site with lime and cement; import of base material is estimated at 1,000 cubic yards. Over excavation for tank foundations will be 3 feet to 5 feet below existing ground surface (2 months).

- Tank Construction: Build new tank, concrete work, construction stairs and appurtenances (12 months).
- Final Site Work: Install Pipe and valves, landscaping/trees, paving, clean up, restore site, replace fencing (2 weeks).

Demolition and Construction Activities

Activity on the Project Site will occur during work hours between 8:00 AM to 5:00 PM, Monday through Friday. Arrival, tailgate training and plan for the day will occur in the morning at approximately 8:00 AM. The Project Site will be cleaned up and locked up by 5:00 PM. Deliveries will occur between 8:00 AM and 4:00 PM.

The contractor's crew will be at the site between 8:00 AM and 5:00 PM. The haul route would be via Skyline Boulevard to Hayne Road at the I-280 ramps.

Equipment in Use during Construction

For purposes of this traffic analysis, Phase 4 (Tank Construction) and Phase 5 (Final Site Work) is combined into the same final phase. The following types and quantities of equipment will be in use at the Project Site but not limited to:

- Mobilization: Field office trailer, backhoe for potholing, two service trucks.
- Demolition: Cat 235 Excavator with demolition hammer attachment, Front End Loader, Two 15 cubic-yard dump trucks, two service trucks, crane, two chain saws, stump grinder. There will be not more than 1-2 truck trips daily during demolition with not more than 70 total truck trips during demolition.
- Grading: Pug Mill Mixer, Bulldozer, Front End Loader Cat 235 Excavator, two service trucks and haulers. This phase will include up to 50 truck trips using haulers to import 1,000 cubic yards of base material for soils stabilization.
- Tank Construction: Crane, Cat 235 Excavator, up to 5 Concrete Trucks per day maximum over a three-month duration, two service trucks. Concrete delivery for tank and vaults will be approximately 655 cubic yards with an estimated 130 to 140 truck trips occurring during the 12-month construction period.

CONSTRUCTION TRAFFIC FORECAST

For purposes of this traffic analysis, Phase 4 (Tank Construction) and Phase 5 (Final Site Work) is combined into the same final phase. Table 1 shows the trip generation calculation of the construction traffic for the 4 phases of the project based on the description of the construction activity. The number of 12 construction crew members are assumed for each phase of the construction. For each phase, the forecast is based on the maximum number of vehicles (car and trucks) during a peak day. It is very conservative in the assumptions that almost all the traffic activity occurs during the AM and PM peak commuting peak hours.

From a traffic standpoint, the construction traffic volumes are fairly low and similar between each 4 phases. The low traffic volumes generated by the construction activity is not anticipated to impact the surrounding roadways. No detailed intersection operational analysis are needed.

CONSTRUCTION CIRCULATION

Construction Worker Parking

It shall be the responsibility of the General Contractor to provide the construction workers of the available parking on-site during this construction period. Material staging should be conducted entirely on site. All contractor staging, material delivery, storage and stockpiling should be planned for an on-site management area to minimizing traffic impacts on the adjacent roadways.

The General Contractor shall provide all construction contractors with written information on where their workers and subcontractors are permitted to park, including identification of clear consequences to violators for failure to following these regulations. The General Contractor shall be responsible for informing subcontractors and construction workers of these requirements and will monitor the compliance of the subcontractors.

Traffic Control Plans

The Owner will generate all worksite traffic control plans (TCP) and obtain prior approval for any lane closures, detours, on-street staging areas and/or temporary changes in street traffic control that may be required during construction. Temporary traffic control procedures will be employed as appropriate to address circulation requirements. These procedures could include, but are not limited to; traffic cones, temporary signs, changeable message signs, and flagmen. All traffic control procedures shall be undertaken in accordance with the standards in the latest edition of *California Manual on Uniform Traffic Control Devices* (California Department of Transportation) and/or the latest edition of *Work Area Traffic Control Handbook* (American Public Works Association). The General Contractor will be responsible for replacing any signs missing or damaged due to construction activities according to Caltrans or Town of Hillsborough specifications. In addition, the General Contractor will be responsible for any proposed or existing roadway striping to be in good condition and visible. Any faded existing striping shall be repainted as directed by the Town of Hillsborough.

Truck Access

All construction-related vehicle access to the Project site shall occur via Skyline Road at the existing gate located approximately 500 feet south of the existing water tanks. The following are the anticipated truck routes for hauling and other large construction vehicles.

Inbound trucks from I-280 Northbound:
Exit 36 toward Black Mountain Road, Hayne Road
Turn Right onto Golf Course Drive
Turn Left onto Black Mountain Road
Continue Through onto Skyline Boulevard
Turn Right into a dirt road through an existing gate on Skyline Boulevard (500 feet of the existing tanks).
Continue to Project site

Inbound trucks from I-280 Southbound:
Exit 36 toward Black Mountain Road, Hayne Road
Turn Left onto Golf Course Drive
Turn Left onto Black Mountain Road
Continue Through onto Skyline Boulevard
Turn Right into a dirt road through an existing gate on Skyline Boulevard (500 feet of the existing tanks).
Continue to Project site

Outbound trucks to I-280 Northbound and Southbound:
Exit Project site via the dirt road
Turn Left onto Skyline Boulevard
Continue Through onto Black Mountain Road
Turn Right onto Gold Course Drive
Turn Right onto the I-280 Northbound Ramp; or Turn Left onto the I-280 Southbound Ramp.

Where necessary, flagmen with communication devices shall be used to coordinate hauling activities.

Permits for oversized or overweight loads, if needed, will be obtained from the Town of Hillsborough (and Caltrans, if the oversized or overweight load will be traveling on a state highway). Such permit loads will be subject to the conditions of the permit and the time of issuance.

Construction Truck Hours

To the extent feasible, the arrival and departure of construction trucks shall occur outside of afternoon peak commute hours and shall be minimized when not feasible. On weekdays, haul truck trips shall be scheduled during the first seven hours (8:00 AM to 3:00 PM) of the permitted construction work period to avoid generating trips during the weekday afternoon peak period (operating conditions at intersections in this area are generally worse during the afternoon peak period than during the morning peak period). On Saturdays and Sundays, no construction are allowed.

Equipment and material deliveries and pick-ups shall be coordinated to reduce the potential for trucks to wait to load or unload on public streets for protracted periods for time to ensure that trucks are not impeding traffic flow on the surrounding streets while waiting to enter the Project site.

ONGOING MAINTENACE AND OPERATIONS

The tank will continue to function via gravity flow, which is supplemented with off-site pumps. Maintenance will consist of yearly inspection conducted by a diver. Project landscaping will continue to be maintained by the Town of Hillsborough and will require a pump on site for adequate water pressure for irrigation.

The maintenance and operations traffic is very low and negligible. No detailed intersection operational analysis are needed.

CONCLUSION

It has been a pleasure to service your needs on the proposed Darrel Water Tank Replacement Project. Should you have any questions or if we can be of further assistance, please do not hesitate to call at (714) 795-3100.

Sincerely,

GANDDINI GROUP, INC.

