

**CALIFORNIA ENVIRONMENTAL QUALITY ACT
NOTICE OF DETERMINATION**

To: Office of Planning and Research
State Clearinghouse
P.O. Box 3044, 1400 Tenth Street
Sacramento, CA 95812-3044

From: City of San Pablo
Planning Division
1000 Gateway Avenue
San Pablo, CA 94806

Subject: FILING OF NOTICE OF DETERMINATION IN COMPLIANCE WITH SECTION 21108 OF THE PUBLIC RESOURCES CODE

Project Title: 2364 Road 20

State Clearinghouse Number: 2010112062

Project Location: 2364 Road 20, San Pablo, CA 94806

County: Contra Costa

Project Applicant: Arris Studio Architects

Project Description: The project activities involve construction and operation of 64 residential units in a five-story building placed on a 1.04-acre site which is consistent with the land use and zoning specified in the General Plan. The development will be accomplished through the approval of a Major Design Review, Conditional Use Permit, and Density Bonus with Waivers/Concessions and Variances for the proposed project on the site.

The City of San Pablo utilized information and analysis in the San Pablo Avenue Specific Plan environmental impact report (EIR) to support a final determination about the type of environmental document required to be prepared for the 13717 San Pablo Avenue project as provided by Sections 15162, 15163, and 15164 of the California Environmental Quality Act (CEQA) Guidelines, which was determined to be an Addendum. The EIR was adopted by the City of San Pablo on September 19, 2011. The EIR evaluated the potential environmental effects of developing the 2364 Road 20 site, and the project will be consistent with the overall assumptions for development on the 2364 Road 20 site as presented in the San Pablo Avenue Specific Plan.

As Lead Agency under the CEQA, the City of San Pablo approved the above-described project on October 25, 2022 and has made the following determinations:

1. The project will not have a significant effect on the environment.
2. An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures were not made a condition of project approval.
4. A Statement of Overriding Considerations was not adopted for this project.
5. Findings were made pursuant to the provisions of CEQA.

This is to certify that the final EIR with comments and responses and record of project approval, or the negative declaration, is available to the General Public at:

City of San Pablo, Planning Division, 1000 Gateway Avenue, San Pablo, CA 94806

Contact Person:
Elizabeth Tyler, Ph.D, FAICP

Contact Title:
Community Development Director

Phone Number:
(510) 215-3036

Signature:



Date:

October 26, 2022

Date Received for Filing at OPR: _____

Addendum to the San Pablo Avenue Specific Plan Environmental Impact Report

1.1 OVERVIEW

On September 19, 2011, the City of San Pablo adopted the San Pablo Avenue Specific Plan environmental impact report (EIR), which included analysis of the potential environmental impacts associated with construction and operation of high-density residential at 2364 Road 20 (Project) in the City of San Pablo. After the adoption of the EIR, the property owner submitted for approval of a Major Design Review, Conditional Use Permit, and Density Bonus with Concessions/Waivers and Variances for the Project. The project will develop 64 residential units in a five-story building placed on a 1.04-acre site. The project will also include a parking garage and surface parking. The project will continue to be consistent with the land use and zoning for the Project site specified in the Specific Plan. However, the Project will exceed the allowed building height limit and will encroach into the side yard and creekbank setback. In response, the Project developer is requesting the grant of a density bonus in exchange for dedicating 10 percent of the allowable dwelling units (6 units) for very low-income households. By providing 6 units for very low-income households, the Project developer requests receiving two concessions (as allowed by California Government Code Section 65915(d)(2)(B)). One concession requested is for the required height and one concession is for the side yard setback. In addition, the Project has requested Density Bonus waivers/reductions or variances to allow for minor encroachments into the 30-foot from top of creekbank setback to accommodate support piers and a second-level overhang and for an increase in the number of allowable stories from four to five. Density Bonus Law also allows a reduced off-street parking requirement which the project would meet by providing 72 parking spaces

1.2 PURPOSE OF ADDENDUM

According to Section 15164 of the California Environmental Quality Act (CEQA) Guidelines, an addendum to a previously certified EIR or adopted negative declaration shall be prepared by a lead agency if changes or additions to the document are necessary but none of the conditions described in Section 15162 requiring the preparation of a subsequent EIR or negative declaration are applicable. An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration. The decision-making body considers the addendum with the final EIR or adopted negative declaration prior to making a decision on the project, as modified.

Section 15162 of the State CEQA Guidelines states that, for a project covered by a certified EIR or adopted negative declaration, preparation of a subsequent EIR or negative declaration is required if one or more of the following conditions occur:

1. Substantial changes are proposed in the project that will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
2. Substantial changes occur with respect to the circumstances under which the project is undertaken that will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
 - a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - d. Mitigation measures or alternatives that are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

1.3 SCOPE AND CONTENT OF ADDENDUM

This Addendum has been prepared in accordance with the requirements of the CEQA (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (Title 14 California Code of Regulations Section 15000 et seq.). The City of San Pablo considered each of the environmental impacts that were analyzed in the prior EIR and focused on determining whether the modified project would result in an increase in the severity of the impacts identified in the prior EIR or would result in any new impacts not previously considered in the prior EIR.

1.4 CONCLUSION

Based on review of the project and of the previous analysis, the City of San Pablo determined that the potential environmental impacts associated with a Major Design Review, Conditional Use Permit, Density Bonus Concessions/Waivers, and Variances for a development project on the 2364 Road 20 site have been fully analyzed and addressed in the previously prepared EIR and will not result in conditions outlined in State CEQA Guidelines Section 15162 that would require preparation of a subsequent EIR. Existing policies and implementation measures identified in the Specific Plan EIR will continue to reduce the potential effects of development of the 2364 Road 20 site to less than significant levels.

Project site is designated as High Density Residential and a Potential Park Location in the San Pablo Specific Plan. As described previously, the project requested concessions for height and side yard setback and waivers/variance for an increase in the number of stories and encroachments in to the top-of-bank creek setback in exchange for providing 10 percent of the allowable dwelling units (6 units) for very low-income households. Related to open space requirements, the project will construct limited portions of the building inside the required 30-foot setback from the top of bank for the San Pablo Creek (for the southern portion of five support columns and to allow up to five-foot of overhang on the second level). It should be noted that the previously existing development on the site extended past the 30-foot setback and a few feet over the San Pablo Creek itself. In addition, there are no sensitive biological resources in or near the portion of San Pablo Creek adjacent to the project site (see further discussion below). Related to building heights, the tallest buildings in the project area are 2-½ stories in height on the north side of Road 20 (residences addressed at 110 through 114 Road 20). The project will construct a building double the height of any nearby buildings. However, the project site is envisioned for future high-density residential uses in the Specific Plan. In addition, surrounding land uses include high-density residential uses located along Road 20 and across San Pablo Creek to the south. Overall, the project will not be required to meet requirements for setbacks and building heights with approval of the requested concessions/waivers; however, the project is considered consistent with the San Pablo Avenue Specific Plan intent and vision for future development at the site.

As mentioned previously, the project will not provide the minimum required number of parking spaces, as modified by Density Bonus Law. In addition, the project site was previously used for an unpermitted tow truck operation. Therefore, the project was examined to determine if potentially new or increased impacts related to traffic, cultural resources, biological resources, or soils could occur.

Traffic Impact Analysis

A project-specific Traffic Impact Analysis Report (Traffic Report) was conducted to analyze the potential traffic impacts from implementing a residential development comprising of a new 64-unit multi-family building, consisting of four levels of dwelling units and one level parking garage. The Traffic Report considered all housing units will be studio or two-bedroom units and be located at the of single family and multifamily land uses. The Traffic Report provides an intersection Level of Service (LOS) analysis and a vehicle miles traveled (VMT) analysis along with evaluations and recommendations concerning project site access and on-site circulation for vehicles, bicycles, and pedestrians. The Traffic Report is provided as **Attachment A** to this Addendum.

The Traffic Report evaluated traffic conditions at two study intersections (San Pablo Avenue/Road 20-23rd Street (signalized), El Portal Drive/Road 20 (signalized)) during the a.m. and p.m. peak hours for a typical weekday. The study intersections were selected in consultation with City of San Pablo staff. The peak periods were determined to occur between 7:00 a.m. – 9:00 a.m. and 4:00 p.m. – 6:00 p.m. The proposed project is expected to generate approximately 23 weekday a.m. peak hour trips (6 inbound trips, 17 outbound trips), and 29 weekday p.m. peak hour trips (18 inbound trips, 11 outbound trips). Based on this estimated trip generation, all of the study intersections will continue to operate within applicable jurisdictional LOS standards of LOS D or better during both peak hours under existing plus project conditions. However, it should be noted that the addition of project trips will further increase the queue lengths that already exceed existing storage lengths at the San Pablo Avenue/Road 20-23rd Street intersection.

The Traffic Report concludes circulation aisles satisfy the minimum 22 feet requirement from the City of San Pablo Municipal Code. However, the Traffic Report recommended the proposed project perform a truck turning analysis to confirm a variety of trucks, including garbage trucks and emergency vehicles, can adequately circulate on-site. The Traffic Report continues to conclude that the project will not conflict with existing and planned pedestrian facilities and will not conflict with existing and planned bicycle facilities.

VMT Analysis

The Governor's Office of Planning and Research (OPR) Technical Advisory (December 2018) provides guidance to analysts and local jurisdictions for implementing VMT as a metric for determining the transportation impact for land use projects. The OPR guidelines state that for analysis purposes, "VMT" refers to automobile VMT, specifically passenger vehicles and light trucks. Heavy truck traffic is typically excluded. The Contra Costa County *Transportation Analysis Guidelines* (June 2020) provide additional guidance on evaluating VMT impacts from projects within the County.

Both the OPR and County guidelines provide standards for identifying which projects should be exempt from further VMT analysis, based on characteristics such as their size, proximity to transit, or expected number of total daily trips. The Traffic Report determined the project is exempt from VMT requirements per Contra Costa County *Transportation Analysis Guidelines* which states:

There are five screening criteria that lead agencies can apply to screen projects out of conducting project-level VMT analysis. Even if a project satisfies one or more of the screening criteria, lead agencies may still require a VMT analysis if there is evidence that the project has characteristics that might lead to a significant amount of VMT.

2.4: Projects Located in Transit Priority Areas (TPAs). Projects located within a TPA can be presumed to have a less-than significant impact absent substantial evidence to the contrary.

The Traffic Report determined the project meets the Transit Priority Area exemption because the project is located within a half mile of a high transit frequency bus stop (under 15-minute headways). The project is also located in a Metropolitan Transportation Commission defined transit rich Priority Development Area (PDA) called the "San Pablo Avenue & 23rd Street Corridor." For these reasons, the project is exempt from conducting a project specific VMT analysis.

Parking Supply

As mentioned previously, the Project will provide the minimum required number of parking spaces under State Density Bonus Law, but would not meet the pre-empted local parking requirements (72 spaces provided, 94 spaces required). The project site is located in a Transit Priority Area and transit rich PDA which reduces the demand, and thereby the needed supply, for onsite parking. Based on the location of the project site in an area with readily available public transit (bus stop with under 15-minute headways) and close access (within a half mile of a high transit frequency bus stop), the number of parking spaces provided by the project are considered sufficient and will avoid any potential conflicts with City of San Pablo policy.

Cultural Resources Study

A project-specific Cultural Resources Identification Study (Cultural Study) was prepared to determine whether the project could result in significant impacts to historical and archaeological resources as defined by CEQA Section 15064.5. The Cultural Study includes a Northwest Information Center (NWIC) records search; literature, historical map, and aerial photo review; local historical group consultation; archaeological buried site sensitivity analysis; pedestrian survey; and evaluation of the property for inclusion in the California Register of Historical Resources (California Register). The Cultural Study is provided as **Attachment B** to this Addendum.

The Cultural Study considered the project to involve demolishing an existing single-family residence and large shed and constructing a new multifamily five-story residential building. The Cultural Study assumed development would include 64 multifamily rental units, a parking garage, surface parking, and parking lifts. The Cultural Study identifies the San Pablo Creek runs along the southern end of the parcel and assumed no structures will be constructed within a 30-foot setback from the top bank of the creek. Lastly, the Cultural Study identifies two existing decks on the site, which extend through the 30-foot setback and over the creek top of the bank, will be removed as part of the project.

NWIC staff conducted a cultural resources records search (File No. 21-1074) of the project area and a half-mile search radius on February 7, 2022. As part of the records search and background research, the following federal and California inventories were reviewed:

- National Register of Historic Places (National Register) (National Park Service 2022)
- California Points of Historical Interest (OHP 2022a)
- California Historical Landmarks (OHP 2022a)
- Archaeological Determinations of Eligibility (OHP 2012)
- California Inventory of Historic Resources (1976)
- Built Environment Resources Directory for Contra Costa County (OHP 2022b). The directory includes resources reviewed for eligibility for the National Register and the California Historical Landmarks programs through federal and state environmental compliance laws, and resources nominated under federal and state registration programs, including the National Register, California Register, California Historical Landmarks, and California Points of Historical Interest.

No cultural resources were identified on the project and 13 cultural resources were identified within the half-mile search radius of the project. In addition, no cultural resources studies have been previously completed for the project site, but 45 cultural resource studies have been completed within the half-mile search radius.

Cultural staff reviewed literature, historical maps, and aerial photographs for historical information about the project area and the vicinity. A 1939 aerial photograph shows the property was undeveloped, and the neighboring parcels to the east and north were sparsely developed and appear to have supported agricultural uses. During World War II, the agricultural land across Road 20 to the north was developed with a temporary defense workers' housing project called El Portal Park. El Portal Park was later redeveloped with portions used to build a shopping center, tract homes, and Contra Costa Community College. USGS topographic quadrangle maps show the project area was developed with several buildings sited parallel to Road 20 as early as 1947. The county assessor's data for the extant building on the property indicates it was constructed in 1943. By 1952, the project site was in use as a nursery. Aerial photographs appear to show several buildings on the project site parallel to the road through about 1980. The western side of the property was cleared of structures by the late 1980s. The property was sold and ceased being used as a nursery in approximately the late 2000s.

On February 1, 2022, an archaeologist conducted a pedestrian survey of the project area. The exposed ground surface was walked over in single transects spaced approximately 15 meters apart. No cultural materials or anthropogenic soils were identified within the project area during the survey.

Sensitivity for cultural resources consisting of archaeological sites is considered moderate based upon the known cultural resources in the vicinity of the project, the shallow previous disturbance in the project area, and various natural factors including being located adjacent to San Pablo Creek, number of previously documented sites in the project vicinity, accumulating soil environment, and likely shallow ground disturbance from previous site construction. Therefore, the Cultural Study concluded the project site has moderate sensitivity for buried significant or potentially significant prehistoric or historic-period archaeology sites as a result of historic and modern development.

The Cultural Study concludes no historical or archaeological resources as defined by CEQA Section 15064.5(a) were identified on the project site as a result of the NWIC records search, literature, map, and aerial photo review, historical society consultation, pedestrian survey, and California Register evaluation. The Cultural Study also concludes that sensitivity for buried archaeological resources is moderate because there is a potential for disturbing previously unknown archaeological resources during ground-disturbing activities associated with project construction. However, the City of San Pablo's General Plan (Implementing Policy OSC-I-15) requires pre-construction surveys and monitoring during any ground disturbance for all development in areas of historic or archaeological sensitivity. In addition, Implementing Policy OSC-I-16 of the City's General Plan requires educating developers and the community-at-large about the connections between Native American history and the environmental features that characterize the local landscape. Because appreciating, protecting, and preserving known and unknown cultural resources is standard City policy and will be implemented as a condition of approval for the project, potentially significant impacts to unknown cultural resources will be avoided.

Biological Resources Study

A project-specific Biological Resources Technical Memorandum (Bio Study) was prepared to evaluate the existing biological conditions of the project site with the goal of determining whether the site provides any habitat value for endangered, rare, or threatened species. The Bio Study considered the project to involve the construction of a new multi-family five story residential building on the existing developed area of a 1.04-acre parcel southeast of the Road 20 and San Pablo Avenue intersection. The Bio Study assumed development will include 64 rental units, a parking garage, surface parking, and parking lifts. The Bio Study identified the San Pablo Creek runs along the southern end of the project site and, other than the southern portions of five narrow support columns, no structures will be constructed within a 30-foot setback from the creek top of bank. The Bio Study also identified two existing

decks on the parcel that extend through the 30-foot setback and over the creek top of bank and assumed the decks will be removed as part of the project. The Bio Study is provided as **Attachment C** to this Addendum.

A biologist conducted a reconnaissance survey of the project sites on September 8, 2021, between the hours of 3:00 p.m. and 4:00 p.m. to document existing site conditions, assess vegetation communities, and evaluate the potential for the project site to support special status species habitat, including sensitive plant and wildlife species. A biologist also conducted record searches of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB, nine-quad search). The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants and the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) were also accessed for the Bio Study to obtain comprehensive information regarding State- and federally-listed species, as well as other special status species and sensitive plant communities considered to have potential to occur or known to occur within the *Richmond, California* USGS 7.5-minute topographic quadrangle and/or surrounding eight quadrangles.

The Bio Study identified the project site as including developed area on the northern half of the site along Road 20 and a fragment of riparian woodland along San Pablo Creek at the southern edge of the site. The developed area of the project site is paved or graveled and surrounded by wooden or chain-link fencing. Existing structures occur on the eastern half of the site, including a house with an attached deck that extends south towards the creek, a large shed at the northeast corner of the site, and a smaller deck at the southeastern edge of the site. The house is currently occupied by tenants who operate a tow truck company from the site. A paved area on the western half of the site is used as a parking lot. Although largely devoid of plants, small patches of ruderal vegetation and escaped ornamentals are present in the developed area. Despite the presence of a perennial creek (San Pablo Creek), the area surrounding the project site is heavily developed and urbanized. The creek itself is disturbed by anthropogenic activity and invasive plant species.

The Bio Study concluded that the narrow band of riparian woodland on either side of San Pablo Creek within and adjacent to the project site contains both native and non-native species but is disturbed by anthropogenic activities and largely isolated as a result of surrounding residential and commercial development. Riparian vegetation and the aquatic habitat of San Pablo Creek within the project site may provide marginally suitable habitat for wildlife, including steelhead, Cooper's hawk, nesting birds, and roosting bats. However, the project is designed to only impact previously developed areas and avoid impacts within 30 feet of the San Pablo Creek top of bank. Therefore, implementation of the project is unlikely to affect special status species.

The Bio Study also concludes that if any trees or vegetation must be impacted as part of construction activities, the City of San Pablo's General Plan (Implementing Policy OSC-I-8) requires scheduling of construction and vegetation removal outside of nesting bird season or conducting a preconstruction nesting bird survey. If removal of mature trees is required, the General Plan (Implementing Policy OSC I-9) requires a pre-construction acoustic survey to determine if bats are present. Any disturbance to San Pablo Creek water quality through removal of the deck structures will be avoided through implementation of best management practices (BMPs) such as preparing and implementing a stormwater pollution prevention plan, as required by Implementing Policy OSC I-9 in the General Plan and the Municipal Code (Chapter 17.40). Because protecting nesting birds, roosting bats, and water quality is standard City policy and will be implemented as a condition of approval for the project, potentially significant impacts to special status species and their habitats will be avoided.

Geotechnical (Soils) Analysis

Based on historic uses at the site, a project-specific Soil Analysis was conducted to analyze the potential environmental issues with onsite soils. Three soil discrete samples were collected from the site and no known past environmental issues or concerns exist at the site. Soil samples were analyzed for the presence of asbestos, organochlorine pesticides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi-volatile organics, metals, total petroleum hydrocarbon (TPH) as gasoline with benzene, toluene, ethylbenzene, and xylene (BTEX) and Methyl tert-butyl ether (MTBE), and TPH-diesel and TPH-motor oil. The Soil Analysis is provided as **Attachment D** to this Addendum.

Only arsenic was detected in the three soil samples at concentration of 6.2 milligrams per kilogram (mg/kg), 6.5 mg/kg, and 9.4 mg/kg which exceed the environmental screening levels (ESL) standards. However, the indicated level is not considered to be high enough to be a concern because background arsenic levels are naturally elevated in the Bay Area, and in any case are not high enough to warrant soluble threshold limit concentration (STLC) testing. The San Francisco Regional Water Quality Control Board (RWQCB) references a 2011 Master's thesis that evaluates background arsenic concentrations in the San Francisco Bay Region. This thesis proposes an upper (99th percentile) estimate of background arsenic of 11 mg/kg within undifferentiated urbanized Bay Area flatland soils.

Chromium was detected in one soil sample at a concentration of 67 mg/kg, above the Tier 1-ESLs. Soluble threshold limit concentrations (STLC) is used to define the “soluble fraction” that classifies a “waste” as California hazardous. Non-hazardous disposal facilities utilize a rule-of-thumb guideline to interpret total contaminant concentrations relative to the STLC hazardous waste criteria. Soils or waste with total contaminant concentrations in excess of 10 times the STLC (50 mg/kg) have the potential to be classified as hazardous and they are also analyzed by the California Waste Extraction Test (WET) when the subsequent solute analysis results exceed the STLC for chromium (5 mg/L). The result of the STLC for chromium was not detected in the lab. Therefore, the soil is not considered to be a California hazardous waste.

Overall, the project site does not contain any substantial soil contaminants that are considered hazardous to future residential uses.

The project will be consistent with the overall assumptions for development on the vacant site as presented in the Specific Plan and the project will not result in any new significant impacts or increase the severity of any potentially significant impacts identified in the San Pablo Specific Plan EIR. The circumstances under which the project will be undertaken have not substantially changed such that new or substantially increased impacts will occur. Further, there is nothing peculiar about the project or the project site that will result in impacts substantially greater than discussed in the prior EIR. Therefore, no further environmental analysis is required.

Draft Traffic Impact Analysis Report

2364 Road 20

San Pablo, California

September 22, 2021



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Appendix A – Existing Traffic Counts

Appendix B – Existing Conditions Intersection Level of Service and Queuing Analysis Work Sheets

Appendix C – Existing plus Project Conditions Intersections Level of Service and Queuing Work Sheets

EXECUTIVE SUMMARY

This report summarizes the results of the Traffic Impact Analysis (TIA) conducted for the residential development located at 2364 Road 20 in City of San Pablo, CA. The development comprises of a new 64-unit multi-family building, consisting of four levels of dwelling units and one level parking garage. All housing units will be studio or two-bedroom units. The proposed development will be located on the south side of Road 20, approximately 375 feet east of the Road 20/San Pablo Avenue intersection. The proposed development edges single family and multifamily land uses. Other surrounding land uses include a retail center and a middle school.

This report provides the intersection Level of Service (LOS) related to the project. Additionally, the report also includes vehicle miles traveled (VMT), evaluations and recommendations concerning project site access and on-site circulation for vehicles, bicycles, and pedestrians.

To evaluate the impacts on the transportation infrastructure due to the addition of traffic from the proposed project, two study intersections were evaluated during the weekday morning (a.m.) peak hour and evening (p.m.) peak hour under two study scenarios. The study intersections were evaluated under *No Project* and *Plus Project* scenarios for Existing Conditions. For the purpose of this analysis, potential traffic operational effects from the proposed project are identified based on established operational thresholds described in the report.

Project Trip Generation

The proposed project is expected to generate approximately 23 weekday a.m. peak hour trips (6 inbound trips, 17 outbound trips), and 29 weekday p.m. peak hour trips (18 inbound trips, 11 outbound trips).

Existing Conditions

Under this scenario, all of the study intersections operate within applicable jurisdictional LOS standards of LOS D or better during both peak hours.

Existing plus Project Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards of LOS D or better during both peak hours.

Queueing Analysis

The following are movements where the addition of project trips would further increase the queue lengths that already exceed existing storage lengths:

- San Pablo Avenue/Road 20-23rd Street
 - ✓ Eastbound left-turn lane during the p.m. peak hour only. Eastbound through-left lane during both peak hours.
 - ✓ Westbound through-left lane during both peak hours.
 - ✓ Northbound left-turn lane during the p.m. peak hour only.

- ✓ Southbound left-turn lane during the a.m. peak hour only. Southbound through lane during the p.m. peak hour only. Southbound right-turn lane during the p.m. peak hour only.

Site Access and On-Site Circulation

The proposed vehicular access to the project site is via one project entrance on Road 20. Main driveway access is to the proposed parking garage. From the site plan, it appears that existing sidewalks and on-street parking along the project frontage will be maintained. Sight distance between vehicles travelling westbound on Road 20 and vehicles exiting the project site is clear and visible for at least 200 feet; however, sight distance between vehicles travelling eastbound on Road 20 and vehicles exiting the project site is slightly obstructed by the horizontal curvature of Road 20, west of the project site. TJKM recommends the project use landscaping below eye level to avoid further obstructing sight distance west of the project site.

Based on the current site plan, circulation aisles seem to satisfy the minimum 22 feet requirement from the City of San Pablo Municipal Code. The proposed project should perform a truck turning analysis to confirm a variety of trucks, including garbage trucks and emergency vehicles, can circulate on-site. Based on a preliminary review of the project site plan, the site access and on-site circulation is considered adequate.

Pedestrian Impacts

The proposed project should provide adequate street lighting at the project driveway. The proposed project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is **less than significant**.

Bicycle Impacts

The project is does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is **less than significant**.

Transit Impacts

The project site is within walking distance to various AC Transit bus stops on Road 20 and San Pablo Avenue. Impacts to transit service are expected to be **less than significant**.

Vehicle Miles Traveled

Since the proposed project is exempt from CEQA (CEQA exemption #15332), in accordance to CCTA VMT requirements, it is also not required to conduct a VMT analysis.

1.0 INTRODUCTION

This report summarizes the results of the Traffic Impact Analysis (TIA) for the proposed residential development located in City of San Pablo, California.

1.1 PROJECT DESCRIPTION

The project proposes to develop 42,842 square feet (sq. ft.) of multifamily residential use, including four levels of dwelling units and one level parking garage. The project proposes to provide 72 parking spaces in a one-story parking garage.

The project is located on the south side of Road 20 between San Pablo Avenue and El Portal Drive. The project entrances will consist of one new driveway into the parking garage. The project site is located across from the existing College Center and an existing multifamily development.

The following section discusses the TIA Purpose, study intersections, and analysis scenarios.

1.2 PROJECT PURPOSE

The purpose of the Traffic Impact Analysis is to evaluate the impacts on the transportation infrastructure due to the addition of the traffic from the proposed project. The report also includes evaluations and recommendations concerning Vehicle Miles Traveled (VMT), project site access and on-site circulation for vehicles, bicycles, and pedestrians, queuing analysis at the study intersections, and parking supply.

1.3 STUDY INTERSECTIONS

TJKM evaluated traffic conditions at two study intersections during the a.m. and p.m. peak hours for a typical weekday. The study intersections were selected in consultation with City of San Pablo staff. The peak periods were between 7:00 a.m. – 9:00 a.m. and 4:00 p.m. – 6:00 p.m. The study intersections and associated traffic controls are as follows:

1. San Pablo Avenue/Road 20 – 23rd Street (Signal)
2. El Portal Drive/Road 20 (Signal)

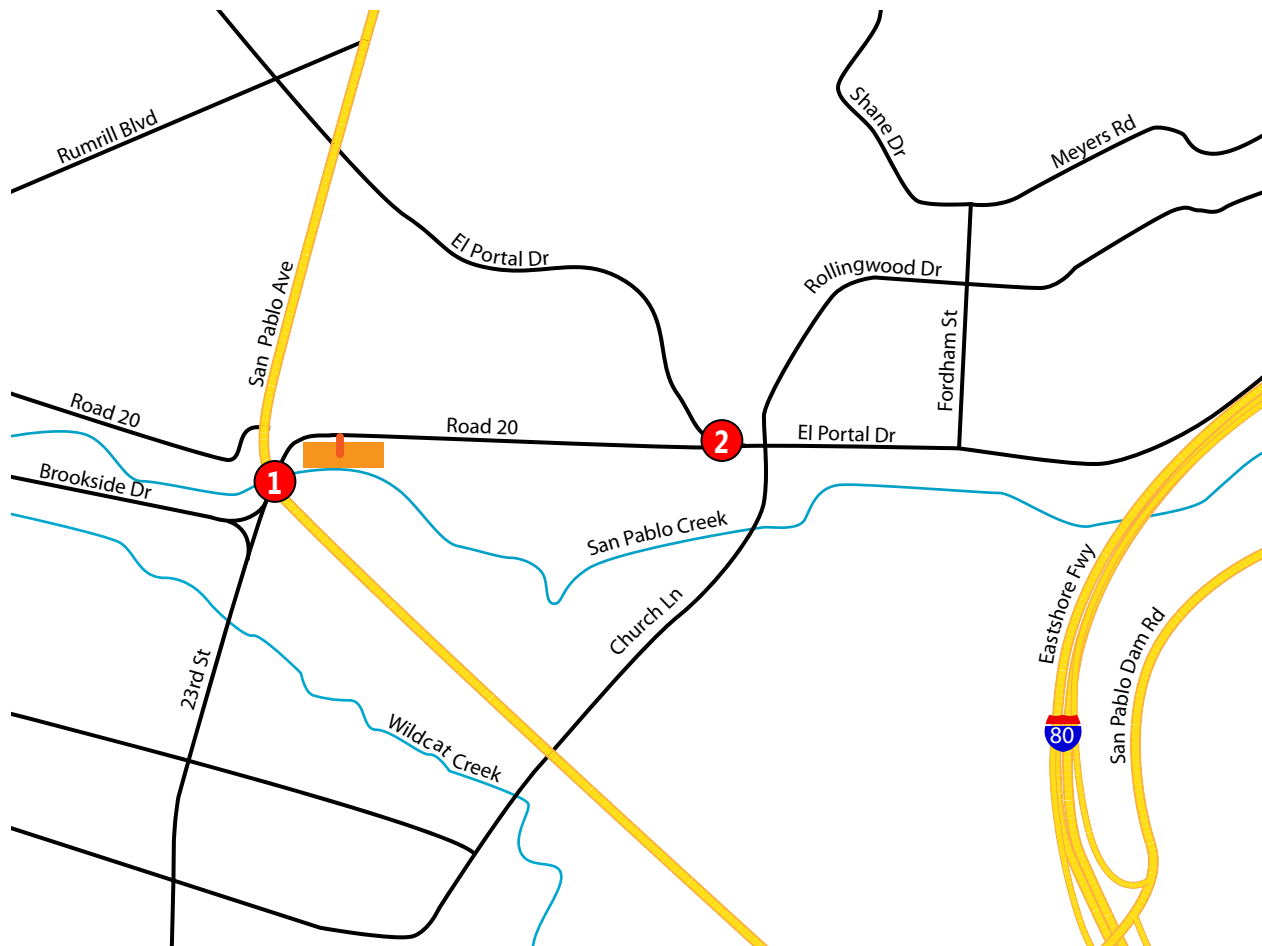
Figure 1 illustrates the study intersections and the vicinity map of the proposed project. **Figure 2** shows the proposed project site plan.

1.4 ANALYSIS SCENARIOS

This study addresses the following two traffic scenarios:

- **Existing Conditions** – This scenario evaluates the study intersections based on existing traffic volumes, lane geometry, and traffic controls.
- **Existing plus Project Conditions** – This scenario is identical to Existing Conditions, but with the addition of traffic from the proposed project.

Figure 1: Vicinity Map



LEGEND




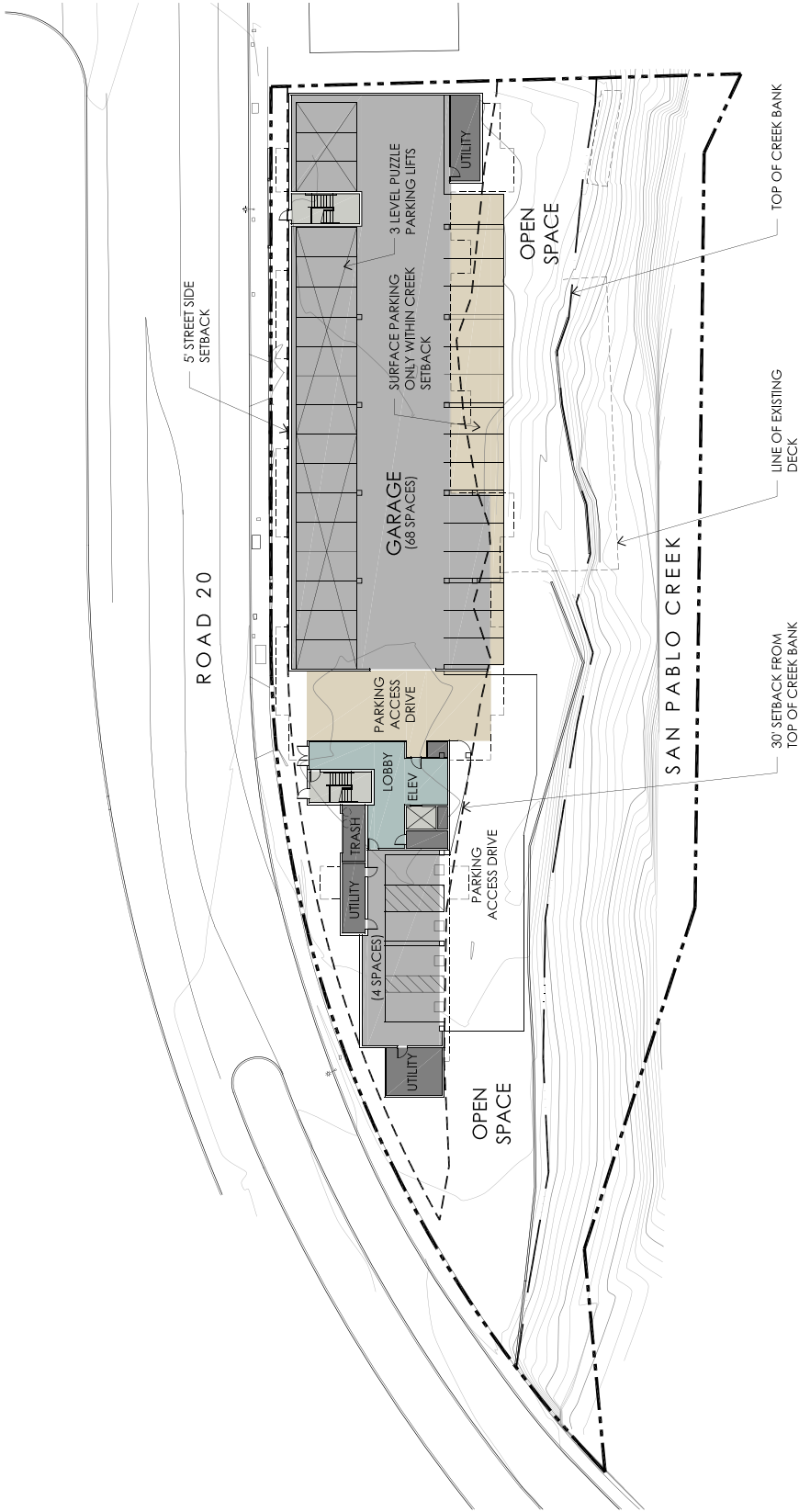
-  Project Site
-  Study Intersection
-  Project Access



Figure 2: Site Plan



2.0 STUDY METHODOLOGY

Traffic impacts related to the proposed project were evaluated for both compliance with applicable regulatory documents and environmental significance as defined in the California Environmental Quality Act (CEQA). In CEQA published by the Governor's Office of Planning and Research (OPR), the July 1, 2020 Technical Memorandum prepared by Fehr & Peers describing the VMT methodology adopted by the Contra Costa Transportation Authority (CCTA). As of July 1, 2020, intersection level of service (LOS) can no longer be used to determine significant CEQA impacts.

2.1 LEVEL OF SERVICE ANALYSIS METHODOLOGY

Level of Service (LOS) is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow) and F the worst (severely-congested flow with high delays). The intersection capacity analysis was conducted using the Synchro 10th Edition software to implement the Highway Capacity Manual, 2000 Edition (Transportation Research Board, 2000) (HCM) methodology to determine the overall intersection delay. The HCM methodology calculates the average delay, in seconds, of a vehicle passing through the intersection in any direction. The average delay is used to determine the intersection LOS according to the LOS definitions provided in **Table 1**.

Table 1: Level of Service Definitions for Intersections

Level of Service	Description	Delay in seconds	
		Signalized Intersections	Unsignalized Intersections
A	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.	≤ 10.0	0.0-10.0
B	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.	> 10.0 and ≤ 20.0	10.1-15.0
C	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.	> 20.0 and ≤ 35.0	15.1-25.0
D	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.	> 35.0 and ≤ 55.0	25.1-35.0
E	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.	> 55.0 and ≤ 80.0	35.1-50.0
F	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.	> 80.0	> 50.0

Source: Highway Capacity Manual 2000 (Transportation Research Board, 2000)

2.2 SIGNIFICANT IMPACT CRITERIA/LEVEL OF SERVICE STANDARDS

In accordance with the California Environmental Quality Act (CEQA), State CEQA Guidelines, Contra Costa County, City of San Pablo plans and policies, and professional standards, a project impact would be considered significant if:

- The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
- The project conflicts with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.
- If the project substantially increases hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- The project results in inadequate emergency access

The following criteria are not subject to CEQA significance criteria but should be addressed as appropriate in the findings of the traffic study:

- If the project site design does not have adequate parking or circulation capacity to accommodate the anticipated demand
- If the project would result in inadequate internal circulation to accommodate project traffic.

Table 2: Impact Criteria and Significance Thresholds

Intersection Control Type	Significant Impact Threshold
Signalized	<p>The Project</p> <ul style="list-style-type: none"> • Causes an acceptable LOS (LOS D or better) to decline to an unacceptable LOS (LOS E or F), or • Increases the average delay by more than 5 seconds per vehicle at an intersection having an unacceptable LOS without project traffic.
Unsignalized	<p>The Project</p> <ul style="list-style-type: none"> • Causes an acceptable LOS to decline to an unacceptable LOS, or • For intersections already operating at an unacceptable LOS without the project, it is considered a significant impact if the project related traffic increases the worst movement/approach delay by more than 5 seconds.

Source: *The San Pablo General Plan 2030 (April 2011)*

2.3 VEHICLE MILES TRAVELED

As the City of San Pablo does not currently have an adopted policy document regarding VMT standards or methodology, this study evaluates project-related VMT as outlined in the draft CCTA VMT

methodology¹. This methodology includes a screening process, in order to streamline evaluation of projects that can be presumed to generate a less-than-significant impact on VMT by exempting them from further analysis. Absent evidence that the project has characteristics that might lead to a significant amount of VMT, a screened out project can be presumed to have a less-than-significant impact.

If a project meets any of the following screening criteria and does not have characteristics indicating high VMT generation, CCTA does not require further VMT analysis:

- Qualifies for CEQA exemption
- Considered a small project
- Contains only local-serving uses
- Located in Transit Priority Areas (TPAs)
- Located in low VMT areas.

VMT is further discussed in Section 5.4 of this report.

¹ [Contra Costa County Transportation Analysis Guidelines](#)

3.0 EXISTING CONDITIONS

This section describes existing conditions in the immediate project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersections, including the results of LOS calculations.

3.1 EXISTING SETTING AND ROADWAY SYSTEM

Regional roadway facilities providing access to the proposed residential development is provided via San Pablo Avenue. Local access to the proposed project is provided via Road 20, El Portal Drive and 23rd Street.

San Pablo Avenue is a four-lane, north-south mixed use boulevard in the study area, extending from Hercules in the north to downtown Oakland to the south. In the project vicinity, the roadway features a raised median and on-street parking. San Pablo Avenue provides continuous sidewalks on both sides. Class II bike lanes exist on both sides of the roadway, south of Road 20. Continuous lighting is present via overhead street lights on both sides of the roadway. The posted speed limit is 35 miles per hour (mph) in the project vicinity.

Road 20 is a two-lane, east-west Avenue in the City of San Pablo, extending between Rumrill Boulevard and El Portal Drive. Road 20 provides direct access to multifamily residential uses and a middle school. The roadway features a two-way left-turn lane median and on-street parking on both sides of the roadway. Continuous sidewalks provide pedestrian access along the roadway. Continuous lighting is present via overhead street lights on both sides of the roadway. The posted speed limit along Road 20 ranges from 15 to 30 mph, however a school zone speed limit of 25 mph is present in the study area.