Tom Huang, TE
Senior Traffic Engineer

Table 1
Project Trip Generation

Trip Generation Rates										
Project				Weekday AM Peak			Weekday PM Peak			Daily Trip-Ends
No.	Vehicle Type	Unit	PCE[1]	In %	Out %	Total	In %	Out %	Total	
1	Passenger Car / Contractor's Crew	Cars[2]	1.0	100%	0%	1.000	0%	100%	1.000	2.000
2	Heavy Truck / Equipment	Trucks[3]	3.0	50%	50%	0.500	50%	50%	0.500	2.000

Trips Generated											
Phase No.	Phase of Operation	Total Vehicle Trip in Phase	Working Days	Vehicles Per Day	Weekday AM Peak			Weekday PM Peak			Daily Trip-Ends
					In	Out	Total	In	Out	Total	
1	Mobilization (1 Week)[4]										
	Passenger Car / Contractor's Crew			12 Cars	12	0	12	0	12	12	24
	Heavy Truck / Equipment	2 Trucks	5 Days	2 Trucks	1	1	2	1	1	2	4
	▪ Heavy Truck Traffic in PCE[1]				3	3	6	3	3	6	12
	Total PCE Trips - Mobilization				**15**	**3**	**18**	**3**	**15**	**18**	**36**
2	Demolition (1 Month)[5]										
	Passenger Car / Contractor's Crew			12 Cars	12	0	12	0	12	12	24
	Heavy Truck / Equipment	70 Trucks	20 Days	6 Trucks	2	2	4	2	2	4	12
	▪ Heavy Truck Traffic in PCE[1]				6	6	12	6	6	12	36
	Total PCE Trips - Demolition				**18**	**6**	**24**	**6**	**18**	**24**	**60**
3	Grading (2 Months)[6]										
	Passenger Car / Contractor's Crew			12 Cars	12	0	12	0	12	12	24
	Heavy Truck / Equipment	50 Trucks	40 Days	4 Trucks	1	1	2	1	1	2	8
	▪ Heavy Truck Traffic in PCE[1]				3	3	6	3	3	6	24
	Total PCE Trips - Grading				**15**	**3**	**18**	**3**	**15**	**18**	**48**
4	Tank Construction (12 Months)[7]										
	Passenger Car / Contractor's Crew			12 Cars	12	0	12	0	12	12	24
	Heavy Truck / Equipment	140 Trucks	240 Days	7 Trucks	2	2	4	2	2	4	14
	▪ Heavy Truck Traffic in PCE[1]				6	6	12	6	6	12	42
	Total PCE Trips - Tank Construction				**18**	**6**	**24**	**6**	**18**	**24**	**66**

Notes:

(1) Passenger Car Equivalence (PCE). Passenger car PCE factor = 1.0 per vehicle. Heavy truck PCE factor = 3.0 per vehicle.

(2) Passenger Car Traffic: The contractor's crew will be 3 crews of 4 workers and a total of 12 workers at the site. Each construction crew member drives a passenger car that generates one daily round trips per day (two trip-ends). To be conservative, all the construction crew will arrive during the AM peak hour and depart during the PM peak hour. In the morning, 100% of the construction crew is anticipated to arrive into the site during the AM peak hour [1 vehicle x 100% = 1.000 AM trip per car] with a directional split of 100% AM Inbound and 0% AM Outbound. In the afternoon, 100% of the the construction crew is anticipated to depart out of the site during the PM peak hour [1 vehicle x 100% = 1.000 PM trip per car] with a directional split of 0% PM Inbound and 100% PM Outbound.

(3) Heavy Truck Traffic: Each heavy truck generates one daily round trips per day (two trip-ends). To be conservative, all the truck activity will occur during the peak hours with 50% enters and exits in the AM peak hour and 50% enters and exits during the PM peak hour. For the morning, 50% of the heavy truck traffic is anticipated to arrive into and depart out of the site during the AM peak hour [1 vehicle x 50% = 0.500 AM trip per truck] with a directional split of 50% AM Inbound and 50% AM Outbound. For the afternoon, 50% of the the heavy truck traffic is anticipated to arrive into and depart out of the site during the PM peak hour [1 vehicle x 50% = 0.500 PM trip per truck] with a directional split of 50% PM Inbound and 50% PM Outbound.

(4) Mobilization: 2 service trucks per day.

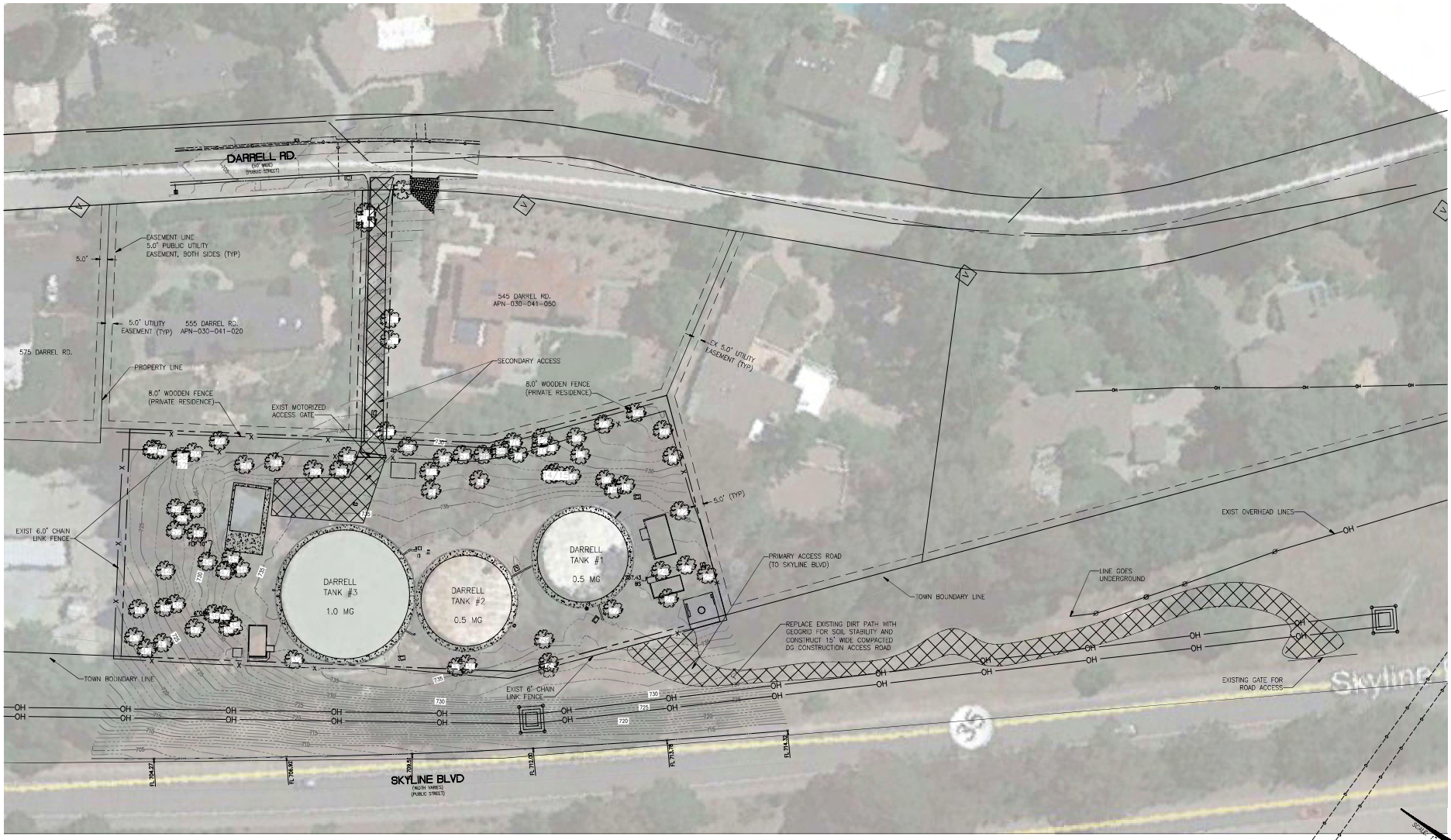
(5) Demolition: 70 total truck trips for the one-month demolition period (20 working days) is approximatley 4 dump truck trips per day, plus 2 service trucks per day for a total of 6 trucks per day.

(6) Grading: 50 total import truck trips for the two-month grading period (40 working days) is approximatley 2 hauler trucks per day, plus 2 service trucks per day for a total of 4 trucks per day.

(7) Tank Construction: A maximum of 5 concrete trucks per day, plus 2 service trucks per day for a total 7 trucks per day. For the overall 12-month construction period, there will be approximately 140 truck trips delivering concrete.