El Portal Drive is a two- to four-lane, east-west arterial in San Pablo and Richmond. In the City of San Pablo, El Portal Drive is classified as an urban arterial between San Pablo Avenue and Church Lane and an auto arterial between Church Lane and eastern City limits. El Portal Drive provides residents access to and from I-80 to the east. In the project vicinity, the roadway continuous sidewalks on both sides. Class II bike lanes exist on both sides of the roadway, east of Church Lane. Continuous lighting is present via overhead street lights in a raised median. The posted speed limit along El Portal Drive is 30 mph.

23rd Street is a two- to three-lane, north-south mixed use boulevard in the study area, extending from San Pablo Avenue in the north to Cutting Boulevard to the south. This road provides residents access between San Pablo and the City of Richmond. In the project vicinity, the roadway has continuous sidewalks on both sides and Class II bike lanes exist on both sides of the roadway. Continuous lighting is present via overhead street lights on both sides of the roadway. The posted speed limit along 23rd Street is 25 mph in the project vicinity.

3.2 EXISTING PEDESTRIAN FACILITIES

Walkability is defined as the ability to travel easily and safely between various origins and destinations without having to rely on automobiles or other motorized travel. The ideal “walkable” community includes wide sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited

number of conflict points with vehicle traffic, easy access to transit facilities and services and a network of pedestrian facilities. Pedestrian facilities are comprised of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access the destinations such as institutions, businesses, public transportation, and recreation facilities. Along the project frontage on Road 20, the width of the sidewalk is approximately six feet wide. All of the study signalized intersections have marked crosswalks with pedestrian pushbuttons and pedestrian signal heads.

At the intersection of San Pablo Avenue/Road 20-23rd Street and El Portal Drive/Road 20 there are ADA compliant curb-ramps and crosswalk markings. At the El Portal Drive/Road 20 intersection curb ramps at the northeast and southeast quadrants are not ADA-compliant. Throughout the project vicinity, Road 20, San Pablo Avenue, El Portal Drive and 23rd Street feature continuous sidewalks on both sides and high visibility crosswalks.

3.3 EXISTING BICYCLE FACILITIES

The 2017 City of San Pablo Bicycle and Pedestrian Master Plan outlines goals and objectives to improve the current active transportation system that includes walking and biking. The various bicycle facilities throughout the city are described below.

- **Class I Shared-Use Path:** Class I bikeways are a completely separate right-of-way designed for the exclusive use of cyclists and pedestrians, with minimal crossings for motorists. These paths are often located along creeks, canals, and rail lines.
- **Class II Bike Lanes:** Class II bike lanes use special lane markings, pavement legends, and signage. Bike lanes provide designated street space for bicyclists, typically adjacent to outer vehicle travel lanes. Buffered bike lanes increase separation through painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (e.g., driveways or intersections).
- **Class III Bike Routes:** Bike routes provide enhanced mixed-traffic conditions for bicyclists through signage, sharrow striping, and or traffic calming treatments, and provide continuity to a bikeway network. Bike routes are typically designated along gaps between bike trails or bike lanes, or along low-volume, low-speed streets. Bicycle Boulevards further enhance bike routes by encouraging slower speeds and discouraging non-local vehicle traffic using traffic diverters, chicanes, traffic circles, and speed tables.
- **Class IV Bikeway:** Bikeways are also known as cycle tracks or separated bikeways, are set aside for the exclusive use of bicycles and physically separated from vehicle traffic. Separated bikeways were adopted by Caltrans in 2015. Separation may include grade separation, flexible posts, physical barriers, or on-street parking.

In the vicinity of the project, there are Class II bicycle facilities along 23rd Street, and El Portal Drive. Additionally, the Wildcat Creek Trail, a Class I shared use path, is accessible on 23rd Street, located 0.2 miles southwest of the project site. There are no bicycle facilities that provide direct access to the project site.

3.4 EXISTING TRANSIT FACILITIES

AC Transit provides transit service throughout Richmond, San Pablo, and East Contra Costa County. In the project vicinity, transit stops for AC Transit are located along San Pablo Avenue, 23rd Street, Road 20 and El Portal Drive. **Table 3** summarizes the existing AC Transit services in the project vicinity.

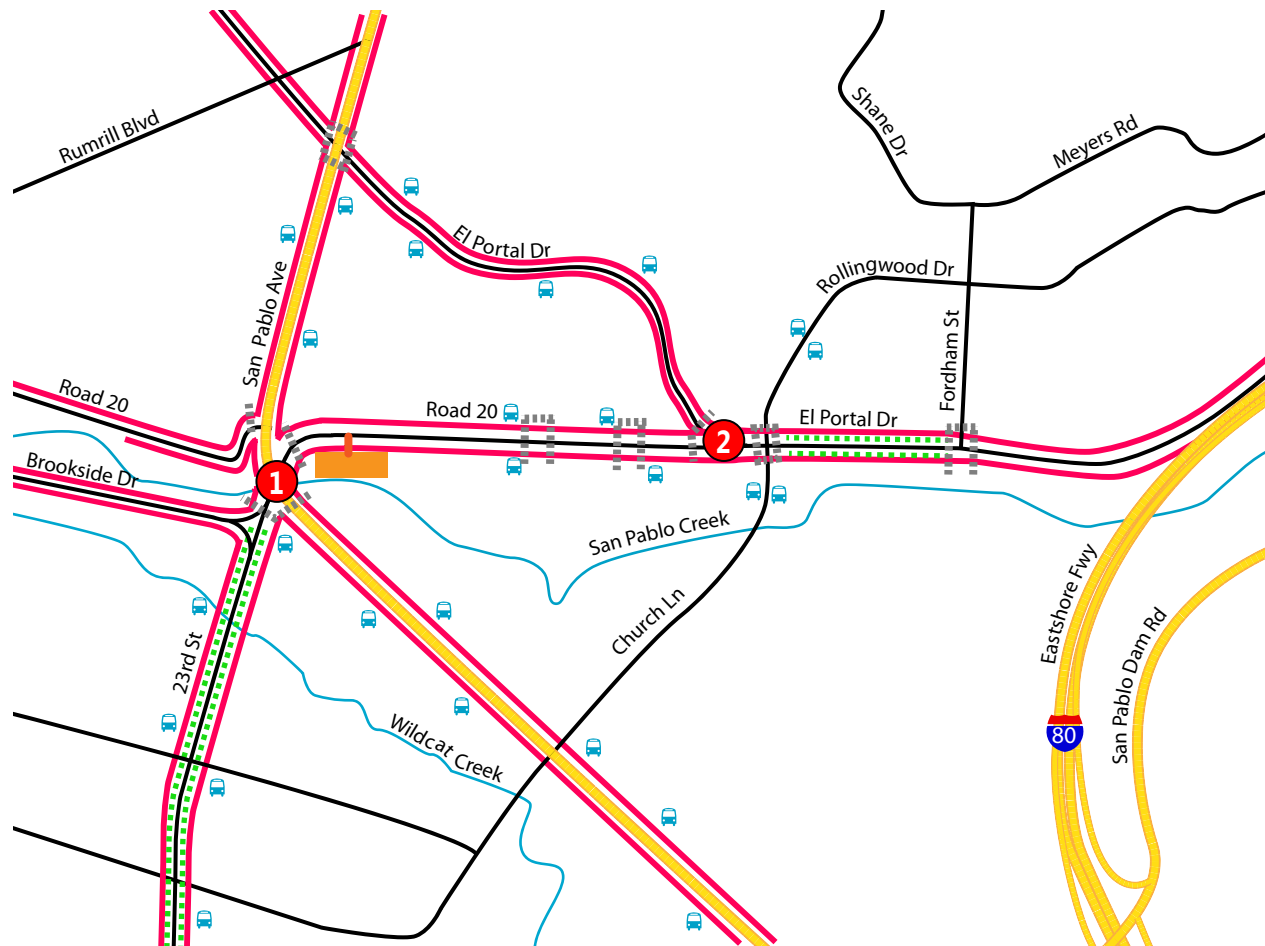
Table 3: Existing Tri Delta Transit Service

Route	From	To	Weekdays		Weekends	
			Operating Hours	Headway (minutes)	Operating Hours	Headway (minutes)
72	Hilltop Mall	Jack London Square	5:07 a.m. – 1:02 a.m.	19-40	4:59 a.m. – 1:28 a.m.	27-40
72R	Jack London Square	Contra Costa College	5:50 a.m. – 8:01 p.m.	6-22	6:59 a.m. – 7:40 p.m.	12-18
74	Castro Ranch Rd/Sherwood Forest Dr	Harbour Way South/Ford Point	6:41 a.m. – 8:16 p.m.	30-60	6:42 a.m. – 8:14 p.m.	30-62
76	El Cerrito Del Norte BART	Richmond Parkway Transit Center	6:17 a.m. – 8:27 p.m.	6-30	6:33 a.m. – 8:27 p.m.	30
607	Richmond High	Point Richmond	7:05 a.m. – 7:39 a.m.	One a.m. cycle only	Not in Service	Not in Service
669	Crespi Middle	San Pablo Dam	7:26 a.m. – 4:51 p.m.	One a.m. cycle; 77 for p.m.	Not in Service	Not in Service
676	De Anza	Rollingwood	7:47 a.m. – 4:19 p.m.	One a.m. cycle; 60-75 for p.m.	Not in Service	Not in Service






Source: AC Transit Website

Figure 3 illustrates existing pedestrian, bicycle and transit facilities in the project vicinity.

Figure 3: Existing Pedestrian, Bike, and Transit Facilities



LEGEND

- | | | |
|--|--|---|
|  Project Site |  Sidewalk |  Transit Stop |
|  Study Intersection |  Marked Crosswalk | |
|  Project Access |  Class II Bike Lane | |

3.5 EXISTING PEAK HOUR TRAFFIC VOLUMES AND LANE CONFIGURATIONS

The existing operations of the study intersections were evaluated for the highest one-hour volumes during weekday morning and evening peak periods. Recent turning movement counts for vehicles, bicycles, and pedestrians were conducted during the weekday a.m. peak period (7:00 a.m.-9:00 a.m.) and p.m. peak period (4:00-6:00 p.m.) at the study intersections on Tuesday, August 31, 2021. TJKM compared the traffic counts at the intersection of San Pablo Avenue/Road 20-23rd Street and El Portal Drive/Road 20 before COVID-19 conditions (March 2019) and present traffic counts (August 2021) during the COVID-19 pandemic conditions. TJKM applied a growth factor of 1.08 during the a.m. peak hour and 1.05 during the p.m. peak hour to the present traffic volumes at San Pablo Avenue/Road 20-23rd Street intersection to establish baseline conditions. Similarly, TJKM applied a growth factor of 1.18 during the a.m. peak hour and 1.24 during the p.m. peak hour to the present traffic volumes at El Portal Drive/Road 20 intersection to establish baseline conditions. These adjustment rates were applied to all volume data including pedestrians and bicyclists at the two study intersections. **Appendix A** includes all data sheets for the collected vehicle, bicycle, and pedestrian counts. **Figure 4** illustrates the existing lane geometry, and traffic controls at the study intersections. **Figure 5** illustrates the existing a.m. and p.m. peak hour vehicle turning movement volumes at the study intersections.

3.6 INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING CONDITIONS

Existing intersection lane configurations, signal timings, and turning movement volumes are used to calculate the level of service for the study intersections during each peak hour. **Table 4** below summarizes peak hour LOS at the study intersections under Existing Conditions. Due to the limitations of HCM 2010 methodology, the study intersections were evaluated using HCM 2000 Methodology.

Under this scenario, all of the study intersections operate at the applicable jurisdictional standards of LOS D or better during both peak periods. **Appendix B** contains the detailed LOS calculation sheets for Existing Conditions.

Table 4: Intersection Level of Service Analysis – Existing Conditions

#	Intersection	Control	Peak Hour ¹	Existing Conditions	
				Delay ²	LOS ³
1	San Pablo Avenue/Road 20-23 rd Street	Signal	A.M.	53.2	D
			P.M.	47.1	D
2	El Portal Drive/Road 20	Signal	A.M.	11.9	B
			P.M.	8.2	A

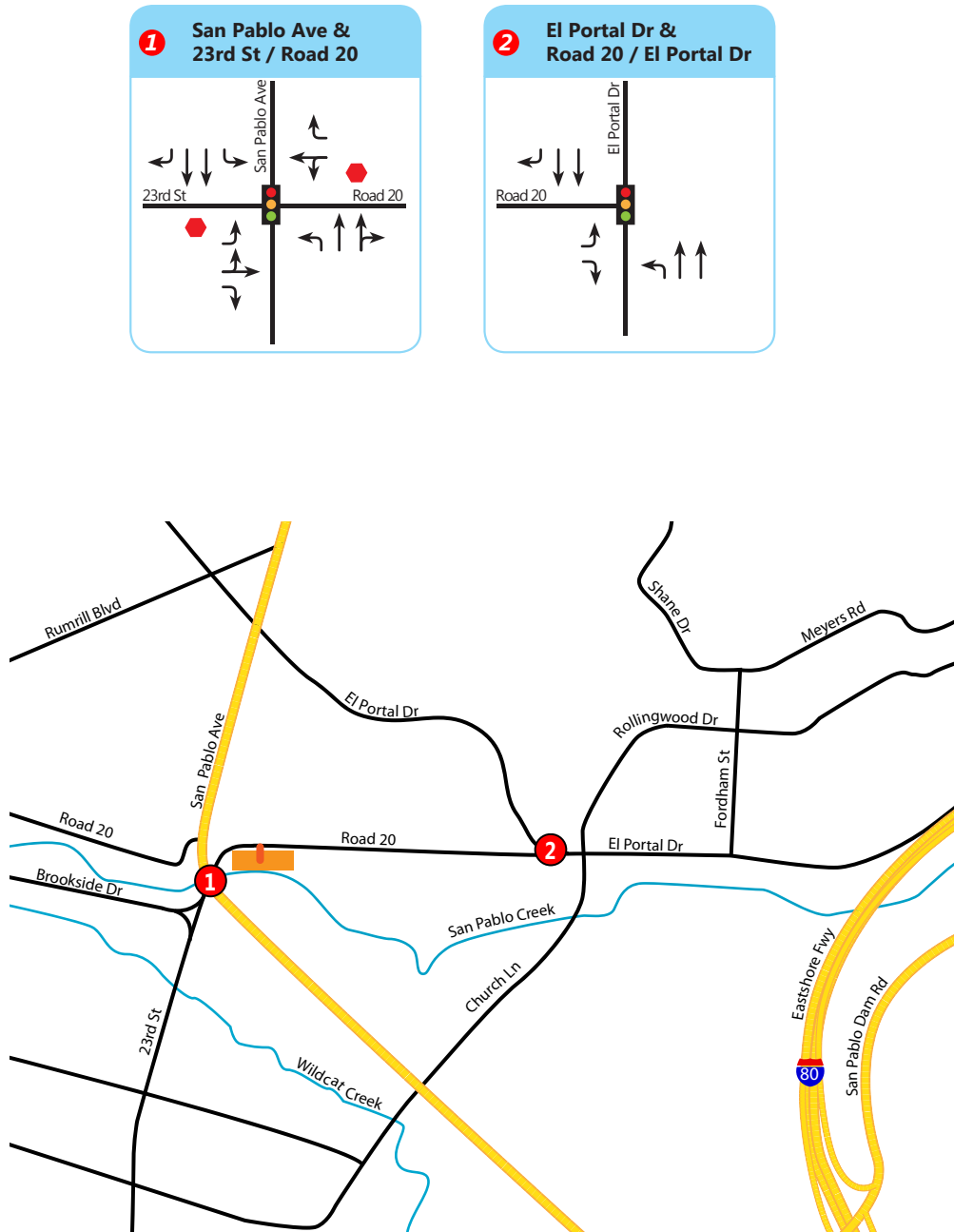
Notes:

1. AM – morning peak hour, PM – evening peak hour

2. Delay – Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections.

3. LOS – Level of Service. **Bold** indicates unacceptable LOS and Delay.

Figure 4: Existing Lane Geometry and Traffic Control

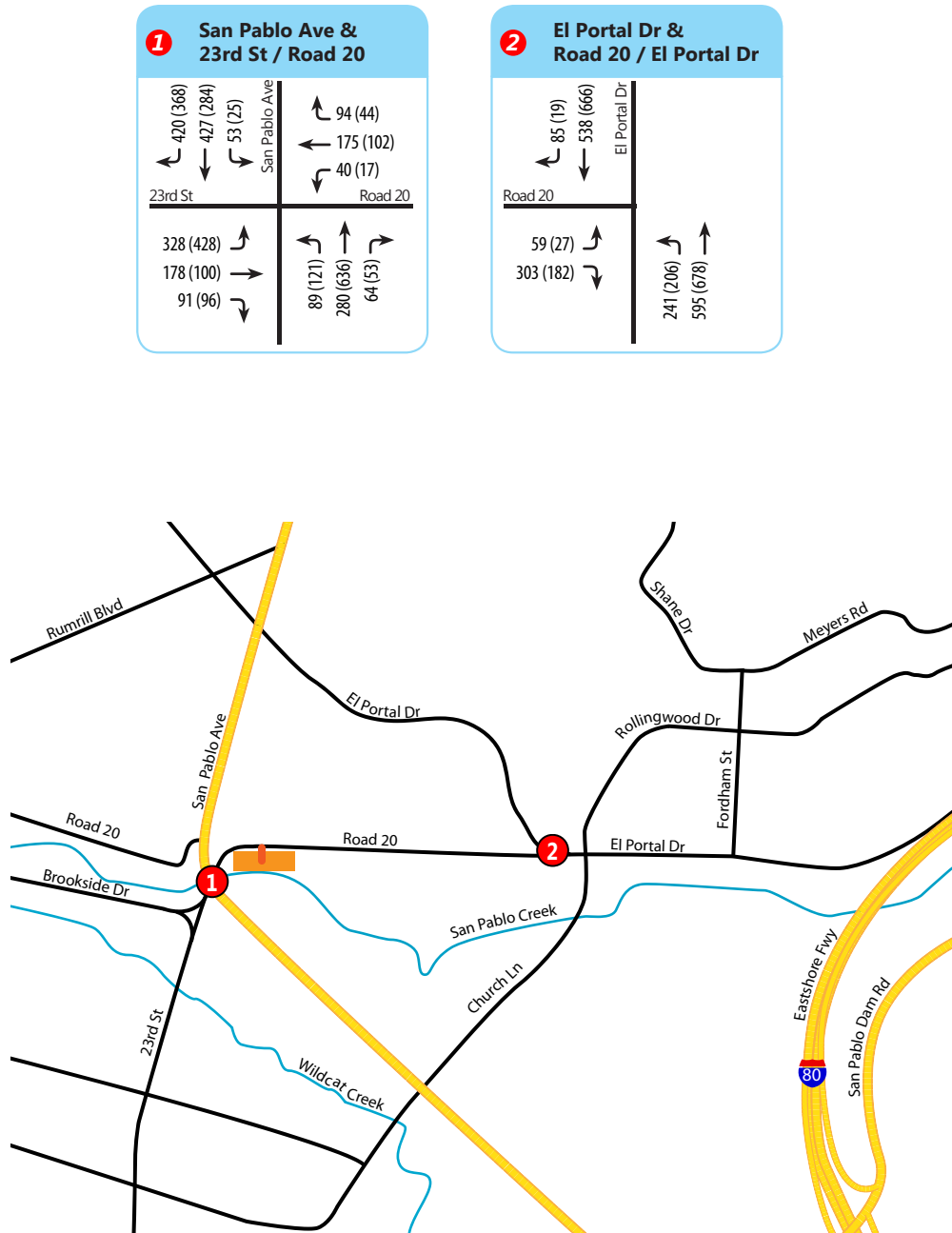


LEGEND

- Project Site
- ⊗ Study Intersection
- Project Access
- ⬢ Stop Sign
- ⬢ Traffic Signal



Figure 5: Existing Peak Hour Traffic Volumes



LEGEND

- Project Site
- X Study Intersection
- Project Access
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes



4.0 EXISTING PLUS PROJECT CONDITIONS

The impacts of the proposed project on the transportation system are discussed in this chapter. First, the method used to estimate the amount of traffic generated by the project is described. Then, the results of the level of service calculations for Existing plus Project Conditions are presented. (Existing plus Project Conditions are defined as Existing Conditions plus traffic generated by the proposed project). A comparison of intersections under Existing plus Project Conditions and Existing Conditions is presented and the impacts of the project on the study intersections are discussed.