APPENDIX A

PROJECT DESIGN PLAN



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ENGINEERING CORPORATION
1735 North First Street
Suite 304
San Jose, California 95112
T 408.495.4107 F 408.479.3220
www.iecorporation.com

REGISTERED PROFESSIONAL ENGINEER
ROBERT S. WEBER
No. C059312
CIVIL
STATE OF CALIFORNIA

DATE	SYMBOL	REVISIONS	BY	CHECKED	APPROVED

DATE XX/XX/21	SUBMITTED	DATE XX/XX/21	REVIEWED	DATE	
XX / XX					
DESIGNED					
DATE XX/XX/21	REVIEWED	DATE XX/XX/21	APPROVED	DATE	
XX					
DELINEATED	DANIEL ARUTA	R.C.E.# XXXXXX			
DATE XX/XX/21	APPROVED	DATE XX/XX/18	APPROVED	DATE	
XX					
CHECKED	ROB WEBER	R.C.E.# C59312			

TOWN OF HILLSBOROUGH
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
CALIFORNIA

FILE NO: XXXX-XX | SCALE: XXXX-XX | AUTOCAD DRAWING FILE:

DARRELL WATER TANK REPLACEMENT PROJECT

SITE PLAN - ACCESS

DRAWING C-1

SHEET 4 OF XX

DRAWING NO.

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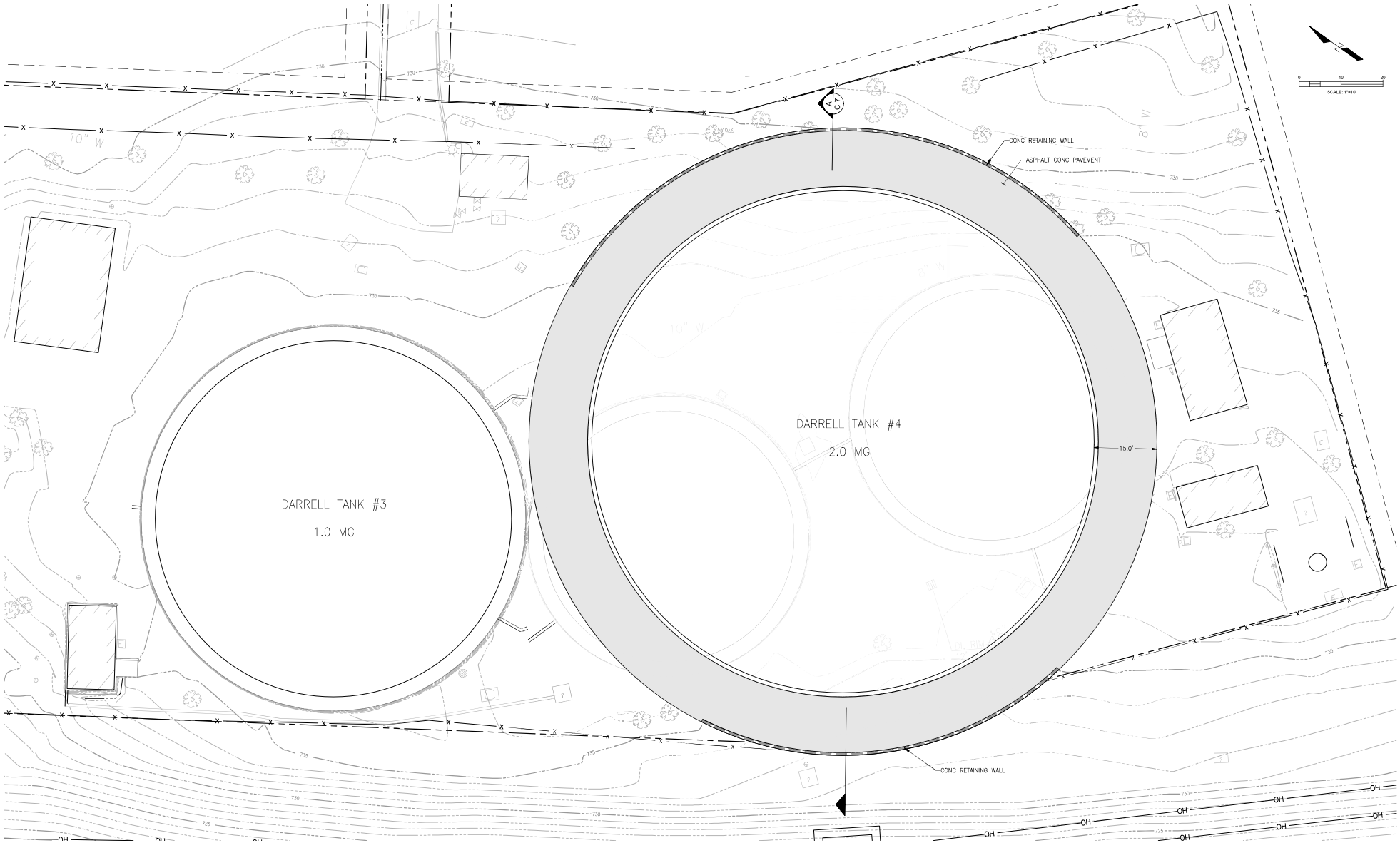

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www.iecorporation.com

REGISTERED PROFESSIONAL ENGINEER — ROBERT S. WEBER — No. C059312 — CIVIL — STATE OF CALIFORNIA

DATE	SYMBOL	REVISIONS	BY	CHECKED	APPROVED

DESIGNED	XX / XX	DATE XX/XX/21	SUBMITTED	DATE XX/XX/21	REVIEWED DATE
DELINEATED	XX	DATE XX/XX/21	REVIEWED	DATE XX/XX/21	APPROVED DATE
CHECKED	XX	DATE XX/XX/21	APPROVED	DATE XX/XX/18	APPROVED DATE
			DUSTIN PAYNE	R.C.E.# XXXXX	
			ROB WEBER	R.C.E.# C59312	

TOWN OF HILLSBOROUGH
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
CALIFORNIA

FILE NO: XXXX-XX | SCALE: XXXX-XX | AUTOCAD DRAWING FILE:

DARRELL WATER TANK REPLACEMENT PROJECT

GRADING AND PAVING PLAN

DRAWING C-5

SHEET 8 OF XX

DRAWING NO.

Appendix I:

Letters to Tribes

TOWN OF HILLSBOROUGH
California

April 7, 2021

Amah MutsunTribal Band of
Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA, 94062
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Sir/Madam,

The Town of Hillsborough has decided to undertake the following project: Darrell Tank Water Replacement Project.

Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

The Town of Hillsborough (Town) operates a complex water distribution system to supply potable water for domestic use, landscape irrigation and fire suppression. The normal source of water is the San Francisco Public Utilities Commission's (SFPUC), Sunset Pipeline No.1 and Crystal Springs Pipeline No. 2. The Town stores this water in 17 active storage tanks and one reservoir located at 10 sites throughout the Town with a total storage of over 8 million gallons.

Darrell water tanks are one component of the Town's water system that provides approximately 25% of the Town's water storage facilities. There are three existing steel tanks at Darrell site comprised of Tanks No.1 and No. 2 of half million gallon capacity each (60 feet diameter and 24 feet height), and Tank No. 3 of one million gallon capacity (85 feet diameter and 24 feet height), built in 1952 and 1958, respectively.

The 2003 inspection that Town performed for the existing water tanks found both Darrell Tanks No.1 and No. 2 have seriously degraded coatings, and both the coatings and the underlying steel were also found to be degraded in Tank No. 2 in a 2009 inspection. On the inspection condition results, Town put Darrell Tanks No 1. and 2 on the top of highest priority water storage replacement project.

TOWN OF HILLSBOROUGH
California

The goal of the project is to replace Darrell tanks No.1 and 2 with a larger two million gallons pre-stressed concrete tank. Construction of the new larger tank at Darrell would enable the Forest View tanks and the Oaks Pump Station to be decommissioned and taken out of service. It will provide larger storage water capacity with improved seismic performance.