The amount of traffic added to the roadway system by the proposed development is estimated using a three-step process.

- Trip Generation – Estimates the amount of traffic added to the roadway network,
- Trip Distribution – Estimates the direction of travel to and from the project site,
- Trip Assignment – The new trips are assigned to specific street segments and intersection turning movements.

4.1 PROJECT TRIP GENERATION

TJKM developed estimated project trip generation for the proposed project based on published trip generation rates from the *Institute of Transportation Engineers' (ITE) publication Trip Generation (10th Edition)*. TJKM used published trip rates for the ITE land use Multifamily Housing (Mid-Rise) (ITE Code 221) for the proposed residential development.

Table 5 shows the trip generation expected to be generated by the proposed project. The proposed project is expected to generate approximately 348 net new daily trips, including 23 weekday a.m. peak hour trips (6 inbound trips, 17 outbound trips), and 29 weekday p.m. peak hour trips (18 inbound trips, 11 outbound trips).

Table 5: Project Trip Generation

Proposed Land Uses (ITE Code)	Size	Daily		AM Peak				PM Peak			
		Rate	Trips	Rate	In/out %	In/out	Total	Rate	In/out %	In/out	Total
Multifamily Housing (Mid-Rise) (221) ¹	64 DU	5.44	348	0.36	26/74	6/17	23	0.44	61/39	18/11	29
Total Net Trips			348			6/17	23			18/11	29

Source - ITE Trip Generation Manual, 10th Edition (2019).

¹Multifamily Housing (Mid-Rise), General Urban/Suburban (ITE Land Use Code 221) vehicle trip rates are based upon number of dwelling units.

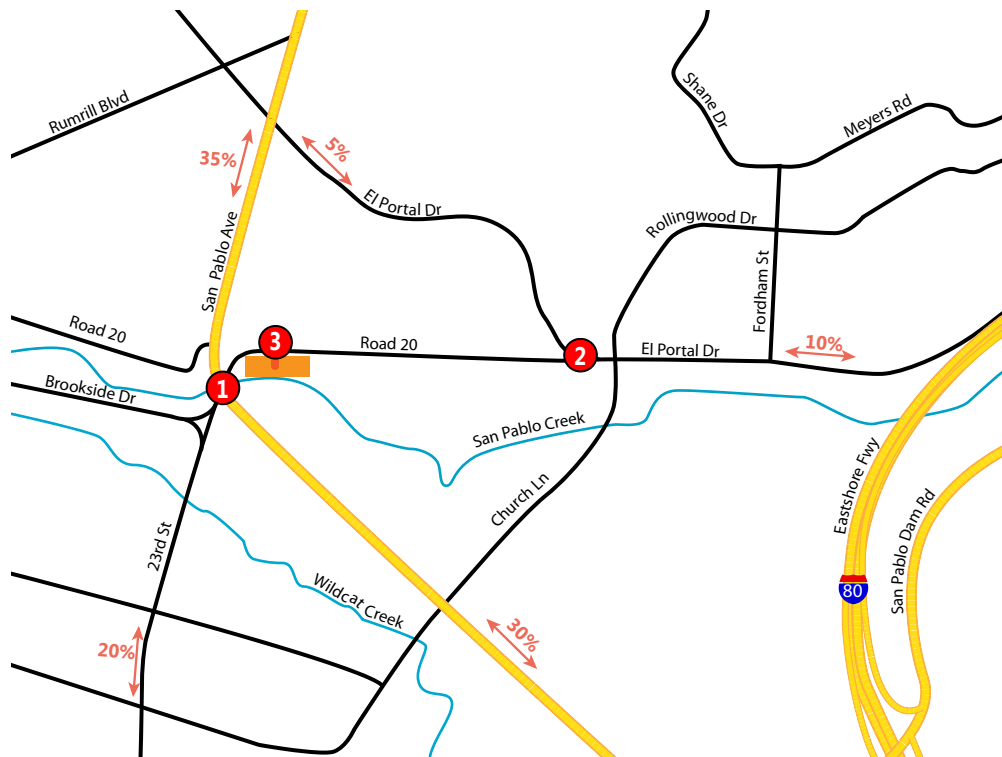
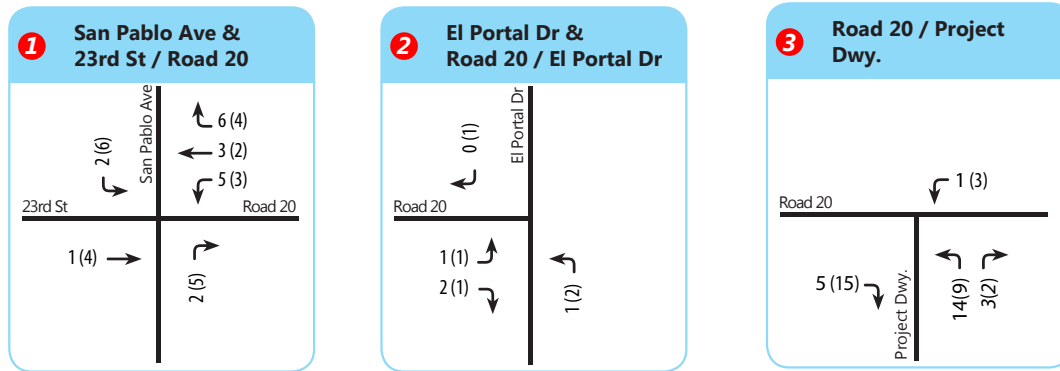
4.2 PROJECT TRIP DISTRIBUTION AND ASSIGNMENT

Trip distribution is a process that determines in what proportion vehicles would be expected to travel between the project site and various destinations outside the project study area and also determines the various routes that vehicles would take from the project site to each destination using the calculated trip

distribution. Trip distribution assumptions for the proposed project were developed based on existing travel patterns, and knowledge of the study area.

Figure 6 illustrates the trip distribution percentages and trip assignment project volumes developed for the proposed project. The assigned project trips were then added to traffic volumes under Existing Conditions to generate Existing plus Project Conditions traffic volumes.

Figure 6: Project Trip Distribution and Assignment



LEGEND

Project Site

Study Intersection

Project Access

XX AM Peak Hour Project Trips

(XX) PM Peak Hour Project Trips

Trip Distribution



4.3 INTERSECTION LEVEL OF SERVICE ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

The intersection LOS analysis results for Existing plus Project Conditions are summarized in **Table 6**. The results for Existing Conditions are included for comparison purposes. **Figure 7** displays projected peak hour turning movement volumes at all of the study intersections for Existing plus Project Conditions.

All study intersections are expected to continue operating within applicable jurisdictional standards of LOS D or better under Existing plus Project Conditions. **Appendix C** contains the detailed LOS calculation sheets for Existing plus Project Conditions.

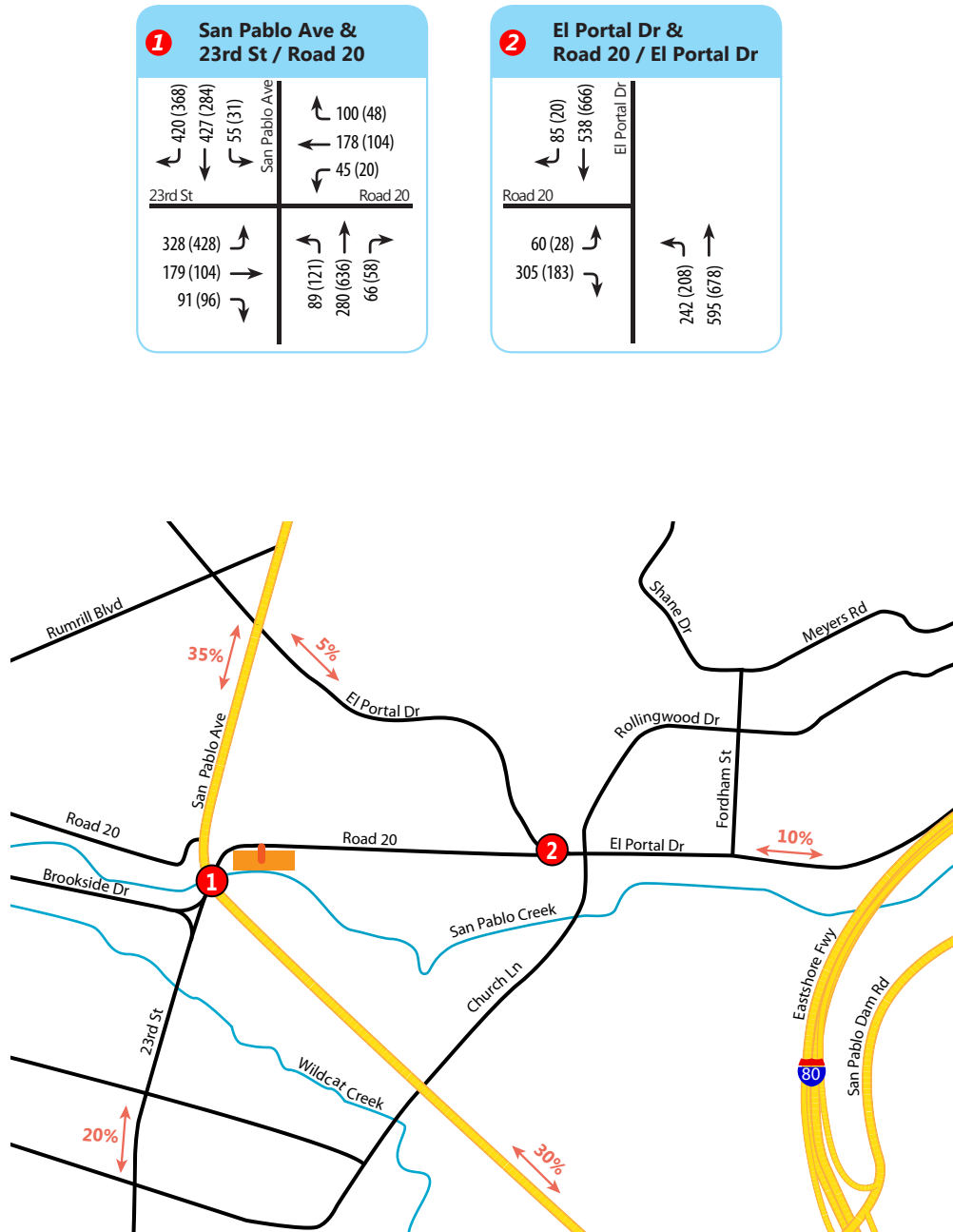
Table 6: Intersection Level of Service Analysis – Existing plus Project Conditions

#	Study Intersections	Control	Peak Hour ¹	Existing Conditions		Existing Plus Project Conditions		Change in Delay	Significant?
				Delay ²	LOS ³	Delay ²	LOS ³		
1	San Pablo Avenue/Road 20-23 rd Street	Signal	A.M.	53.2	D	53.9	D	0.7	N
			P.M.	47.1	D	48.2	D	1.1	N
2	El Portal Drive/Road 20	Signal	A.M.	11.9	B	11.9	B	0.0	N
			P.M.	8.2	A	8.3	A	0.1	N

Notes:

1. AM – morning peak hour, PM – evening peak hour
2. Delay – Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections.
3. LOS – Level of Service.

Figure 7: Existing plus Project Peak Hour Traffic Volumes



LEGEND

- Project Site
- ✕ Study Intersection
- Project Access
- XX AM Peak Hour Traffic Volumes
- (XX) PM Peak Hour Traffic Volumes
- ↔ XX% Trip Distribution



4.4 QUEUING ANALYSIS – EXISTING PLUS PROJECT CONDITIONS

TJKM conducted a vehicle queueing and storage analysis for exclusive left and right turn pockets at the study intersections where project traffic is added under Existing plus Project Conditions. The 95th percentile queues were analyzed using Synchro 10.0 software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario. **Table 7** summarizes the 95th percentile queue lengths at selected study intersections under Existing and Existing plus Project scenarios. It should be noted that queue lengths at some locations already exceed capacity, creating deficient conditions.

Table 7: 95th Percentile Queues at Study Intersections

#	Study Intersections	Lane Group	Storage Length	Existing		Existing Plus Project Conditions		Change	
				AM	PM	AM	PM	AM	PM
1	San Pablo Avenue/Road 20-23 rd Street	EBL	325	525	490	525	505	0	15
		EBTL	325	535	500	540	505	5	5
		EBR	135	20	25	20	25	0	0
		WBTL	70	440	245	460	255	20	10
		WBR	70	20	0	35	0	15	0
		NBL	155	220	285	220	290	0	5
		NBTR	1,025	280	540	280	550	0	10
		SBL	90	175	75	185	90	10	15
		SBT	90	370	225	370	230	0	5
		SBR	90	405	280	405	285	0	5
2	El Portal Drive/Road 20	EBL	170	40	30	45	30	5	0
		EBR	300	0	0	0	0	0	0
		NBL	155	235	190	235	190	0	0
		NBT	350	115	135	115	135	0	0
		SBT	445	160	240	160	240	0	0
		SBR	45	40	20	40	20	0	0

Notes: Storage length and 95th percentile queue is expressed in feet per lane

AM – morning peak hour, PM – evening peak hour

1 vehicle = 25 feet

Bold indicates queue lengths exceeding capacity

The following are movements where the addition of project trips would exceed existing storage or further increase the queue lengths that already exceed existing storage lengths:

- Eastbound left-turn lane at San Pablo Avenue/Road 20-23rd Street: the proposed project would further increase the already exceeding exiting queue length by less than one vehicle (1 vehicle = 25 ft.) during the p.m. peak only. Improvements to this intersection have been identified in the *Update of the Contra Costa Congestion Management Program* (CCTA, 2019) that include widening the intersection to accommodate additional eastbound left-turn lanes. However, specific improvements to this approach have not been identified yet.

- Eastbound through-left lane at San Pablo Avenue/Road 20-23rd Street: the proposed project would further increase the already exceeding existing queue length by less than one (1 vehicle = 25 feet) during both peak periods.
- Westbound through-left lane at San Pablo Avenue/Road 20-23rd Street: the proposed project would further increase the already exceeding existing queue length by less than one vehicle (1 vehicle = 25 feet) during both peak periods.
- Northbound left-turn lane at San Pablo Avenue/Road 20-23rd Street: the proposed project would further increase the already exceeding existing queue length by less than one vehicle (1 vehicle = 25 feet) during the p.m. peak period only.
- Southbound left-turn lane at San Pablo Avenue/Road 20-23rd Street: the proposed project would further increase the already exceeding existing queue length by less than one vehicle (1 vehicle = 25 feet) during the a.m. peak period only.
- Southbound through lane at San Pablo Avenue/Road 20-23rd Street: the proposed project would further increase the already exceeding existing queue length by less than one vehicle (1 vehicle = 25 ft.) during the p.m. peak only.
- Southbound right-turn lane at San Pablo Avenue/Road 20-23rd Street: the proposed project would further increase the already exceeding existing queue length by less than one vehicle (1 vehicle = 25 ft.) during the p.m. peak only.

4.5 QUEUING ANALYSIS AT PROJECT DRIVEWAY

TJKM conducted a vehicle queuing analysis at the project driveway along Road 20. The 95th percentile (maximum) queues were analyzed using the HCM 2000 Queue methodology contained in Synchro 10 software for the project driveways. **Table 8** summarizes the 95th percentile queue lengths at the project driveway under Existing plus Project scenario. As shown in **Table 8**, under Existing plus Project Conditions the 95th percentile queues at the outbound approach of project driveway are expected to be minimal.

Table 8: 95th Percentile Queues at Project Driveways

Intersection	Control	Existing plus Project Conditions			
		AM		PM	
		LOS	95 th Percentile Queue (ft) ¹	LOS	95 th Percentile Queue (ft) ¹
Road 20/ Project Driveway	One-Way Stop	B	25	B	25

Notes:

1 vehicle=25 feet

¹Reported values of 95th percentile queues are for the outbound movements at the project driveways

5.0 ADDITIONAL ANALYSES

The following sections provide additional analyses of other transportation issues associated with the project site, including:

- Site Access and Onsite Circulation;
- Pedestrian, Bicycle, and Transit Impacts
- Vehicle Miles Traveled (VMT) Analysis

Unlike the LOS impact methodology, the analyses in these sections is based on professional judgment in accordance with the standards and methods employed by traffic engineers. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to the project environment.

5.1 SITE ACCESS AND ON-SITE CIRCULATION

Site Access

The proposed vehicular access to the project site is via one project entrance on Road 20. Main driveway access is to the proposed parking garage. From the site plan, it appears that existing sidewalks and on-street parking along the project frontage will be maintained. The posted speed limit along the project frontage is 30 mph, requiring a stopping sight distance of 200 feet. Sight distance between vehicles travelling westbound on Road 20 and vehicles exiting the project site is clear and visible for at least 200 feet; however, sight distance between vehicles travelling eastbound on Road 20 and vehicles exiting the project site is slightly obstructed by the horizontal curvature of Road 20, west of the project site. TJKM recommends the project use landscaping below eye level to avoid further obstructing sight distance west of the project site.

On-Site Circulation

In terms of external access, the project site plan (**Figure 2**) shows that the proposed project would provide access via one bidirectional driveway. The driveway does not have any turning restrictions and appears to accommodate two-way travel. Based on the current site plan, circulation aisles seem to satisfy the minimum 22 feet requirement from the City of San Pablo Municipal Code.

The proposed project proposes to provide a single level of parking garage space with one two-way circulation aisle. The southern side of the parking garage features surface level parking and the northern side of the garage features three-level parking lifts. The proposed project should perform a truck turning analysis to confirm a variety of trucks, including garbage trucks and emergency vehicles, can circulate on-site. Based on a preliminary review of the project site plan, the site access and on-site circulation is considered adequate. Garbage trucks can access the project site via the parking access driveway between the garage and accessible parking lot. Emergency vehicles may access the project site via the parking access driveway between the garage and accessible parking lot or the on-street parking along the project frontage.

5.2 PEDESTRIAN, BICYCLE, AND TRANSIT IMPACTS

Pedestrian Access

Pedestrian access to the project site will be facilitated by existing sidewalks along Road 20, San Pablo Avenue, 23rd Street and El Portal Drive. Additionally, a Class I shared use path called the Wildcat Creek Trail can be accessed via 23rd Street, located 0.2 miles southwest of the project site. Based on the project site plan, the project proposes to maintain the existing sidewalk adjacent to the project site. There is existing street lighting that is adequate along Road 20. However, the project should provide street lighting at the project driveway to increase pedestrian visibility. The proposed project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is **less than significant**.

Bicycle Access

In terms of bicycle access to the project site, there are currently Class II bicycle facilities along 23rd Street, and El Portal Drive. Additionally, the Wildcat Creek Trail, a Class I shared use path, is accessible on 23rd Street, located 0.2 miles southwest of the project site. There are no bicycle facilities that provide direct access to the project site. The project does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is **less than significant**.

Transit Access

AC Transit bus stops exist on Road 20, San Pablo Avenue, El Portal Drive and 23rd Street within the project vicinity. The project site is within a quarter mile of the San Pablo Avenue and Purisima Street, and Road 20 at Abella Circle AC Transit bus stops. AC Transit can connect riders locally to Richmond and Hilltop Mall. The existing pedestrian facilities in the project vicinity provide adequate connectivity for pedestrians to the transit stops. Impacts to transit service are expected to be **less than significant**.