The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition and replacement of the two existing steel Tanks (No. 1 and No. 2) to be removed. Project construction will include tree removal/replacements, grading within the southern half of the Project Area, over excavation, soil amendments, and subgrade preparation for structural tank floor slab and foundation, piping, valves, utilities relocations, and replacement of paved and gravel surfaces. Depth of impact ranges between 10 to 15 feet below grade.

If you or your organization has any information or concerns regarding the historic resources in the areas that could be affected by this project, please respond via email to Town of Hillsborough, Abdulkader Hashem, at ahashem@hillsborough.net, or in writing to Town of Hillsborough, Public Works Department/Engineering Division, 1600 Floribunda Avenue, Hillsborough, CA 94404

Pursuant to PRC § 21080.3.1 (b), you have 30 days from the receipt of this letter to request consultation, in writing, with the Town of Hillsborough.

Very Respectfully,

Natalie Gribben,
Senior Engineer

Enclosures: Attachment 1 - Project Area Map

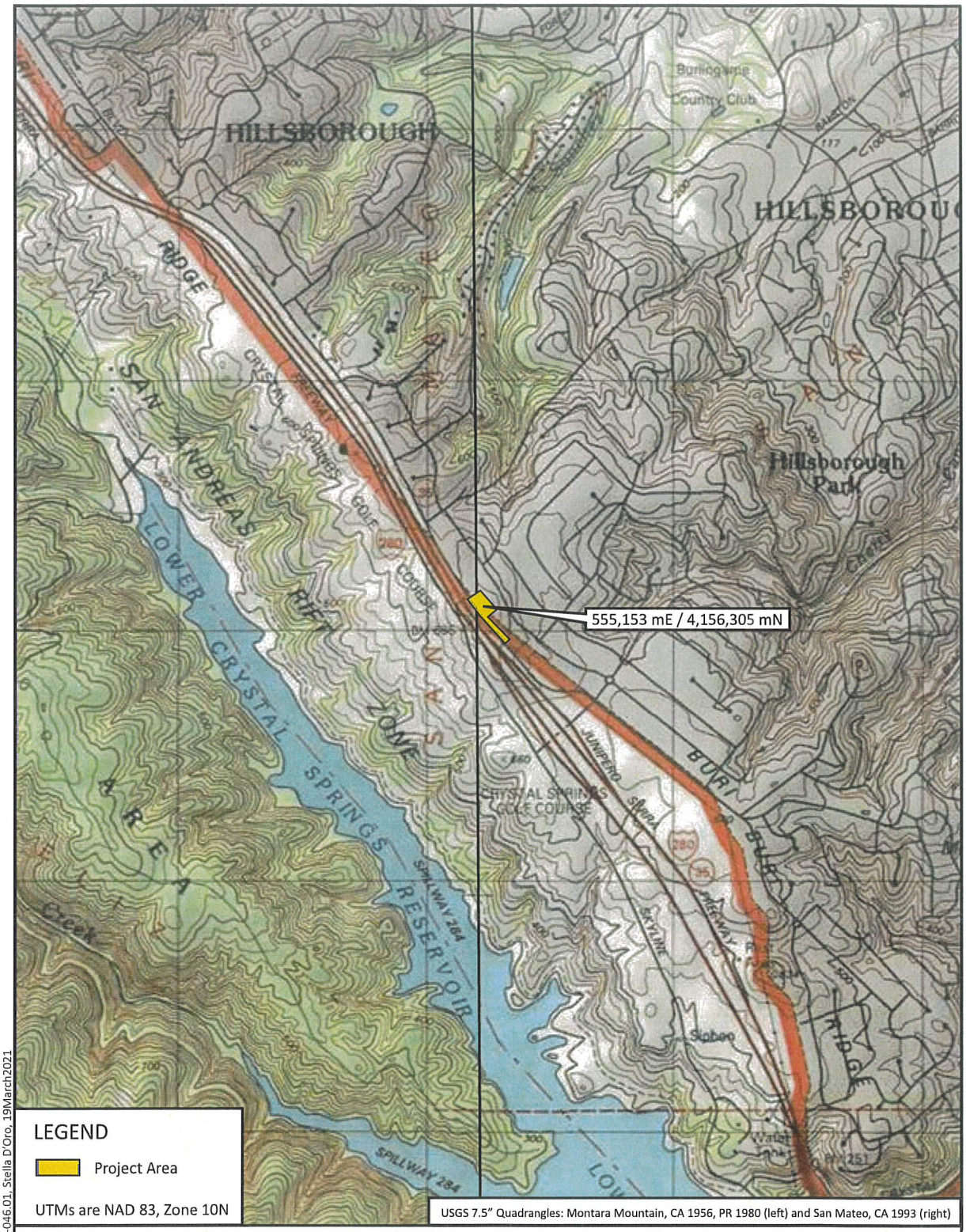

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Figure 1. Location map, Darrell Tanks.

TOWN OF HILLSBOROUGH
California

April 7, 2021

Costanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
244 E. 1st Street
Pomona, CA, 91766
Phone: (909) 629 - 6081
Fax: (909) 524-8041
rumsen@aol.com

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Sir/Madam,

The Town of Hillsborough has decided to undertake the following project: Darrell Tank Water Replacement Project.

Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

The Town of Hillsborough (Town) operates a complex water distribution system to supply potable water for domestic use, landscape irrigation and fire suppression. The normal source of water is the San Francisco Public Utilities Commission's (SFPUC), Sunset Pipeline No.1 and Crystal Springs Pipeline No. 2. The Town stores this water in 17 active storage tanks and one reservoir located at 10 sites throughout the Town with a total storage of over 8 million gallons.

Darrell water tanks are one component of the Town's water system that provides approximately 25% of the Town's water storage facilities. There are three existing steel tanks at Darrell site comprised of Tanks No.1 and No. 2 of half million gallon capacity each (60 feet diameter and 24 feet height), and Tank No. 3 of one million gallon capacity (85 feet diameter and 24 feet height), built in 1952 and 1958, respectively.

The 2003 inspection that Town performed for the existing water tanks found both Darrell Tanks No.1 and No. 2 have seriously degraded coatings, and both the coatings and the underlying steel were also

found to be degraded in Tank No. 2 in a 2009 inspection. On the inspection condition results, Town put Darrell Tanks No 1. and 2 on the top of highest priority water storage replacement project.

The goal of the project is to replace Darrell tanks No.1 and 2 with a larger two million gallons pre-stressed concrete tank. Construction of the new larger tank at Darrell would enable the Forest View tanks and the Oaks Pump Station to be decommissioned and taken out of service. It will provide larger storage water capacity with improved seismic performance.

The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition and replacement of the two existing steel Tanks (No. 1 and No. 2) to be removed. Project construction will include tree removal/replacements, grading within the southern half of the Project Area, over excavation, soil amendments, and subgrade preparation for structural tank floor slab and foundation, piping, valves, utilities relocations, and replacement of paved and gravel surfaces. Depth of impact ranges between 10 to 15 feet below grade.

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Natalie Gribben,
Senior Engineer

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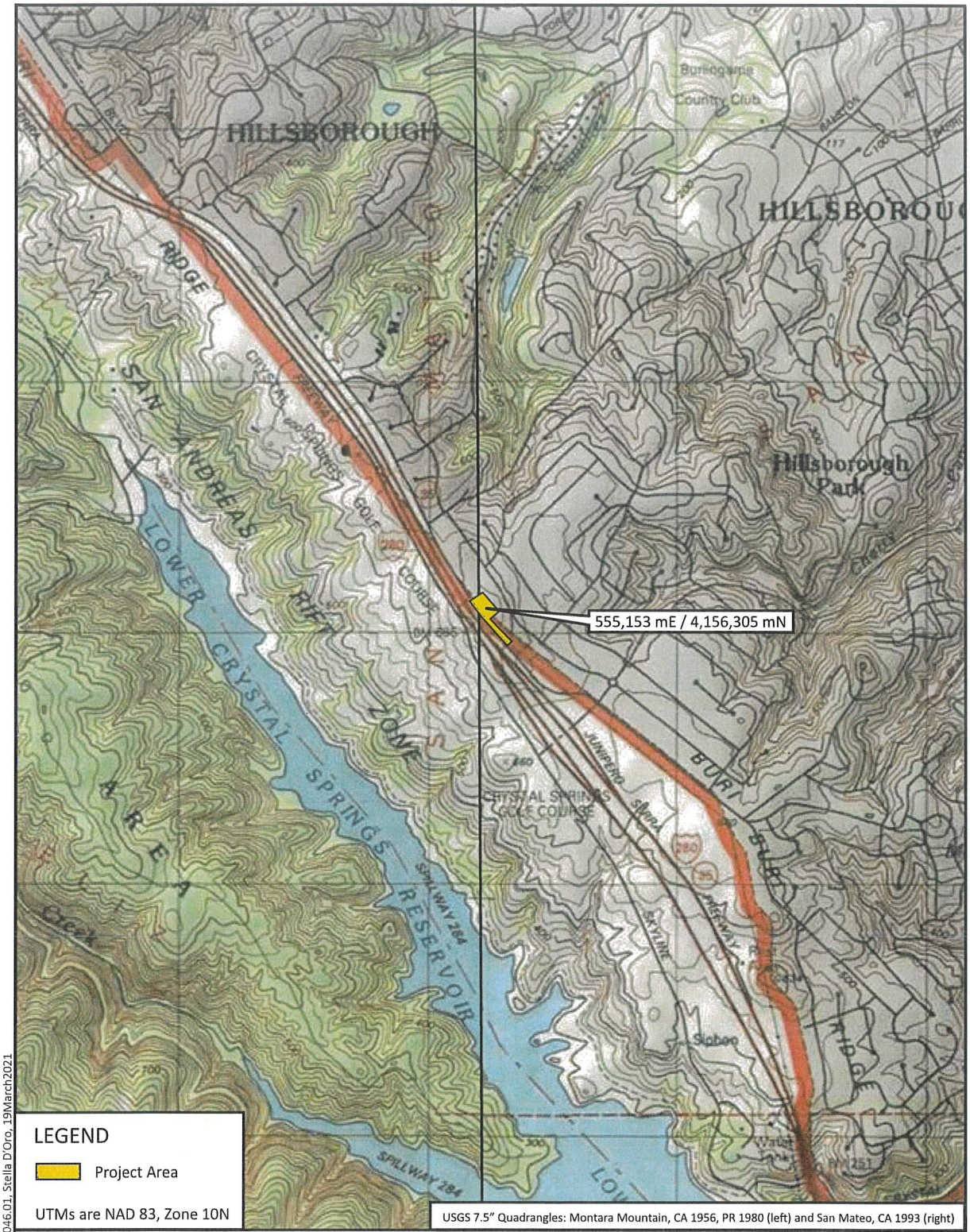

File name: Figure_1.ai, J2020-046.01, Stella D'Oro, 19March2021

Figure 1. Location map, Darrell Tanks.

TOWN OF HILLSBOROUGH
California

April 7, 2021

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Sir/Madam,

The Town of Hillsborough has decided to undertake the following project: Darrell Tank Water Replacement Project.

Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

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TOWN OF HILLSBOROUGH
California

The goal of the project is to replace Darrell tanks No.1 and 2 with a larger two million gallons pre-stressed concrete tank. Construction of the new larger tank at Darrell would enable the Forest View tanks and the Oaks Pump Station to be decommissioned and taken out of service. It will provide larger storage water capacity with improved seismic performance.

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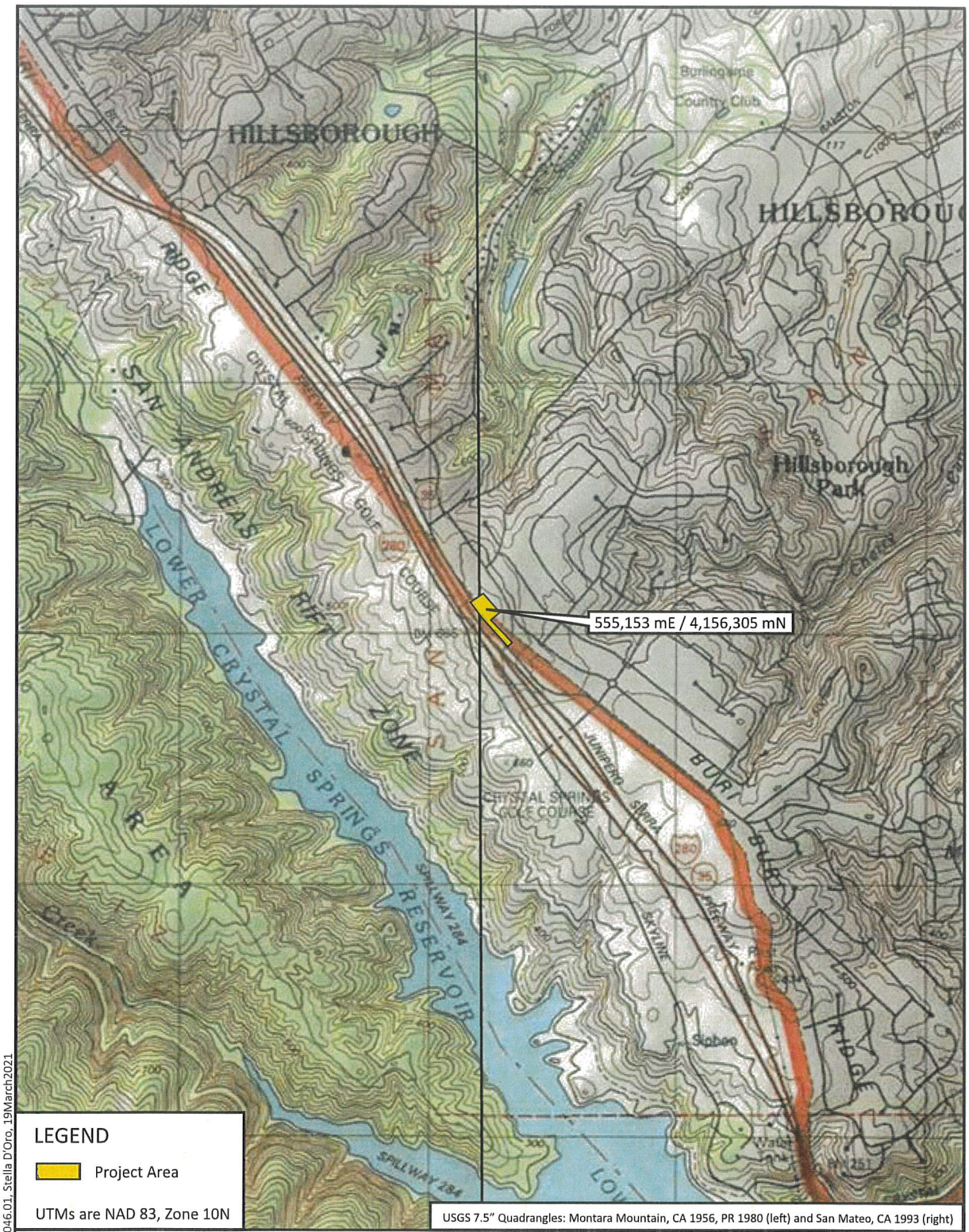

File name: Figure_1.ai, J2020-046.01, Stella D'Oro, 19March2021

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TOWN OF HILLSBOROUGH
California

April 7, 2021

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Sir/Madam,

The Town of Hillsborough has decided to undertake the following project: Darrell Tank Water Replacement Project.

Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

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TOWN OF HILLSBOROUGH
California

The goal of the project is to replace Darrell tanks No.1 and 2 with a larger two million gallons pre-stressed concrete tank. Construction of the new larger tank at Darrell would enable the Forest View tanks and the Oaks Pump Station to be decommissioned and taken out of service. It will provide larger storage water capacity with improved seismic performance.