5.4 VEHICLES MILES TRAVELED (VMT)

The Governor's Office of Planning and Research (OPR) *Technical Advisory* (December 2018) provides guidance to analysts and local jurisdictions for implementing VMT as a metric for determining the transportation impact for land use projects. The OPR guidelines state that for analysis purposes, "VMT" refers to automobile VMT, specifically passenger vehicles and light trucks. Heavy truck traffic is typically excluded. The Contra Costa County *Transportation Analysis Guidelines* (June 2020) provide additional guidance on evaluating VMT impacts from projects within the County.

Both the OPR and County guidelines provide standards for identifying which projects should be exempt from further VMT analysis, based on characteristics such as their size, proximity to transit, or expected number of total daily trips. **Table 9** summarizes the VMT screening criteria as outlined in the Transportation analysis Guidelines.

Table 9: Contra Costa County VMT Screening Criteria

Type of Project	Screening Criteria
General	Generate or attract fewer than 110 daily vehicle trips; or Projects of 10,000 square feet or less of non-residential space or 20 residential units or less, or otherwise generating less than 836 VMT per day.
Residential, retail, office, or mixed- use projects	Projects within ½ mile of an existing major transit stop or an existing stop along a high quality transit corridor.
Residential, employment	Residential projects (home-based) at 15% or below the baseline County-wide home-based average VMT per capita; or Employment projects (employee VMT) at 15% or below the baseline Bay Area average commute VMT per employee in areas with low VMT that incorporate similar VMT reducing features (i.e. density, mix of uses, transit accessibility).
Public facilities and government buildings	Public facilities (e.g. emergency services, passive parks (low-intensity recreation, open space), libraries, community centers, public utilities) are exempt.

Source: Contra Costa County Transportation Analysis Guidelines

The project is located in the city of San Pablo consists of 64 multi-family housing units on a site east of San Pablo near the downtown area. Currently, there is a small single family house on the site of the Project.

This project is exempt from VMT requirements per Contra Costa County Transportation Analysis Guidelines (6/23/2020, page 7) which states:

There are five screening criteria that lead agencies can apply to screen projects out of conducting project-level VMT analysis. Even if a project satisfies one or more of the screening criteria, lead agencies may still require a VMT analysis if there is evidence that the project has characteristics that might lead to a significant amount of VMT.

2.1: CEQA Exemption. Any project that is exempt from CEQA is not required to conduct a VMT analysis.

This project can claim CEQA exemption #15332, as stated below:

15332. IN-FILL DEVELOPMENT PROJECTS

Class 32 consists of projects characterized as in-fill development meeting the conditions described in this section:

- A. The project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations.*
- B. The proposed development occurs within city limits on a project site of no more than five acres substantially surrounded by urban uses.*
- C. The project site has no value as habitat for endangered, rare or threatened species.*

- D. Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality.*
- E. The site can be adequately served by all required utilities and public services.*

Note: Authority cited: Section 21083, Public Resources Code. Reference: Section 21084, Public Resources Code.

Since this project is exempt from CEQA, in accordance to CCTA VMT requirements, it is also not required to conduct a VMT analysis.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Project Trip Generation

The proposed project is expected to generate approximately 23 weekday a.m. peak hour trips (6 inbound trips, 17 outbound trips), and 29 weekday p.m. peak hour trips (18 inbound trips, 11 outbound trips).

Existing Conditions

Under this scenario, all of the study intersections operate within applicable jurisdictional LOS standards of LOS D or better during both peak hours.

Existing plus Project Conditions

Under this scenario, all of the study intersections continue to operate within applicable jurisdictional LOS standards of LOS D or better during both peak hours.

Queueing Analysis

The following are movements where the addition of project trips would further increase the queue lengths that already exceed existing storage lengths:

- San Pablo Avenue/Road 20-23rd Street
 - ✓ Eastbound left-turn lane during the p.m. peak hour only. Eastbound through-left lane during both peak hours.
 - ✓ Westbound through-left lane during both peak hours.
 - ✓ Northbound left-turn lane during the p.m. peak hour only.
 - ✓ Southbound left-turn lane during the a.m. peak hour only. Southbound through lane during the p.m. peak hour only. Southbound right-turn lane during the p.m. peak hour only.

Site Access and On-Site Circulation

The proposed vehicular access to the project site is via one project entrance on Road 20. Main driveway access is to the proposed parking garage. From the site plan, it appears that existing sidewalks and on-street parking along the project frontage will be maintained. Sight distance between vehicles travelling westbound on Road 20 and vehicles exiting the project site is clear and visible for at least 200 feet; however, sight distance between vehicles travelling eastbound on Road 20 and vehicles exiting the project site is slightly obstructed by the horizontal curvature of Road 20, west of the project site. TJKM recommends the project use landscaping below eye level to avoid further obstructing sight distance west of the project site.

Based on the current site plan, circulation aisles seem to satisfy the minimum 22 feet requirement from the City of San Pablo Municipal Code. The proposed project should perform a truck turning analysis to confirm a variety of trucks, including garbage trucks and emergency vehicles, can circulate on-site. Based on a preliminary review of the project site plan, the site access and on-site circulation is considered adequate.

Pedestrian Impacts

The proposed project should provide adequate street lighting at the project driveway. The proposed project does not conflict with existing and planned pedestrian facilities; therefore, the impact to pedestrian facilities is ***less than significant***.

Bicycle Impacts

The project is does not conflict with existing and planned bicycle facilities; therefore, the impact to bicycle facilities is ***less than significant***.

Transit Impacts

The project site is within walking distance to various AC Transit bus stops on Road 20 and San Pablo Avenue. Impacts to transit service are expected to be ***less than significant***.

Vehicle Miles Traveled

Since the proposed project is exempt from CEQA (CEQA exemption #15332), in accordance to CCTA VMT requirements, it is also not required to conduct a VMT analysis.

Appendix A – Existing Traffic Counts

AM PEAK HOUR TRAFFIC VOLUMES													
#	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	San Pablo Avenue/Road 20-23rd Street	89	280	64	53	427	420	328	178	91	40	175	94
2	El Portal Drive/Road 20	241	595	0	0	538	85	59	0	303	1	0	2
PM PEAK HOUR TRAFFIC VOLUMES													
#	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	San Pablo Avenue/Road 20-23rd Street	121	636	53	25	284	368	428	100	96	17	102	44
2	El Portal Drive/Road 20	206	678	0	0	666	19	27	0	182	0	0	1

Two-Hour Count Summaries

Interval Start	Rd 20					Rd 20					San Pablo Ave					San Pablo Ave					23rd St					15-min Total	Rolling One Hour	
	Eastbound					Westbound					Northbound					Southbound					Northeastbound							
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR			
7:00 AM	0	1	1	5	5	0	1	9	0	7	0	13	0	28	2	0	2	53	36	1	0	0	36	13	14	227	0	
7:15 AM	0	0	3	8	8	0	6	24	0	5	0	7	0	32	5	0	3	76	57	0	0	0	42	12	14	302	0	
7:30 AM	0	0	1	9	5	0	6	16	0	10	0	12	0	40	6	0	6	109	65	5	0	0	64	13	15	382	0	
7:45 AM	0	1	2	11	7	0	3	20	0	11	0	20	0	71	8	0	4	131	83	2	0	0	111	21	14	520	1,431	
8:00 AM	0	0	3	7	5	0	8	27	0	21	0	20	0	68	6	0	3	104	100	4	0	0	105	28	21	530	1,734	
8:15 AM	0	1	3	4	4	0	10	23	0	18	0	16	0	44	9	1	11	112	120	5	0	0	72	35	28	516	1,948	
8:30 AM	0	0	1	7	0	0	5	51	0	17	0	19	0	79	30	0	11	84	104	6	0	0	56	67	18	555	2,121	
8:45 AM	0	0	2	9	1	0	14	61	0	31	0	27	0	68	14	0	23	95	65	8	0	0	71	35	17	541	2,142	
Count Total	0	3	16	60	35	0	53	231	0	120	0	134	0	430	80	1	63	764	630	31	0	0	557	224	141	3,573	0	
Peak Hour	All	0	1	9	27	10	0	37	162	0	87	0	82	0	259	59	1	48	395	389	23	0	0	304	165	84	2,142	0
	HV	0	0	0	0	1	0	0	4	0	3	0	3	0	8	0	0	2	15	5	0	0	0	6	0	3	50	0
	HV%	-	0%	0%	0%	10%	-	0%	2%	-	3%	-	4%	-	3%	0%	0%	4%	4%	1%	0%	-	-	2%	0%	4%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North	South	Southwest	Total
7:00 AM	0	2	3	0	3	8	0	1	0	0	0	1	0	1	0	1	0	2
7:15 AM	0	2	3	10	3	18	0	0	1	0	0	1	2	5	0	0	1	8
7:30 AM	0	1	3	9	6	19	0	0	0	0	1	1	1	3	1	0	1	6
7:45 AM	2	1	4	9	3	19	0	0	0	0	0	0	5	6	0	6	5	22
8:00 AM	0	1	2	4	3	10	0	1	1	1	0	3	6	9	0	11	3	29
8:15 AM	1	3	2	5	1	12	0	0	0	0	0	0	3	5	0	26	4	38
8:30 AM	0	2	1	2	2	7	0	0	0	0	0	0	4	2	4	25	12	47
8:45 AM	0	1	6	11	3	21	0	0	0	0	0	0	6	3	0	15	3	27
Count Total	3	13	24	50	24	114	0	2	2	1	1	6	27	34	5	84	29	179
Peak Hr	1	7	11	22	9	50	0	1	1	1	0	3	19	19	4	77	22	141

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Rd 20 Eastbound					Rd 20 Westbound					San Pablo Ave Northbound					San Pablo Ave Southbound					23rd St Northeastbound					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	1	0	1	0	2	0	1	0	0	0	0	0	0	0	0	1	1	1	8	0
7:15 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	3	0	0	2	4	4	0	0	0	2	1	0	18	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	2	0	1	0	0	1	4	4	0	0	0	4	1	1	19	0
7:45 AM	0	0	0	2	0	0	0	0	0	1	0	0	0	4	0	0	1	5	3	0	0	0	3	0	0	19	64
8:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	3	1	0	0	0	2	0	1	10	66
8:15 AM	0	0	0	0	1	0	0	1	0	2	0	1	0	1	0	0	1	3	1	0	0	0	0	0	1	12	60
8:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	1	1	0	0	0	2	0	0	7	48
8:45 AM	0	0	0	0	0	0	0	0	0	1	0	2	0	4	0	0	1	8	2	0	0	0	2	0	1	21	50
Count Total	0	0	0	2	1	0	0	7	0	6	0	7	0	17	0	0	6	28	16	0	0	0	16	3	5	114	0
Peak Hour	0	0	0	0	1	0	0	4	0	3	0	3	0	8	0	0	2	15	5	0	0	0	6	0	3	50	0

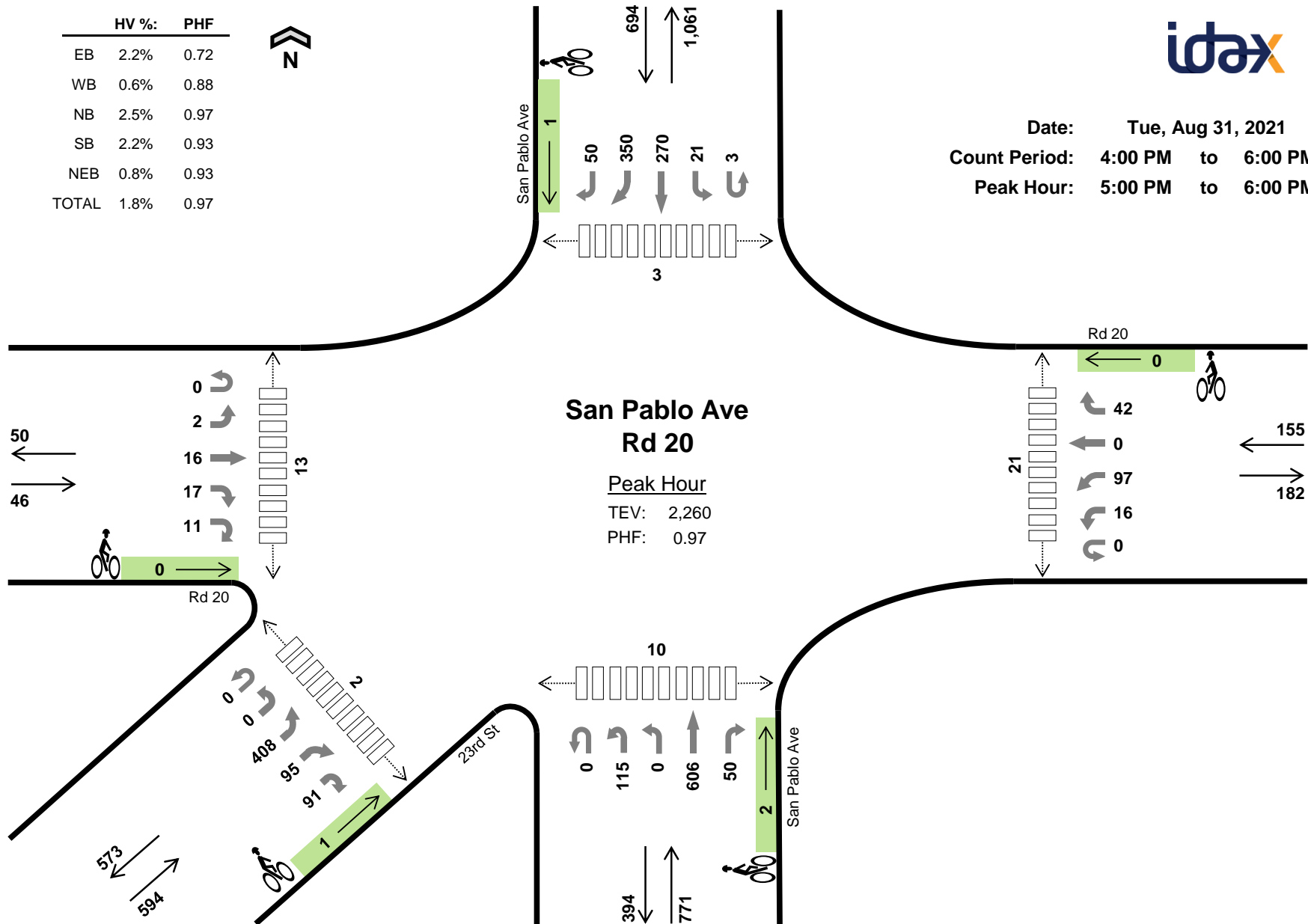
Two-Hour Count Summaries - Bikes

Interval Start	Rd 20 Eastbound					Rd 20 Westbound					San Pablo Ave Northbound					San Pablo Ave Southbound					23rd St Northeastbound					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
7:00 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	3	5
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Count Total	0	0	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	0	1	0	0	6	0
Peak Hour	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	3	0



Date: Tue, Aug 31, 2021
 Count Period: 4:00 PM to 6:00 PM
 Peak Hour: 5:00 PM to 6:00 PM

	HV %:	PHF
EB	2.2%	0.72
WB	0.6%	0.88
NB	2.5%	0.97
SB	2.2%	0.93
NEB	0.8%	0.93
TOTAL	1.8%	0.97



Two-Hour Count Summaries

Interval Start		Rd 20					Rd 20					San Pablo Ave					San Pablo Ave					23rd St					15-min Total	Rolling One Hour
		Eastbound					Westbound					Northbound					Southbound					Northeastbound						
		UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM		0	0	3	6	0	0	6	31	0	13	0	34	0	125	6	0	10	73	114	18	0	0	107	22	18	586	0
4:15 PM		0	1	1	9	0	0	4	20	0	16	0	38	0	140	4	1	7	78	97	8	0	0	78	13	16	531	0
4:30 PM		0	0	2	4	1	0	2	18	0	12	0	28	0	159	7	0	5	63	78	14	0	0	122	13	25	553	0
4:45 PM		0	0	0	4	0	0	9	23	0	14	0	19	0	159	14	2	8	67	82	11	0	0	91	17	22	542	2,212
5:00 PM		0	1	3	6	1	0	4	28	0	12	0	28	0	140	12	1	5	68	79	13	0	0	107	22	30	560	2,186
5:15 PM		0	0	6	4	6	0	1	21	0	12	0	38	0	139	17	0	4	66	92	5	0	0	97	21	25	554	2,209
5:30 PM		0	1	2	5	2	0	7	19	0	10	0	25	0	166	7	0	7	64	88	15	0	0	99	29	17	563	2,219
5:45 PM		0	0	5	2	2	0	4	29	0	8	0	24	0	161	14	2	5	72	91	17	0	0	105	23	19	583	2,260
Count Total		0	3	22	40	12	0	37	189	0	97	0	234	0	1,189	81	6	51	551	721	101	0	0	806	160	172	4,472	0
Peak Hour	All	0	2	16	17	11	0	16	97	0	42	0	115	0	606	50	3	21	270	350	50	0	0	408	95	91	2,260	0
	HV	0	0	0	1	0	0	0	1	0	0	0	3	0	14	2	0	1	7	5	2	0	0	5	0	0	41	0
	HV%	-	0%	0%	6%	0%	-	0%	1%	-	0%	-	3%	-	2%	4%	0%	5%	3%	1%	4%	-	-	1%	0%	0%	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

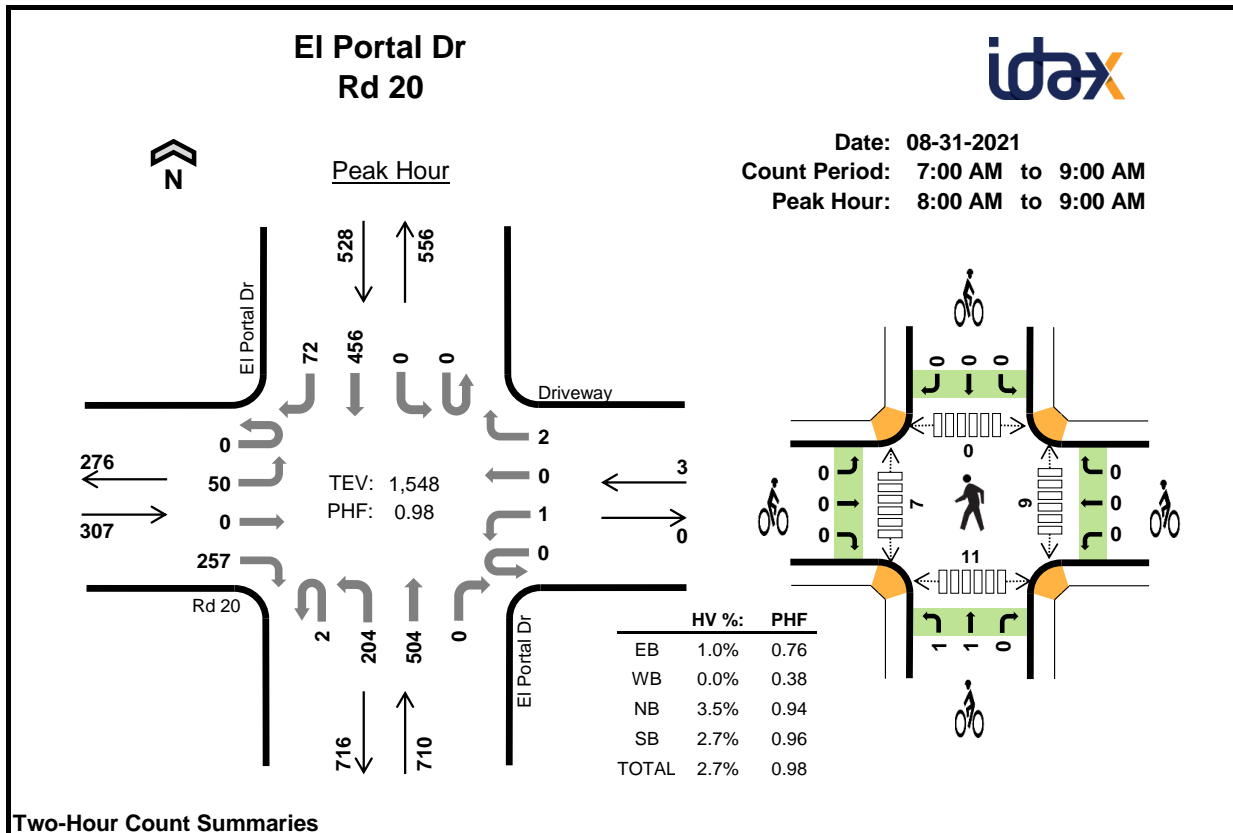
Interval Start	Heavy Vehicle Totals						Bicycles						Pedestrians (Crossing Leg)					
	EB	WB	NB	SB	NEB	Total	EB	WB	NB	SB	NEB	Total	East	West	North	South	Southwest	Total
4:00 PM	0	1	9	7	2	19	0	0	0	2	0	2	1	8	0	5	2	16
4:15 PM	0	0	2	8	1	11	0	0	0	0	0	0	4	7	0	6	3	20
4:30 PM	0	2	5	4	3	14	1	1	0	0	0	2	2	4	0	4	5	15
4:45 PM	0	0	3	4	0	7	0	0	1	0	0	1	3	7	0	2	2	14
5:00 PM	0	0	7	4	2	13	0	0	1	1	0	2	5	5	0	1	1	12
5:15 PM	0	0	4	4	0	8	0	0	0	0	0	0	4	3	2	0	0	9
5:30 PM	1	0	4	4	0	9	0	0	0	0	1	1	2	3	1	3	1	10
5:45 PM	0	1	4	3	3	11	0	0	1	0	0	1	10	2	0	6	0	18
Count Total	1	4	38	38	11	92	1	1	3	3	1	9	31	39	3	27	14	114
Peak Hr	1	1	19	15	5	41	0	0	2	1	1	4	21	13	3	10	2	49