The proposed work is in Hillsborough, San Mateo County, California (Attachment 1). The Project involves the demolition and replacement of the two existing steel Tanks (No. 1 and No. 2) to be removed. Project construction will include tree removal/replacements, grading within the southern half of the Project Area, over excavation, soil amendments, and subgrade preparation for structural tank floor slab and foundation, piping, valves, utilities relocations, and replacement of paved and gravel surfaces. Depth of impact ranges between 10 to 15 feet below grade.

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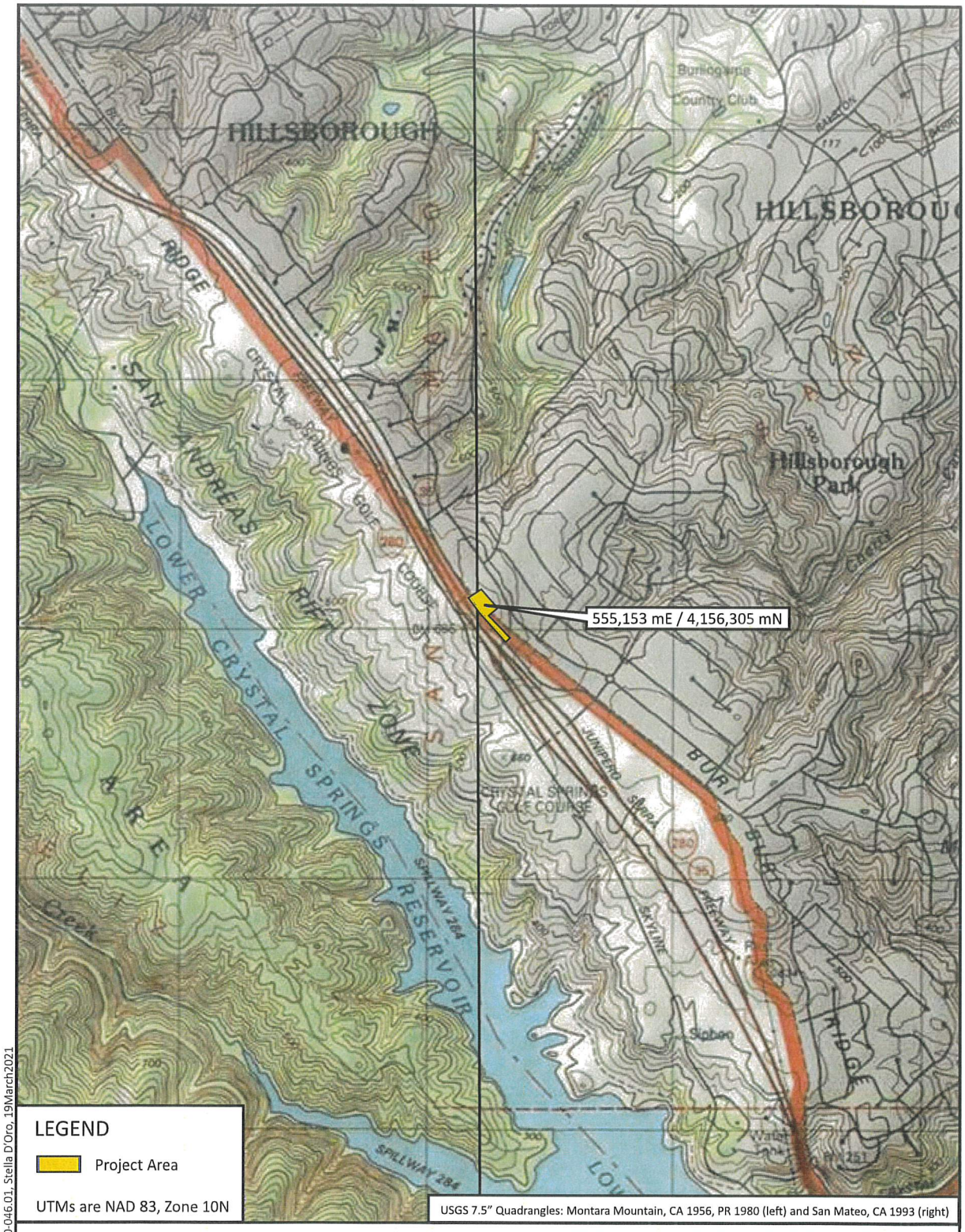
Pursuant to PRC § 21080.3.1 (b), you have 30 days from the receipt of this letter to request consultation, in writing, with the Town of Hillsborough.

Very Respectfully,

Natalie Gribben,
Senior Engineer

Enclosures: Attachment 1 - Project Area Map



File name: Figure_1.ai, J2020-046.01, Stella D'Oro, 19March2021

Figure 1. Location map, Darrell Tanks.

TOWN OF HILLSBOROUGH
California

April 7, 2021

Muwekma Ohlone Indian
Tribe of the SF Bay Area
Charlene Nijmeh, Chairperson
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 464 - 2892
cnijmeh@muwekma.org

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

Dear Sir/Madam,

The Town of Hillsborough has decided to undertake the following project: Darrell Tank Water Replacement Project.

Below please find a description of the proposed project, a map showing the project location, and the name of our project point of contact, pursuant to PRC § 21080.3.1 (d).

The Town of Hillsborough (Town) operates a complex water distribution system to supply potable water for domestic use, landscape irrigation and fire suppression. The normal source of water is the San Francisco Public Utilities Commission's (SFPUC), Sunset Pipeline No.1 and Crystal Springs Pipeline No. 2. The Town stores this water in 17 active storage tanks and one reservoir located at 10 sites throughout the Town with a total storage of over 8 million gallons.

Darrell water tanks are one component of the Town's water system that provides approximately 25% of the Town's water storage facilities. There are three existing steel tanks at Darrell site comprised of Tanks No.1 and No. 2 of half million gallon capacity each (60 feet diameter and 24 feet height), and Tank No. 3 of one million gallon capacity (85 feet diameter and 24 feet height), built in 1952 and 1958, respectively.

The 2003 inspection that Town performed for the existing water tanks found both Darrell Tanks No.1 and No. 2 have seriously degraded coatings, and both the coatings and the underlying steel were also

found to be degraded in Tank No. 2 in a 2009 inspection. On the inspection condition results, Town put Darrell Tanks No 1. and 2 on the top of highest priority water storage replacement project.

The goal of the project is to replace Darrell tanks No.1 and 2 with a larger two million gallons pre-stressed concrete tank. Construction of the new larger tank at Darrell would enable the Forest View tanks and the Oaks Pump Station to be decommissioned and taken out of service. It will provide larger storage water capacity with improved seismic performance.

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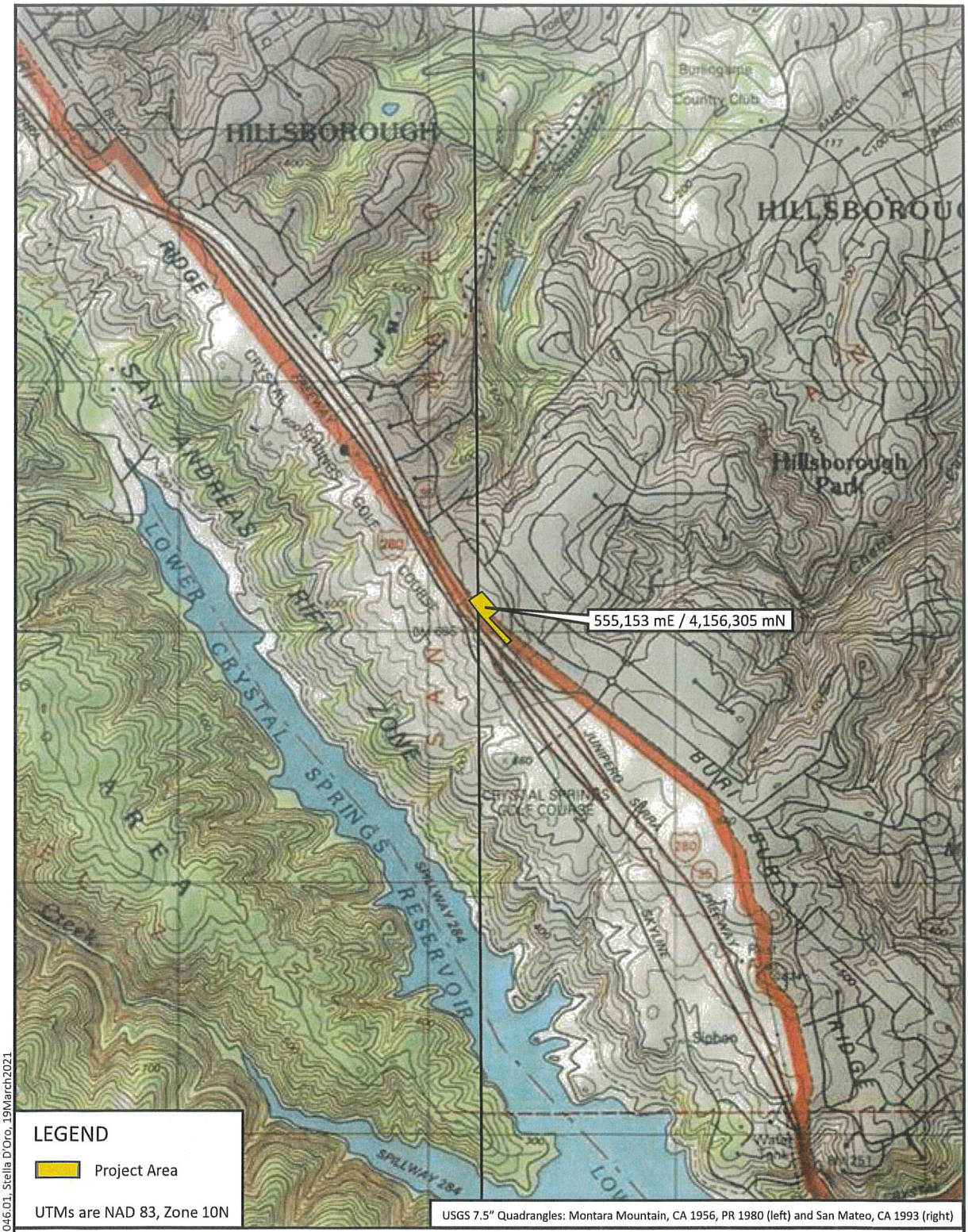

File name: Figure_1.ai, J2020-046.01, Stella D'Oro, 19March2021

Figure 1. Location map, Darrell Tanks.

TOWN OF HILLSBOROUGH
California

April 7, 2021

Muwekma Ohlone Indian
Tribe of the SF Bay Area
Monica Arellano,
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org

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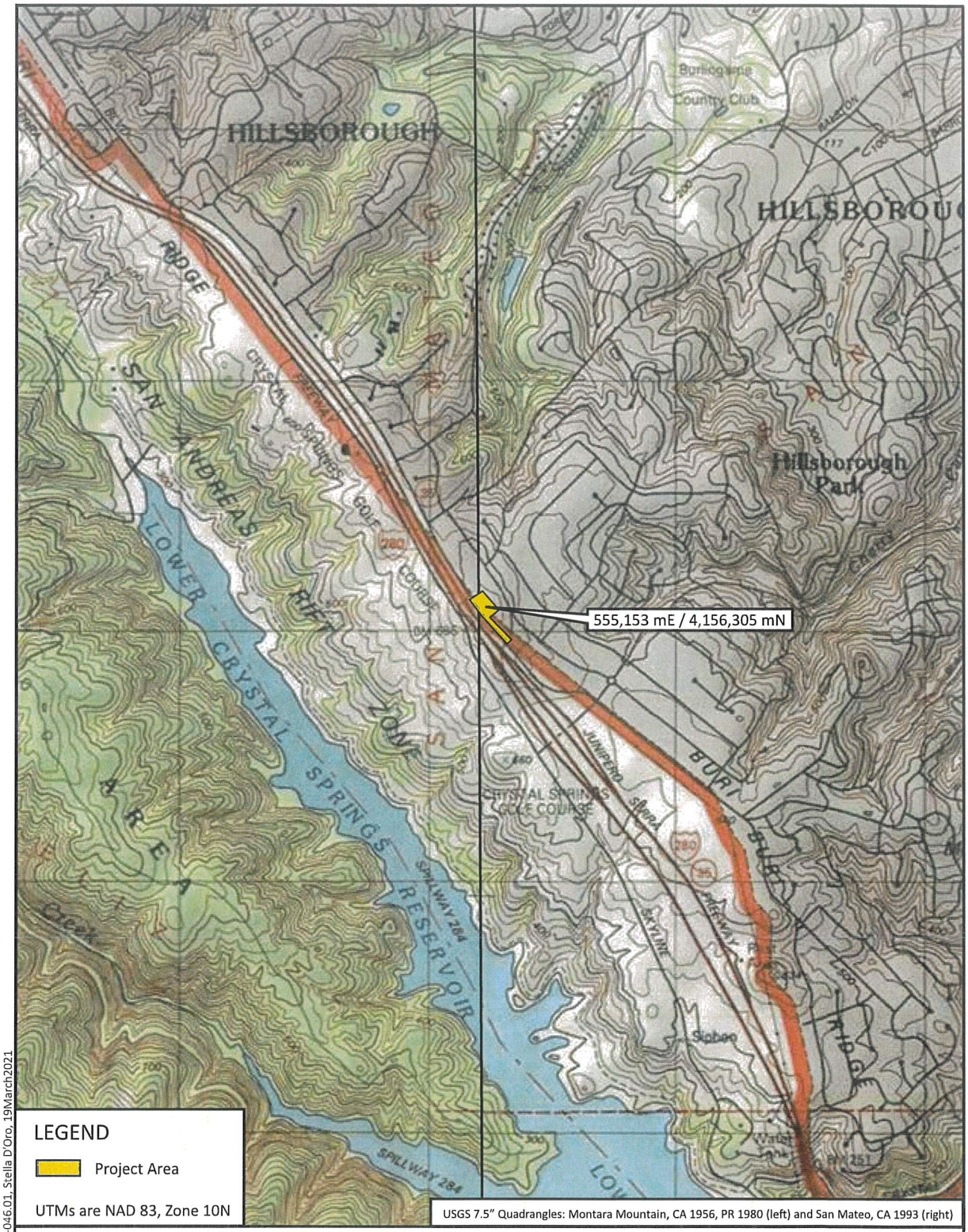

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TOWN OF HILLSBOROUGH
California

April 7, 2021

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (hereafter PRC).

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TOWN OF HILLSBOROUGH
California