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Rd 20 Eastbound					Rd 20 Westbound					San Pablo Ave Northbound					San Pablo Ave Southbound					23rd St Northeastbound					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	3	0	6	0	0	1	2	4	0	0	0	2	0	0	19	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	4	3	0	0	0	1	0	0	11	0
4:30 PM	0	0	0	0	0	0	0	0	0	2	0	1	0	4	0	0	0	3	1	0	0	0	3	0	0	14	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	2	1	0	0	0	0	0	0	7	51
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	6	0	0	0	2	2	0	0	0	2	0	0	13	45
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	1	3	0	0	0	0	0	0	0	8	42
5:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	3	1	0	0	2	1	1	0	0	0	0	0	9	37
5:45 PM	0	0	0	0	0	0	0	1	0	0	0	2	0	2	0	0	0	0	2	1	0	0	3	0	0	11	41
Count Total	0	0	0	1	0	0	0	2	0	2	0	9	0	26	3	0	4	18	14	2	0	0	11	0	0	92	0
Peak Hour	0	0	0	1	0	0	0	1	0	0	0	3	0	14	2	0	1	7	5	2	0	0	5	0	0	41	0

Two-Hour Count Summaries - Bikes

Interval Start	Rd 20 Eastbound					Rd 20 Westbound					San Pablo Ave Northbound					San Pablo Ave Southbound					23rd St Northeastbound					15-min Total	Rolling One Hour
	UT	LT	TH	RT	HR	UT	LT	BL	TH	RT	UT	HL	LT	TH	RT	UT	LT	TH	BR	RT	UT	HL	BL	BR	HR		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	5
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	5
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	4
Count Total	0	0	1	0	0	0	0	0	0	1	0	0	0	3	0	0	0	1	1	1	0	0	0	1	0	9	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	1	0	4	0

**Two-Hour Count Summaries**

Interval Start		Rd 20				Driveway				EI Portal Dr				EI Portal Dr				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	7:00 AM	0	3	0	33	0	0	0	1	1	15	62	0	0	0	117	4	236	0
	7:15 AM	0	2	0	41	0	0	0	1	0	23	58	0	0	0	105	1	231	0
	7:30 AM	0	4	0	40	0	0	0	1	0	21	84	0	0	0	105	5	260	0
	7:45 AM	0	6	0	60	0	0	0	1	0	22	84	0	0	0	115	11	299	1,026
	8:00 AM	0	9	0	53	0	1	0	1	1	55	132	0	0	0	118	8	378	1,168
	8:15 AM	0	15	0	58	0	0	0	0	0	49	124	0	0	0	121	17	384	1,321
	8:30 AM	0	10	0	61	0	0	0	0	0	54	131	0	0	0	113	23	392	1,453
	8:45 AM	0	16	0	85	0	0	0	1	1	46	117	0	0	0	104	24	394	1,548
Count Total		0	65	0	431	0	1	0	6	3	285	792	0	0	0	898	93	2,574	0
Peak Hour	All	0	50	0	257	0	1	0	2	2	204	504	0	0	0	456	72	1,548	0
	HV	0	0	0	3	0	0	0	0	0	6	19	0	0	0	13	1	42	0
	HV%	-	0%	-	1%	-	0%	-	0%	0%	3%	4%	-	-	-	3%	1%	3%	0

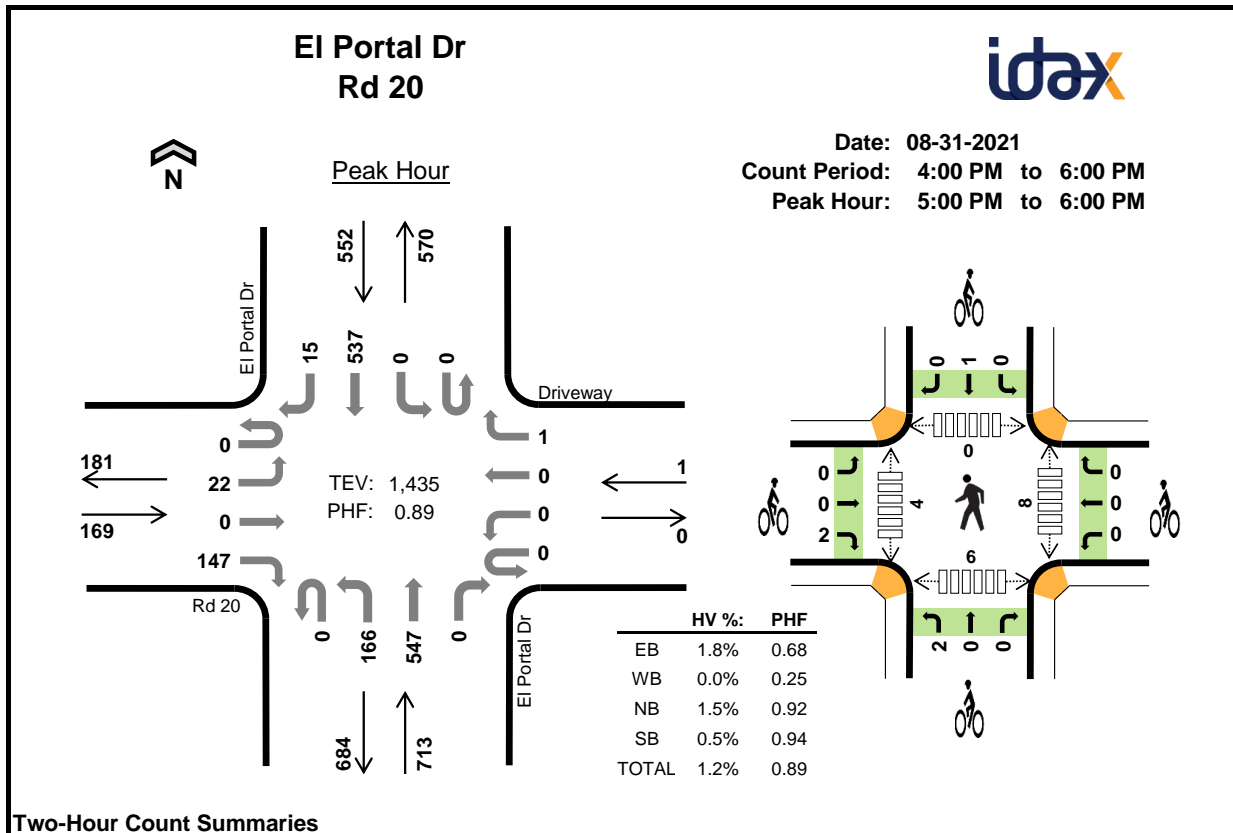
Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	4	0	6	3	13	0	0	0	0	0	1	0	0	1	2
7:15 AM	3	0	5	6	14	0	0	1	0	1	0	0	0	0	0
7:30 AM	1	0	7	3	11	0	0	1	0	1	0	1	0	0	1
7:45 AM	1	0	5	9	15	0	0	1	0	1	0	1	0	0	1
8:00 AM	0	0	6	4	10	0	0	2	0	2	2	0	0	2	4
8:15 AM	1	0	5	3	9	0	0	0	0	0	1	1	0	0	2
8:30 AM	0	0	7	4	11	0	0	0	0	0	3	5	0	4	12
8:45 AM	2	0	7	3	12	0	0	0	0	0	3	1	0	5	9
Count Total	12	0	48	35	95	0	0	5	0	5	10	9	0	12	31
Peak Hour	3	0	25	14	42	0	0	2	0	2	9	7	0	11	27

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Rd 20				Driveway				EI Portal Dr				EI Portal Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	2	0	2	0	0	0	0	0	1	5	0	0	0	2	1	13	0
7:15 AM	0	0	0	3	0	0	0	0	0	1	4	0	0	0	6	0	14	0
7:30 AM	0	0	0	1	0	0	0	0	0	1	6	0	0	0	3	0	11	0
7:45 AM	0	0	0	1	0	0	0	0	0	1	4	0	0	0	8	1	15	53
8:00 AM	0	0	0	0	0	0	0	0	0	2	4	0	0	0	3	1	10	50
8:15 AM	0	0	0	1	0	0	0	0	0	2	3	0	0	0	3	0	9	45
8:30 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	4	0	11	45
8:45 AM	0	0	0	2	0	0	0	0	0	2	5	0	0	0	3	0	12	42
Count Total	0	2	0	10	0	0	0	0	0	10	38	0	0	0	32	3	95	0
Peak Hour	0	0	0	3	0	0	0	0	0	6	19	0	0	0	13	1	42	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Rd 20			Driveway			EI Portal Dr			EI Portal Dr			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0				
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1	0				
7:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	1	3				
8:00 AM	0	0	0	0	0	0	1	1	0	0	0	0	2	5				
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4				
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3				
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2				
Count Total	0	0	0	0	0	0	2	3	0	0	0	0	5	0				
Peak Hour	0	0	0	0	0	0	1	1	0	0	0	0	2	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

**Two-Hour Count Summaries**

Interval Start		Rd 20				Driveway				EI Portal Dr				EI Portal Dr				15-min Total	Rolling One Hour
		Eastbound				Westbound				Northbound				Southbound					
		UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
	4:00 PM	0	2	0	29	0	0	0	1	0	50	128	0	0	0	140	7	357	0
	4:15 PM	0	5	0	28	0	0	0	0	0	50	131	0	0	0	122	7	343	0
	4:30 PM	0	2	0	31	0	0	0	2	0	39	116	1	0	0	139	10	340	0
	4:45 PM	0	5	0	43	0	0	0	1	0	48	135	0	0	0	111	6	349	1,389
	5:00 PM	0	7	0	30	0	0	0	1	0	40	136	0	0	0	128	3	345	1,377
	5:15 PM	0	3	0	34	0	0	0	0	0	41	139	0	0	0	131	4	352	1,386
	5:30 PM	0	1	0	32	0	0	0	0	0	37	126	0	0	0	136	3	335	1,381
	5:45 PM	0	11	0	51	0	0	0	0	0	48	146	0	0	0	142	5	403	1,435
Count Total		0	36	0	278	0	0	0	5	0	353	1,057	1	0	0	1,049	45	2,824	0
Peak Hour	All	0	22	0	147	0	0	0	1	0	166	547	0	0	0	537	15	1,435	0
	HV	0	0	0	3	0	0	0	0	0	2	9	0	0	0	3	0	17	0
	HV%	-	0%	-	2%	-	-	-	0%	-	1%	2%	-	-	-	1%	0%	1%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	1	0	5	2	8	0	0	0	0	0	2	1	0	2	5
4:15 PM	2	0	3	4	9	0	0	1	1	2	1	3	1	2	7
4:30 PM	0	0	14	2	16	0	0	1	0	1	2	1	0	1	4
4:45 PM	1	0	4	4	9	0	0	0	1	1	0	2	0	0	2
5:00 PM	1	0	2	0	3	0	0	2	1	3	0	1	0	2	3
5:15 PM	1	0	1	1	3	2	0	0	0	2	6	1	0	2	9
5:30 PM	1	0	4	2	7	0	0	0	0	0	1	1	0	1	3
5:45 PM	0	0	4	0	4	0	0	0	0	0	1	1	0	1	3
Count Total	7	0	37	15	59	2	0	4	3	9	13	11	1	11	36
Peak Hour	3	0	11	3	17	2	0	2	1	5	8	4	0	6	18

Two-Hour Count Summaries - Heavy Vehicles																		
Interval Start	Rd 20				Driveway				El Portal Dr				El Portal Dr				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	1	0	0	0	0	0	0	5	0	0	0	2	0	8	0
4:15 PM	0	0	0	2	0	0	0	0	0	1	2	0	0	0	4	0	9	0
4:30 PM	0	0	0	0	0	0	0	0	0	3	10	1	0	0	2	0	16	0
4:45 PM	0	0	0	1	0	0	0	0	0	0	4	0	0	0	4	0	9	42
5:00 PM	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	3	37
5:15 PM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	0	3	31
5:30 PM	0	0	0	1	0	0	0	0	0	1	3	0	0	0	2	0	7	22
5:45 PM	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	4	17
Count Total	0	0	0	7	0	0	0	0	0	6	30	1	0	0	15	0	59	0
Peak Hour	0	0	0	3	0	0	0	0	0	2	9	0	0	0	3	0	17	0

Two-Hour Count Summaries - Bikes																		
Interval Start	Rd 20			Driveway			El Portal Dr			El Portal Dr			15-min Total	Rolling One Hour				
	Eastbound			Westbound			Northbound			Southbound								
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT						
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
4:15 PM	0	0	0	0	0	0	0	1	0	0	1	0	2	0				
4:30 PM	0	0	0	0	0	0	0	1	0	0	0	0	1	0				
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1	4				
5:00 PM	0	0	0	0	0	0	2	0	0	0	1	0	3	7				
5:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	2	7				
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	6				
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5				
Count Total	0	0	2	0	0	0	2	2	0	0	3	0	9	0				
Peak Hour	0	0	2	0	0	0	2	0	0	0	1	0	5	0				

Note: U-Turn volumes for bikes are included in Left-Turn, if any.











Appendix B – Existing Conditions Intersection Level of Service and Queuing Analysis Work Sheets

Queues

1: San Pablo Ave & 23rd St/Road 20

Existing Conditions

Timing Plan: A.M. Peak

										
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	271	279	99	233	102	97	374	58	464	457
v/c Ratio	0.74	0.74	0.27	0.74	0.27	0.63	0.37	0.55	0.49	0.57
Control Delay	76.9	76.0	4.2	84.7	5.0	100.2	49.7	106.2	56.3	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	76.0	4.2	84.7	5.0	100.2	49.7	106.2	56.3	22.6
Queue Length 50th (ft)	307	316	0	257	0	109	187	66	247	245
Queue Length 95th (ft)	524	534	18	442	22	218	280	#174	369	407
Internal Link Dist (ft)		368		769			1025		421	
Turn Bay Length (ft)			135			155		90		90
Base Capacity (vph)	597	620	520	525	537	251	1697	126	1510	1073
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.45	0.19	0.44	0.19	0.39	0.22	0.46	0.31	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.























Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: San Pablo Ave & 23rd St/Road 20

Existing Conditions

Timing Plan: A.M. Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	328	178	91	40	175	94	89	280	64	53	427	420
Future Volume (vph)	328	178	91	40	175	94	89	280	64	53	427	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.83		1.00	0.98	1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1743	1316		1846	1551	1770	3406		1770	3539	1583
Flt Permitted	0.95	0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1743	1316		1846	1551	1770	3406		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	357	193	99	43	190	102	97	304	70	58	464	457
RTOR Reduction (vph)	0	0	77	0	0	85	0	0	0	0	0	0
Lane Group Flow (vph)	271	279	22	0	233	17	97	374	0	58	464	457
Confl. Peds. (#/hr)			77			4			19			22
Confl. Bikes (#/hr)						1			1			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	pt+ov
Protected Phases	4	4		8	8		5	2		1	6	6 4
Permitted Phases			4			8						
Actuated Green, G (s)	34.8	34.8	34.8		27.1	27.1	14.0	46.9		9.5	42.4	77.2
Effective Green, g (s)	34.8	34.8	34.8		27.1	27.1	14.0	46.9		9.5	42.4	77.2
Actuated g/C Ratio	0.22	0.22	0.22		0.17	0.17	0.09	0.29		0.06	0.27	0.48
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	366	380	287		313	263	155	1001		105	940	766
v/s Ratio Prot	c0.16	0.16			c0.13		c0.05	c0.11		0.03	0.13	c0.29
v/s Ratio Perm			0.02			0.01						
v/c Ratio	0.74	0.73	0.08		0.74	0.07	0.63	0.37		0.55	0.49	0.60
Uniform Delay, d1	58.1	58.0	49.6		62.9	55.6	70.2	44.7		72.9	49.5	29.9
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.9	6.2	0.0		9.2	0.1	5.6	0.5		3.5	0.9	1.9
Delay (s)	65.0	64.3	49.6		72.1	55.7	75.8	45.1		76.5	50.3	31.7
Level of Service	E	E	D		E	E	E	D		E	D	C
Approach Delay (s)		62.3			67.1			51.5			43.2	
Approach LOS		E			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			53.2									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			159.5									Sum of lost time (s) 30.0
Intersection Capacity Utilization			66.9%									ICU Level of Service C
Analysis Period (min)			15									
c Critical Lane Group												

Queues

2: El Portal Dr & Road 20

Existing Conditions

Timing Plan: A.M. Peak



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	64	262	647	585	92
v/c Ratio	0.25	0.74	0.23	0.32	0.11
Control Delay	26.0	41.6	4.2	13.2	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	41.6	4.2	13.2	7.6
Queue Length 50th (ft)	26	102	28	76	7
Queue Length 95th (ft)	42	#235	114	162	42
Internal Link Dist (ft)	292		120	382	
Turn Bay Length (ft)		155			45
Base Capacity (vph)	632	362	2861	1849	830
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.72	0.23	0.32	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: El Portal Dr & Road 20

Existing Conditions

Timing Plan: A.M. Peak













Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	0	241	595	538	85
Future Volume (vph)	59	0	241	595	538	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	0.95	0.95	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770		1770	3539	3539	1534
Flt Permitted	0.95		0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770		1770	3539	3539	1534
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	64	0	262	647	585	92
RTOR Reduction (vph)	0	0	0	0	0	30
Lane Group Flow (vph)	64	0	262	647	585	62
Confl. Peds. (#/hr)		11				7
Turn Type	Perm		Prot	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	8					2
Actuated Green, G (s)	8.0		14.0	53.0	35.0	35.0
Effective Green, g (s)	8.0		14.0	53.0	35.0	35.0
Actuated g/C Ratio	0.11		0.20	0.76	0.50	0.50
Clearance Time (s)	4.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		2.0	4.0	4.0	4.0
Lane Grp Cap (vph)	202		354	2679	1769	767
v/s Ratio Prot			c0.15	0.18	c0.17	
v/s Ratio Perm	c0.04					0.04
v/c Ratio	0.32		0.74	0.24	0.33	0.08
Uniform Delay, d1	28.5		26.3	2.5	10.5	9.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		7.1	0.2	0.5	0.2
Delay (s)	28.8		33.4	2.7	11.0	9.3
Level of Service	C		C	A	B	A
Approach Delay (s)	28.8			11.6	10.8	
Approach LOS	C			B	B	
Intersection Summary						
HCM 2000 Control Delay			11.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	13.0
Intersection Capacity Utilization			50.9%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

Queues

1: San Pablo Ave & 23rd St/Road 20

Existing Conditions

Timing Plan: P.M. Peak

										
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	284	290	104	129	48	132	749	27	309	400
v/c Ratio	0.72	0.72	0.23	0.58	0.16	0.64	0.61	0.30	0.36	0.50
Control Delay	66.7	66.4	4.2	80.2	1.1	84.5	47.2	91.1	51.1	18.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.7	66.4	4.2	80.2	1.1	84.5	47.2	91.1	51.1	18.6
Queue Length 50th (ft)	293	298	0	131	0	134	375	28	147	178
Queue Length 95th (ft)	491	498	25	246	0	#285	542	76	227	282
Internal Link Dist (ft)		368		769			1025		421	
Turn Bay Length (ft)			135			155		90		90
Base Capacity (vph)	665	680	682	586	585	280	1931	140	1682	1142
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.43	0.15	0.22	0.08	0.47	0.39	0.19	0.18	0.35

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.













Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: San Pablo Ave & 23rd St/Road 20

Existing Conditions

Timing Plan: P.M. Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	428	100	96	17	102	44	121	636	53	25	284	368
Future Volume (vph)	428	100	96	17	102	44	121	636	53	25	284	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.98	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1716	1533		1850	1552	1770	3484		1770	3539	1583
Flt Permitted	0.95	0.97	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1716	1533		1850	1552	1770	3484		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	465	109	104	18	111	48	132	691	58	27	309	400
RTOR Reduction (vph)	0	0	80	0	0	42	0	0	0	0	0	0
Lane Group Flow (vph)	284	290	24	0	129	6	132	749	0	27	309	400
Confl. Peds. (#/hr)			10			3			21			2
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	pt+ov
Protected Phases	4	4		8	8		5	2		1	6	6 4
Permitted Phases			4			8						
Actuated Green, G (s)	33.9	33.9	33.9		17.3	17.3	16.8	51.1		4.1	38.4	72.3
Effective Green, g (s)	33.9	33.9	33.9		17.3	17.3	16.8	51.1		4.1	38.4	72.3
Actuated g/C Ratio	0.23	0.23	0.23		0.12	0.12	0.11	0.35		0.03	0.26	0.49
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	386	394	352		216	182	201	1206		49	921	775
v/s Ratio Prot	0.17	c0.17			c0.07		c0.07	c0.21		0.02	0.09	0.25
v/s Ratio Perm			0.02			0.00						
v/c Ratio	0.74	0.74	0.07		0.60	0.03	0.66	0.62		0.55	0.34	0.52
Uniform Delay, d1	52.6	52.7	44.4		61.8	57.7	62.6	40.1		70.8	44.2	25.7
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.2	6.1	0.0		4.4	0.1	5.8	1.4		7.4	0.5	1.2
Delay (s)	58.8	58.7	44.5		66.2	57.7	68.4	41.6		78.2	44.7	26.8
Level of Service	E	E	D		E	E	E	D		E	D	C
Approach Delay (s)		56.6			63.9			45.6			36.2	
Approach LOS		E			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			47.1									
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			147.5									
Intersection Capacity Utilization			58.9%									
Analysis Period (min)			15									
c Critical Lane Group												

Queues
2: El Portal Dr & Road 20

Existing Conditions
Timing Plan: P.M. Peak



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	29	224	737	724	21
v/c Ratio	0.10	0.54	0.24	0.45	0.03
Control Delay	21.7	25.6	3.5	13.9	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	25.6	3.5	13.9	11.4
Queue Length 50th (ft)	5	36	0	43	1
Queue Length 95th (ft)	32	188	135	239	20
Internal Link Dist (ft)	292		120	382	
Turn Bay Length (ft)		155			45
Base Capacity (vph)	1006	798	3229	2395	1043
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.28	0.23	0.30	0.02
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

2: El Portal Dr & Road 20

Existing Conditions

Timing Plan: P.M. Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	27	0	206	678	666	19
Future Volume (vph)	27	0	206	678	666	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770		1770	3539	3539	1543
Flt Permitted	0.95		0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770		1770	3539	3539	1543
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	0	224	737	724	21
RTOR Reduction (vph)	0	0	0	0	0	5
Lane Group Flow (vph)	29	0	224	737	724	16
Confl. Peds. (#/hr)		6				4
Confl. Bikes (#/hr)						1
Turn Type	Perm		Prot	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	8					2
Actuated Green, G (s)	4.2		11.9	39.8	23.9	23.9
Effective Green, g (s)	4.2		11.9	39.8	23.9	23.9
Actuated g/C Ratio	0.08		0.22	0.75	0.45	0.45
Clearance Time (s)	4.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		2.0	4.0	4.0	4.0
Lane Grp Cap (vph)	140		397	2657	1595	695
v/s Ratio Prot			c0.13	0.21	c0.20	
v/s Ratio Perm	c0.02					0.01
v/c Ratio	0.21		0.56	0.28	0.45	0.02
Uniform Delay, d1	22.8		18.2	2.1	10.0	8.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		1.1	0.1	0.3	0.0
Delay (s)	23.1		19.3	2.2	10.3	8.1
Level of Service	C		B	A	B	A
Approach Delay (s)	23.1			6.2	10.3	
Approach LOS	C			A	B	
Intersection Summary						
HCM 2000 Control Delay		8.2		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.46				
Actuated Cycle Length (s)		53.0		Sum of lost time (s)		13.0
Intersection Capacity Utilization		47.5%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						











Appendix C – Existing plus Project Conditions Intersections Level of Service and Queuing Work Sheets

Queues

1: San Pablo Ave & 23rd St/Road 20

Existing plus Project Conditions

Timing Plan: A.M. Peak

										
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	271	281	99	242	109	97	376	60	464	457
v/c Ratio	0.74	0.74	0.27	0.76	0.29	0.63	0.38	0.57	0.49	0.57
Control Delay	77.6	77.1	4.2	85.9	6.3	101.1	50.1	107.3	56.7	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	77.6	77.1	4.2	85.9	6.3	101.1	50.1	107.3	56.7	22.9
Queue Length 50th (ft)	311	323	0	271	0	110	190	69	250	250
Queue Length 95th (ft)	524	541	18	460	33	218	281	#184	369	407
Internal Link Dist (ft)		368		402			1025		421	
Turn Bay Length (ft)			135			155		90		90
Base Capacity (vph)	592	613	516	519	533	249	1678	124	1496	1065
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.46	0.19	0.47	0.20	0.39	0.22	0.48	0.31	0.43

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.























Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: San Pablo Ave & 23rd St/Road 20

Existing plus Project Conditions

Timing Plan: A.M. Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	328	179	91	45	178	100	89	280	66	55	427	420
Future Volume (vph)	328	179	91	45	178	100	89	280	66	55	427	420
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.83		1.00	0.98	1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1743	1314		1844	1552	1770	3403		1770	3539	1583
Flt Permitted	0.95	0.98	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1743	1314		1844	1552	1770	3403		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	357	195	99	49	193	109	97	304	72	60	464	457
RTOR Reduction (vph)	0	0	77	0	0	90	0	0	0	0	0	0
Lane Group Flow (vph)	271	281	22	0	242	19	97	376	0	60	464	457
Confl. Peds. (#/hr)			77			4			19			22
Confl. Bikes (#/hr)						1			1			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	pt+ov
Protected Phases	4	4		8	8		5	2		1	6	6 4
Permitted Phases			4			8						
Actuated Green, G (s)	35.0	35.0	35.0		27.8	27.8	14.0	47.2		9.6	42.8	77.8
Effective Green, g (s)	35.0	35.0	35.0		27.8	27.8	14.0	47.2		9.6	42.8	77.8
Actuated g/C Ratio	0.22	0.22	0.22		0.17	0.17	0.09	0.29		0.06	0.27	0.48
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	365	379	286		318	268	154	998		105	941	765
v/s Ratio Prot	0.16	c0.16			c0.13		c0.05	c0.11		0.03	0.13	c0.29
v/s Ratio Perm			0.02			0.01						
v/c Ratio	0.74	0.74	0.08		0.76	0.07	0.63	0.38		0.57	0.49	0.60
Uniform Delay, d1	58.7	58.7	50.0		63.3	55.7	70.9	45.1		73.6	49.8	30.1
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.0	6.7	0.0		10.3	0.1	5.7	0.5		4.6	0.9	1.9
Delay (s)	65.7	65.4	50.1		73.6	55.8	76.6	45.6		78.2	50.7	32.0
Level of Service	E	E	D		E	E	E	D		E	D	C
Approach Delay (s)		63.2			68.1			52.0			43.7	
Approach LOS		E			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			53.9									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			160.8									Sum of lost time (s) 30.0
Intersection Capacity Utilization			67.3%									ICU Level of Service C
Analysis Period (min)			15									

c Critical Lane Group

Queues

2: El Portal Dr & Road 20

Existing plus Project Conditions

Timing Plan: A.M. Peak



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	65	263	647	585	92
v/c Ratio	0.25	0.74	0.23	0.32	0.11
Control Delay	26.0	41.5	4.2	13.3	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	26.0	41.5	4.2	13.3	7.7
Queue Length 50th (ft)	27	103	28	76	7
Queue Length 95th (ft)	43	#236	114	162	42
Internal Link Dist (ft)	292		120	382	
Turn Bay Length (ft)		155			45
Base Capacity (vph)	632	363	2859	1844	828
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.10	0.72	0.23	0.32	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.







Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: El Portal Dr & Road 20

Existing plus Project Conditions

Timing Plan: A.M. Peak











						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	60	0	242	595	538	85
Future Volume (vph)	60	0	242	595	538	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	0.95	0.95	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770		1770	3539	3539	1534
Flt Permitted	0.95		0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770		1770	3539	3539	1534
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	0	263	647	585	92
RTOR Reduction (vph)	0	0	0	0	0	30
Lane Group Flow (vph)	65	0	263	647	585	62
Confl. Peds. (#/hr)		11				7
Turn Type	Perm		Prot	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	8					2
Actuated Green, G (s)	8.0		14.1	53.0	34.9	34.9
Effective Green, g (s)	8.0		14.1	53.0	34.9	34.9
Actuated g/C Ratio	0.11		0.20	0.76	0.50	0.50
Clearance Time (s)	4.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		2.0	4.0	4.0	4.0
Lane Grp Cap (vph)	202		356	2679	1764	764
v/s Ratio Prot			c0.15	0.18	c0.17	
v/s Ratio Perm	c0.04					0.04
v/c Ratio	0.32		0.74	0.24	0.33	0.08
Uniform Delay, d1	28.5		26.2	2.5	10.5	9.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		6.8	0.2	0.5	0.2
Delay (s)	28.8		33.0	2.7	11.0	9.4
Level of Service	C		C	A	B	A
Approach Delay (s)	28.8			11.5	10.8	
Approach LOS	C			B	B	
Intersection Summary						
HCM 2000 Control Delay			11.9		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.43			
Actuated Cycle Length (s)			70.0		Sum of lost time (s)	13.0
Intersection Capacity Utilization			51.0%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

3: Project Driveway & Road 20

Existing plus Project Conditions

Timing Plan: A.M. Peak











						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	295	5	1	309	14	3
Future Volume (Veh/h)	295	5	1	309	14	3
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	321	5	1	336	15	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)	482					
pX, platoon unblocked			0.88		0.88	0.88
vC, conflicting volume			326		662	324
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			172		552	170
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1242		437	773
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	326	337	18			
Volume Left	0	1	15			
Volume Right	5	0	3			
cSH	1700	1242	471			
Volume to Capacity	0.19	0.00	0.04			
Queue Length 95th (ft)	0	0	3			
Control Delay (s)	0.0	0.0	12.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.0	12.9			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			27.1%	ICU Level of Service		A
Analysis Period (min)			15			

Queues

1: San Pablo Ave & 23rd St/Road 20

Existing plus Project Conditions

Timing Plan: P.M. Peak

										
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	288	290	104	135	52	132	754	34	309	400
v/c Ratio	0.73	0.72	0.23	0.60	0.17	0.65	0.65	0.36	0.36	0.50
Control Delay	68.4	67.6	4.2	81.5	1.2	86.7	50.2	93.9	51.3	18.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.4	67.6	4.2	81.5	1.2	86.7	50.2	93.9	51.3	18.7
Queue Length 50th (ft)	307	309	0	141	0	138	388	36	150	183
Queue Length 95th (ft)	504	505	24	257	0	#287	551	91	229	286
Internal Link Dist (ft)		368		330			1025		421	
Turn Bay Length (ft)			135			155		90		90
Base Capacity (vph)	652	667	671	574	576	274	1891	137	1649	1126
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.43	0.15	0.24	0.09	0.48	0.40	0.25	0.19	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

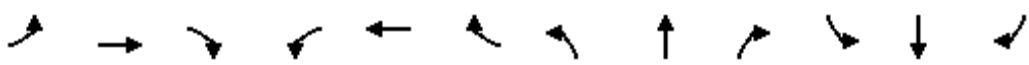











Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: San Pablo Ave & 23rd St/Road 20

Existing plus Project Conditions

Timing Plan: P.M. Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	428	104	96	20	104	48	121	636	58	31	284	368
Future Volume (vph)	428	104	96	20	104	48	121	636	58	31	284	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	0.95	0.95	1.00		1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.97		1.00	0.98	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85		1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	0.97	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1681	1717	1533		1848	1553	1770	3479		1770	3539	1583
Flt Permitted	0.95	0.97	1.00		0.99	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1681	1717	1533		1848	1553	1770	3479		1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	465	113	104	22	113	52	132	691	63	34	309	400
RTOR Reduction (vph)	0	0	80	0	0	46	0	0	0	0	0	0
Lane Group Flow (vph)	288	290	24	0	135	6	132	754	0	34	309	400
Confl. Peds. (#/hr)			10			3			21			2
Confl. Bikes (#/hr)			1						2			1
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA		Prot	NA	pt+ov
Protected Phases	4	4		8	8		5	2		1	6	6 4
Permitted Phases			4			8						
Actuated Green, G (s)	34.5	34.5	34.5		17.9	17.9	16.9	48.9		6.1	38.1	72.6
Effective Green, g (s)	34.5	34.5	34.5		17.9	17.9	16.9	48.9		6.1	38.1	72.6
Actuated g/C Ratio	0.23	0.23	0.23		0.12	0.12	0.11	0.33		0.04	0.26	0.49
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	390	398	356		222	187	201	1145		72	907	773
v/s Ratio Prot	c0.17	0.17			c0.07		c0.07	c0.22		0.02	0.09	0.25
v/s Ratio Perm			0.02			0.00						
v/c Ratio	0.74	0.73	0.07		0.61	0.03	0.66	0.66		0.47	0.34	0.52
Uniform Delay, d1	52.8	52.7	44.5		62.0	57.7	63.0	42.6		69.6	45.0	26.0
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.2	5.6	0.0		4.7	0.1	5.8	1.9		1.8	0.5	1.2
Delay (s)	59.0	58.2	44.5		66.6	57.7	68.8	44.5		71.4	45.4	27.1
Level of Service	E	E	D		E	E	E	D		E	D	C
Approach Delay (s)		56.5			64.2			48.1			36.8	
Approach LOS		E			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			48.2									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			148.5									Sum of lost time (s) 30.0
Intersection Capacity Utilization			59.2%									ICU Level of Service B
Analysis Period (min)			15									
c Critical Lane Group												

Queues
2: El Portal Dr & Road 20

Existing plus Project Conditions
Timing Plan: P.M. Peak



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	30	226	737	724	22
v/c Ratio	0.10	0.54	0.24	0.45	0.03
Control Delay	21.7	25.6	3.5	14.0	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	21.7	25.6	3.5	14.0	11.4
Queue Length 50th (ft)	5	36	0	43	1
Queue Length 95th (ft)	32	190	135	239	21
Internal Link Dist (ft)	292		120	382	
Turn Bay Length (ft)		155			45
Base Capacity (vph)	1010	802	3227	2405	1048
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.28	0.23	0.30	0.02
Intersection Summary					

HCM Signalized Intersection Capacity Analysis

2: El Portal Dr & Road 20

Existing plus Project Conditions

Timing Plan: P.M. Peak












Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	0	208	678	666	20
Future Volume (vph)	28	0	208	678	666	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0
Lane Util. Factor	1.00		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770		1770	3539	3539	1543
Flt Permitted	0.95		0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770		1770	3539	3539	1543
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	0	226	737	724	22
RTOR Reduction (vph)	0	0	0	0	0	6
Lane Group Flow (vph)	30	0	226	737	724	16
Confl. Peds. (#/hr)		6				4
Confl. Bikes (#/hr)						1
Turn Type	Perm		Prot	NA	NA	Perm
Protected Phases			1	6	2	
Permitted Phases	8					2
Actuated Green, G (s)	4.2		12.0	39.7	23.7	23.7
Effective Green, g (s)	4.2		12.0	39.7	23.7	23.7
Actuated g/C Ratio	0.08		0.23	0.75	0.45	0.45
Clearance Time (s)	4.0		4.0	5.0	5.0	5.0
Vehicle Extension (s)	2.0		2.0	4.0	4.0	4.0
Lane Grp Cap (vph)	140		401	2655	1585	691
v/s Ratio Prot			c0.13	0.21	c0.20	
v/s Ratio Perm	c0.02					0.01
v/c Ratio	0.21		0.56	0.28	0.46	0.02
Uniform Delay, d1	22.8		18.1	2.1	10.1	8.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3		1.1	0.1	0.3	0.0
Delay (s)	23.1		19.2	2.2	10.4	8.2
Level of Service	C		B	A	B	A
Approach Delay (s)	23.1			6.2	10.4	
Approach LOS	C			A	B	
Intersection Summary						
HCM 2000 Control Delay			8.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			52.9		Sum of lost time (s)	13.0
Intersection Capacity Utilization			47.6%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

HCM Unsignalized Intersection Capacity Analysis

3: Project Driveway & Road 20

Existing plus Project Conditions

Timing Plan: P.M. Peak

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	209	15	3	225	9	2
Future Volume (Veh/h)	209	15	3	225	9	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	227	16	3	245	10	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	410					
pX, platoon unblocked						
vC, conflicting volume			243	486		235
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			243	486		235
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	98		100
cM capacity (veh/h)			1323	539		804
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	243	248	12			
Volume Left	0	3	10			
Volume Right	16	0	2			
cSH	1700	1323	570			
Volume to Capacity	0.14	0.00	0.02			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.0	0.1	11.4			
Lane LOS	A		B			
Approach Delay (s)	0.0	0.1	11.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			24.2%	ICU Level of Service		A
Analysis Period (min)			15			

March 4, 2022

Elizabeth Tyler, Planning Manager

CITY OF SAN PABLO

13831 San Pablo Avenue

San Pablo, CA 94806

RE: CULTURAL RESOURCES IDENTIFICATION MEMORANDUM FOR THE 2364 ROAD 20 DEVELOPMENT PROJECT, CITY OF SAN PABLO, CONTRA COSTA COUNTY, CALIFORNIA

Dear Ms. Tyler:

In support of the 2364 Road 20 Development Project (project), Michael Baker International completed a cultural resources identification study, which includes a Northwest Information Center (NWIC) records search; literature, historical map, and aerial photo review; local historical group consultation; archaeological buried site sensitivity analysis; pedestrian survey; and evaluation of the property for inclusion in the California Register of Historical Resources (California Register). These efforts were completed to determine whether the project could result in significant impacts to historical and archaeological resources as defined by California Environmental Quality Act (CEQA) Section 15064.5. Methods, results, and recommendations are summarized below.

PROJECT DESCRIPTION

The project proposes to demolish an existing single-family residence and large shed and construct a new multifamily five-story residential building. The development would include 64 multifamily rental units, a parking garage, surface parking, and parking lifts. San Pablo Creek runs along the southern end of the parcel and no structures will be constructed within a 30-foot setback from the top bank of the creek. Two existing decks on the parcel extend through the setback and over the creek top of the bank. The decks will be removed as part of the project.

PROJECT AREA

The project area is identified as the boundaries of Assessor Parcel Number (APN) 416-120-029, 2364 Road 20 in San Pablo, California, and includes the ground-disturbing project activities associated with the demolition of the extant buildings, site preparation, and construction of the new housing development. The project is mapped within *Richmond, California* USGS 7.5-minute topographic quadrangle map Township 1 North, Range 4 West, Section 6 (see **Attachment 1 - Figures**).