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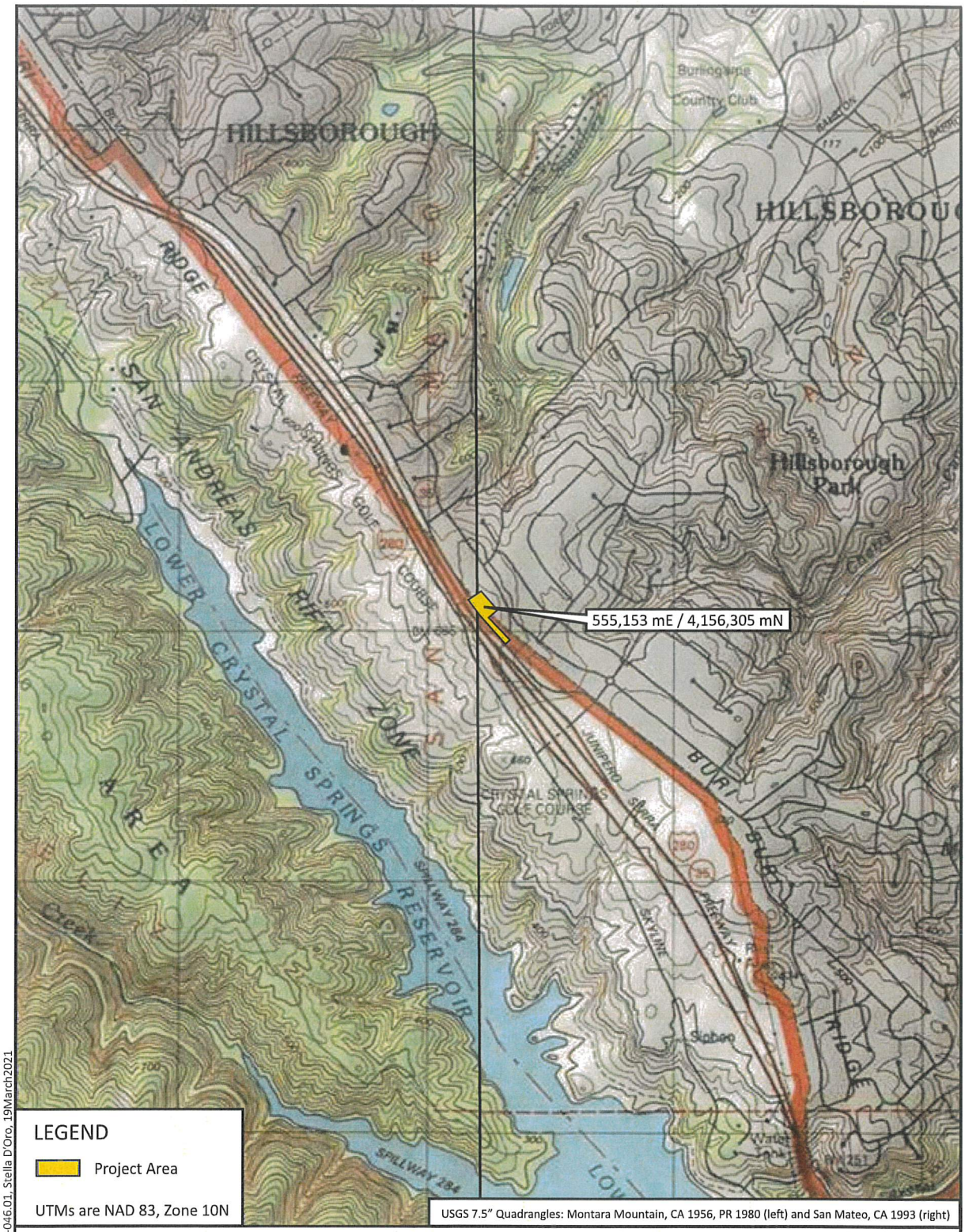

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Figure 1. Location map, Darrell Tanks.

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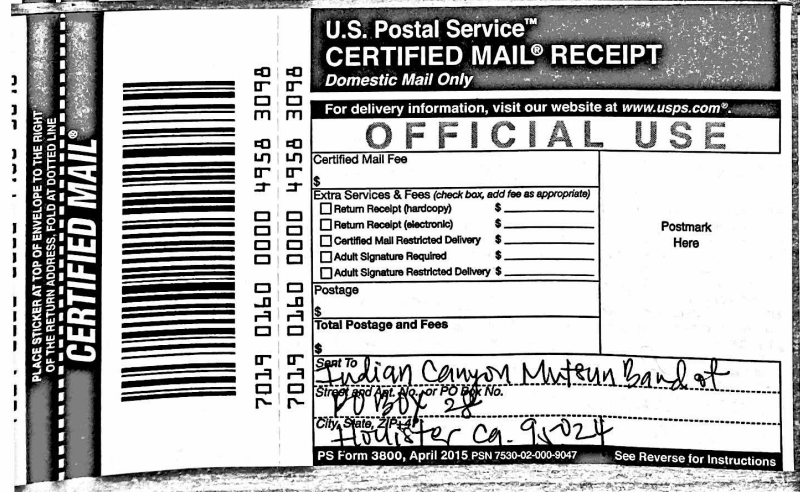

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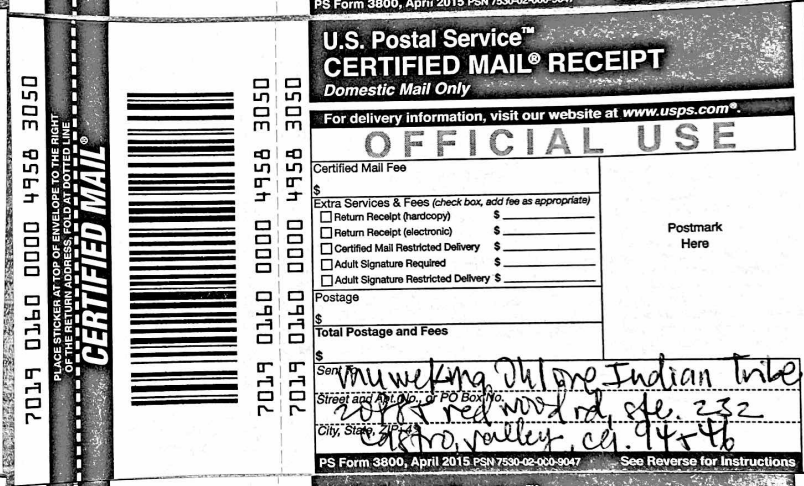

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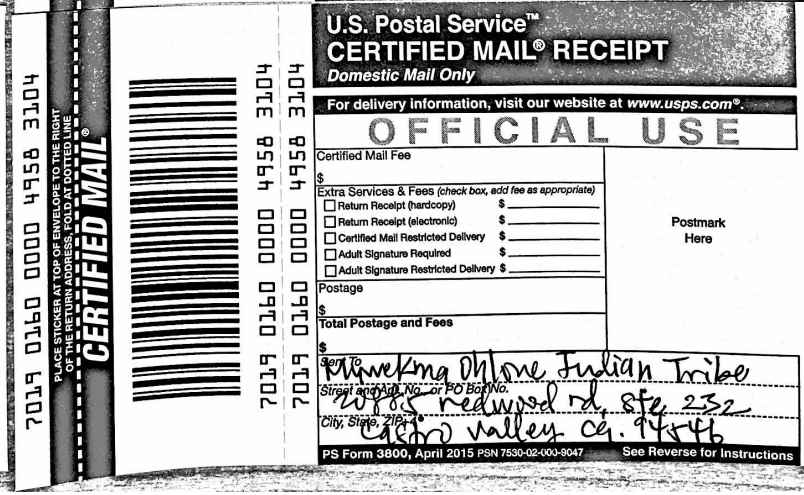

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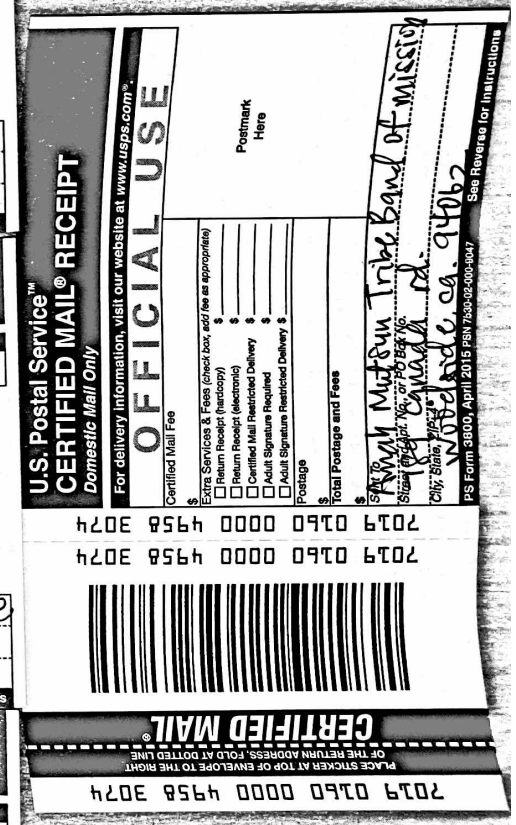

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