NATURAL SETTING

The project area is located on the eastern side of San Pablo Bay, which is part of San Francisco Bay. Most of the San Francisco Bay Area lies to the east of the San Andreas Fault and is underlain by the Franciscan Formation (Graymer, Jones, and Brabb 1994). The Franciscan Formation is an assemblage of sedimentary, volcanic, and metamorphic rocks that formed when the Pacific crustal plate descended beneath the North American plate during the Jurassic and Cretaceous Ages (between 65 and 200 million years ago). San Pablo lies within the Coast Ranges geomorphic province and is characterized by folds, thrusts, and faults that form a series of nearly parallel northwest-trending ridges, interspersed with alluvium-filled valleys. It is traversed by two principal creeks, Wildcat Creek and San Pablo Creek, both of which originate in the ranges to its southeast.

Geologic units underlying the project area are Holocene (Qha) alluvium deposits (11,700 years ago to today [Graymer et al. 2006]). Soils of the entire project area have been mapped as belonging to the Conejo clay loam (NRCS 2022). These are very deep, well-drained soils that formed in alluvium from basic igneous or sedimentary rocks. Conejo soils are on alluvial fans and stream terraces.

The project area is located in a highly urban residential and commercial area, and native vegetation and natural communities are generally absent; however, limited riparian habitat is present along the segment of San Pablo Creek to the south.

CULTURAL RESOURCES IDENTIFICATION METHODS

The methods and results of the NWIC records search, literature, historical map, and aerial photo review, local historical group consultation, archaeological sensitivity analysis, pedestrian survey, and California Register evaluation are presented below.

NORTHWEST INFORMATION CENTER

NWIC staff conducted a cultural resources records search (File No. 21-1074) of the project area and a half-mile search radius on February 7, 2022. The NWIC, as part of the California Historical Resources Information System, Sonoma State University, Rohnert Park, an affiliate of the California Office of Historic Preservation (OHP), is the official state repository of cultural resources records and reports for Contra Costa County. As part of the records search and background research, the following federal and California inventories were reviewed:

- National Register of Historic Places (National Register) (National Park Service 2022)
- California Points of Historical Interest (OHP 2022a)
- California Historical Landmarks (OHP 2022a)
- Archaeological Determinations of Eligibility (OHP 2012)
- California Inventory of Historic Resources (1976)

MICHAEL BAKER INTERNATIONAL**CULTURAL RESOURCES IDENTIFICATION MEMORANDUM FOR THE 2364 ROAD 20 DEVELOPMENT PROJECT, CITY OF SAN PABLO, CONTRA COSTA COUNTY, CALIFORNIA****Page 3**

- Built Environment Resources Directory for Contra Costa County (OHP 2022b). The directory includes resources reviewed for eligibility for the National Register and the California Historical Landmarks programs through federal and state environmental compliance laws, and resources nominated under federal and state registration programs, including the National Register, California Register, California Historical Landmarks, and California Points of Historical Interest.

Results

No cultural resources were identified within the project area; 13 were identified within the half-mile search radius of the project area as described below:

Primary/ Trinomial No.	Address	Type/Name	OHP Status Code/ Eligibility Status	Proximity to Project Site
P-07-000074/ CA-CCO-000132	N/A	Prehistoric site	None	Within 0.4 miles
P-07-000151/ CA-CCO-000272	N/A	Protohistoric site	None	Within 0.5 miles
P-07-000466/ CA-CCO-000357	N/A	Prehistoric site	None	Within 0.5 miles
P-07-000467/ CA-CCO-000358H	1521 Brookside Drive	Historic/Pump house	None	Within 0.5 miles
P-07-001182	1825 Church Lane	Historic/St. Pauls Catholic Church & Graveyard	7N – Needs to be reevaluated - formerly coded as may become NR eligible with specific conditions.	Within 0.5 miles
P-07-001183	2650 Market Avenue	Historic/1906 Earthquake Refugee Camp	4 – Might become eligible for listing on the National Register (Updated to: 7N – Needs to be reevaluated - formerly coded as may become NR eligible with specific conditions)	Within 0.5 miles

MICHAEL BAKER INTERNATIONAL**CULTURAL RESOURCES IDENTIFICATION MEMORANDUM FOR THE 2364 ROAD 20 DEVELOPMENT PROJECT, CITY OF SAN PABLO, CONTRA COSTA COUNTY, CALIFORNIA**

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Primary/ Trinomial No.	Address	Type/Name	OHP Status Code/ Eligibility Status	Proximity to Project Site
P-07-001190	14006 San Pablo Ave	Single-family residence/ Mello Residence	7R – Identified in reconnaissance level survey or in an area of potential effect: Not evaluated.	Within 0.3 miles
P-07-001192	1901 Church Lane	Historic/Old Rectory	2S2– Individually determined eligible for National Register by consensus through Section 106 process. Listed in the California Register	Within 0.5 miles
P-07-002678	13613 San Pablo Avenue	Historic district/Circle S Mobile Home Park	No longer extant	Within 0.5 miles
P-07-002680	13685 San Pablo Avenue	Historic/San Pablo Redevelopment Agency Warehouse	No longer extant	Within 0.5 miles
P-07-002681	2842, 2846, 2850, 2856, 2864 Chattleton Lane	Historic/Chattleton Housing District	Ineligible for the National and California Registers	Within 0.5 miles
P-07-002753	2600 Castro Road	Historic/Colonial Hunter Hall USAR Center	6Z – Found ineligible for the National Register, California Register or local designation through survey evaluation	Within 0.5 miles
P-07-004534	N/A	Prehistoric, Protohistoric/Lower San Pablo Creek Archaeological District	2S2– Individually determined eligible for National Register by consensus through Section 106 process. Listed in the California Register	Within 0.5 miles

No cultural resources studies have been previously completed within the project area; 45 have been completed within the half-mile search radius, summarized below.

MICHAEL BAKER INTERNATIONAL**CULTURAL RESOURCES IDENTIFICATION MEMORANDUM FOR THE 2364 ROAD 20 DEVELOPMENT PROJECT, CITY OF SAN PABLO, CONTRA COSTA COUNTY, CALIFORNIA**

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Report No.	Author(s)	Date	Report Title
S-000871	Bank, Peter, David A. Fredrickson, Lai- Ning Lee, and Susan McMurray	1977	<i>Cultural Resource Survey of the Wildcat and San Pablo Creeks Water Resources Project, Contra Costa County, California</i>
S-001248	Ananian, Benjamin F.	1977	<i>An Archaeological Field Survey, San Pablo Avenue Widening, San Pablo, California</i>
S-001254	Parkman, E. Breck	1978	<i>Archaeological Assessment of the Senior Citizen's Center and Sear's Building Site, San Pablo, California</i>
S-001295	Ananian, Benjamin F., Joseph S. Eisenlauer, and George R. Miller	1978	<i>Archeological Testing for the Proposed San Pablo Avenue Widening Project, San Pablo, California</i>
S-001610	Banks, Peter M.	1979	<i>An Archaeological Investigation of a Parcel on El Portal Drive, San Pablo, Contra Costa County, California</i>
S-001718	Banks, Peter M.	1979	<i>An Archaeological Investigation of the Baaba Project, San Pablo, Contra Costa County, California</i>
S-001719	Banks, Peter M.	1979	<i>An Archaeological Investigation of the Central Addition to El Portal Redevelopment Project, San Pablo, Contra Costa County, California</i>
S-001768	Banks, Peter M. And Robert I. Orlins	1979	<i>Final Report of the Testing of Cultural Resources within the Wildcat and San Pablo Creeks Flood Control and Water Resources Project, Contra Costa County, California</i>
S-005661	Wiberg, Randy S.	1982	<i>An Archaeological Evaluation of Subdivision 6190, City of San Pablo (letter report)</i>
S-005661a	Holman, Miley Paul	1982	<i>Further Archaeological Auger Boring Inside the Area of Subdivision 6190 (letter report)</i>
S-006614	Banks, Peter	1984	<i>Subsurface Archaeological Investigations at Subdivision 6367, Road 20, San Pablo, Contra Costa County, California</i>
S-007286	Cartier, Robert	1985	<i>Cultural Resource Evaluation of the El Portal Shopping Center/Road 20 Improvement Project in the City of San Pablo, County of Contra Costa</i>
S-011056	Peron, Rene	1989	<i>An Archaeological Investigation of the E.A.H. Church Lane Senior Housing, 1924-1928 Church Lane, San Pablo, Ca</i>
S-018038	Holman, Miley Paul	1994	<i>Mechanical Subsurface Testing for Cultural Resources at the Proposed Church Lane Apartment Project Area, San Pablo, Contra Costa County, California (letter report)</i>

MICHAEL BAKER INTERNATIONAL**CULTURAL RESOURCES IDENTIFICATION MEMORANDUM FOR THE 2364 ROAD 20 DEVELOPMENT PROJECT, CITY OF SAN PABLO, CONTRA COSTA COUNTY, CALIFORNIA**

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Report No.	Author(s)	Date	Report Title
S-019741	Gause, Seana L. S.	1997	<i>An Archaeological Survey Report for the Bridge Widening on Rumrill Boulevard, San Pablo, Contra Costa County, California</i>
S-029696	Kelley, John and Benjamin Matzen	2004	<i>A Cultural and Paleontological Resources Study for the Circle S Housing Development Project, San Pablo, Contra Costa County, California.</i>
S-031068	Billat, Scott	2005	<i>Collocation ("CO") Submission Packet, FCC Form 621, El Portal, CA-4056B</i>
S-033596	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resource Inventory and Evaluation of United States Army Reserve 63D Regional Readiness Command Facilities; Contract No. W912C8-05-P-0052</i>
S-033596a	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Heroic War Dead USAR Center/Area Maintenance Support Activity 85 (G), Oakland, California; P-01-[010831], 63D Regional Readiness Command Facility CA036, Contract No. W912C8-05-P</i>
S-033596b	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Oakland USAR Center #2, Oakland, California; P-01-01830, 63D Regional Readiness Command Facility CA-125, Contract No. W912C8-05-P-0052</i>
S-033596c	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve PFC Bacciglieri Armed Forces Reserve Center, Concord, California; P-07-002752, 63 D Regional Readiness Command Facility CA007, Contract No. W912C8-P-0052</i>
S-033596d	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Col. Hunter Hall USAR Center, San Pablo, California; P-07-002753, 63D Regional Readiness Command Facility CA 070, Contract No. W912C8-05-P-0052</i>
S-033596e	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Fort Ord USAR Center, Marina, California; 63D Regional Readiness Command Facility CA012, Contract No. W912C8-05-P-0052</i>

MICHAEL BAKER INTERNATIONAL**CULTURAL RESOURCES IDENTIFICATION MEMORANDUM FOR THE 2364 ROAD 20 DEVELOPMENT PROJECT, CITY OF SAN PABLO, CONTRA COSTA COUNTY, CALIFORNIA**

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Report No.	Author(s)	Date	Report Title
S-033596f	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Moss Landing Local Training Area, Moss Landing, California; 63D Regional Readiness Command Facility CA189, Contract No. W912C8-05-P-0052</i>
S-033596g	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Jones Hall USAR Center, Mountain View, California; P-43-001836, 63D Regional Readiness Command Facility CA031, Contract No. W912C8-05-P-0052</i>
S-033596h	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Richey Hall USAR Center, San Jose, California; P-43-000728, 63D Regional Readiness Command Facility CA069, Contract No. W912C8-05-P-0052</i>
S-033596i	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve Moffett USAR Center, Mountain View, California; P-43-001837, 63D Regional Readiness Command Facility CA120, Contract No. W912C8-05-P-0052</i>
S-033596j	Maniery, Mary L. and Cindy L. Baker	2007	<i>Cultural Resources Inventory and Evaluation of the United States Army Reserve PFC Young USAR Center, Vallejo, California; P-[48-000752], 63D Regional Readiness Command Facility CA-090, Contract No. W912C8-05-P-0052</i>
S-033596k	Milford, Wayne Donaldson and James O. Anderson	2007	<i>USA070613A; Inventory and Evaluation of Historic Resources at 63D Regional Readiness Command, US Army Reserve Center in California</i>
S-035030	Dexter, Sean	2008	<i>Archaeological Survey Report for Davis Park, City of San Pablo, Contra Costa County, California (letter report)</i>
S-035664	Jones, E. Timothy and Michael Hibma	2008	<i>A Cultural and Paleontological Resources Study for the Contra Costa College Facilities Master Plan Project, San Pablo, Contra Costa County, California</i>
S-038230	Butt, Kimberly	2011	<i>Historic Resources Evaluation, 1901 Church Lane, San Pablo, California</i>

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Report No.	Author(s)	Date	Report Title
S-038230a	Stratton, Susan K. and Robert T. Calkins	2011	<i>DOE110103A: Section 106 for Energy Upgrades, 1901 Church Lane, San Pablo, CA</i>
S-040631	Koenig, Heidi	2013	<i>West of Hills Northern Pipelines Project, East Bay Municipal Utility District, Contra Costa and Alameda Counties, Cultural Resources Survey Report</i>
S-040631a	Koenig, Heidi	2019	<i>Supplement to the Cultural Resources Study for the East Bay Municipal Utility District, Wildcat Pipeline Improvement Project, El Cerrito</i>
S-043442a	Clark, Matthew R	2013	<i>Rumrill Boulevard Bridge Replacement Project Final Report, Section 1: Archaeological Testing and Evaluation, Monitoring of Construction and Data Recovery, Completion of National Historic Preservation Act Section 106 Compliance</i>
S-043442	Sunshine, Psota	2013	<i>Section II: Rumrill Historic and Recent Artifacts</i>
S-046251	Cross, Michelle C.	2015	<i>Cultural Resources Inventory, Extended Phase I Testing (XPI) and Evaluation Report for the Laurel Terrace Development Project, San Pablo, Contra Costa County, California (FINAL)</i>
S-046251a	Cross, Michelle C.	2015	<i>Amendment 1 to the Cultural Resources Inventory, Extended Phase I Testing (XPI) and Evaluation Report for the Laurel Terrace Development Project, San Pablo, Contra Costa County, California (FINAL)</i>
S-046251b	Roland-Nawi, Carol and Kristin Sherk	2015	<i>HUD 2015_0316_007: Multifamily Development Project Located at Southeast Corner San Pablo Avenue/Church Lane, San Pablo</i>
S-047514	Dang, Darryl	2014	<i>Cultural Resources Constraints Report, Gas Main Standard & Mason, San Pablo, Contra Costa County, PM Number 30968147</i>
S-047514a	Brandon Patterson	2016	<i>Archaeological Monitoring Summary Report for 30968147 Gas Main Standard & Mason, San Pablo, Contra Costa County (letter report)</i>
S-049682	Polanco, Julianne, Laura M. Caballero,	2017	<i>Colonel Hunter Hall, United States Army Reserve Center, Facility ID No. CA070</i>

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Report No.	Author(s)	Date	Report Title
	and Susan K. Stratton		
S-049682a	Polanco, Julianne, Laura M. Caballero, and Susan K. Stratton	2017	<i>USA_2017_0206_002, Real Property Exchange of Hunter Hall Army Reserve Center, 2600 Castro Road, San Pablo, California</i>
S-050069	Alonso, Christina, Stacy Kozakavich, and Nazih Fino	2018	<i>Cultural Resources Assessment Report, Wildcat Creek Restoration and Greenway Trail, San Pablo, California, Project Number 17-365, Report Number 17-394</i>

LITERATURE, HISTORICAL MAP, AND AERIAL PHOTOGRAPH REVIEW

Michael Baker staff reviewed literature, historical maps, and aerial photographs for historical information about the project area and the vicinity. Below is a list of resources reviewed, followed by a narrative description of the results:

- "Cultural Diversity in Early Central California: A View from the North Coast Ranges" (Fredrickson 1974)
- *Archaeological Survey Report for the Rumrill Boulevard Complete Streets Project* (Jordan and Nayyar 2017)
- *California Archaeology* (Moratto 1984)
- *Final Report of the Testing of Cultural Resources within the Wildcat and San Pablo Creeks Flood Control and Water Resources Project, Contra Costa County, California* (Banks and Orlins 1979)
- Survey Plat Map of Township No. 1 North, Ranch No. 4 West, Mount Diablo Meridian (Bureau of Land Management General Land Office [BLM] 1867)
- Richmond, Calif. 1:24,000 scale topographic quadrangle (US Geological Survey [USGS] 1947)
- Richmond, Calif. 1:24,000 scale topographic quadrangle (USGS 1949)
- Richmond, Calif. 1:24,000 scale topographic quadrangle (USGS 1952)
- Richmond, Calif. 1:24,000 scale topographic quadrangle (USGS 1960)
- Aerial photograph: Flight BUU-1958, Frame 12V-82 (University of California, Santa Barbara [UCSB] 1959)
- Aerial photograph: Flight CAS-65-130, Frame 15-35 (UCSB 1965)
- Aerial photograph: Flight GS-VEZR, Frame 1-11 (UCSB 1980)
- Aerial photograph: Flight NAPP-2C, Frame 6365-88 (UCSB 1988)
- *Contra Costa Times* (2005)
- *San Pablo, California* Sanborn Map, June 1928 (Sanborn Map Company 1928)
- *Planning, Current Literature* (U.S. Department of Commerce Bureau of Public Roads 1957)

- 1939 aerial imagery (Google Earth, n.d.)

Results

The Paleo-Archaic-Emergent chronological sequence of the San Francisco Bay region consists of three broad periods (Fredrickson 1974): the Paleo-Indian period (10,000–6,000 B.C.); the Archaic period consisting of the Lower Archaic (6,000–3,000 BC), Middle Archaic (3,000–1,000 BC, and Upper Archaic (1,000 BC–AD 500); and the Emergent period (AD 500–1800). The cultural patterns relevant to the project area include the Berkeley Pattern during the Archaic period (1,000 BC–AD 500) and Augustine Pattern (AD 500–1800).

The Berkeley Pattern is characterized by deeply stratified midden deposits containing diverse tools, large assemblages of milling and grinding stones for the processing of plant resources, distinctive diagonal flaking projectile points, flexed position burials with burial ornaments such as shell beads, and extensive bone tools. The Augustine Pattern is characterized by intensive hunting, fishing, and gathering; a focus on acorn processing; large population increases; intensified trade and exchange networks; more complex ceremonial and social attributes; and the practice of cremation in addition to flexed burials. The Augustine Pattern and the Historic period can be characterized as the apex of Native American cultural development in this part of California (Jordan and Nayyar 2017).

The project area is located within the historical territory of the Huchiun Indians, speakers of the Costanoan/Ohlone language (Spanish for “coastal” people). The Huchiun inhabited the San Pablo–Richmond area, or a stretch of approximately 4 miles extending from north of San Pablo Creek to Cerrito Creek (Banks and Orlins 1979). Ethnographic information suggests that at historic contact, a village on San Pablo or Wildcat Creek was occupied in the spring, a season when plant foods found on the alluvial plain and foothill woodland were extensively collected. Prehistoric sites in the Huchiun tribelet area were almost always situated at or near the transition between ecological zones. These transitional zones, or ecotones, were so favorable for human habitation that prehistoric sites tended to cluster near or at them. Generally, the distribution of cultural resources in the Huchiun tribelet area suggests that groups of sites would most likely be found near or at transitions between ecological zones, and near-permanent sources of freshwater (Banks and Orlins 1979).

The 1867 BLM GLO survey plat depicts the project area as located within the lands of Rancho San Pablo, although no details were mapped for the area (BLM 1867). A 1939 aerial photograph shows the property was undeveloped, and the neighboring parcels to the east and north were sparsely developed and appear to have supported agricultural uses (Google Earth, n.d.).

During World War II, the agricultural land across Road 20 to the north was developed with a temporary defense workers’ housing project called El Portal Park. That property was later redeveloped, with portions used to build a shopping center, tract homes, and Contra Costa Community College (San Pablo Historical and Museum Society 2021; USGS 1960; U.S. Department

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of Commerce, Bureau of Public Roads 1957). In addition, the alignment of Road 20 near its intersection with San Pablo Avenue was modified throughout the decades (USGS 1947, 1949, 1952; UCSB 1959, 1965, 1980, 1988).

USGS topographic quadrangle maps show the project area was developed with several buildings sited parallel to Road 20 as early as 1947. The county assessor's data for the extant building on the property indicates it was constructed in 1943 (ParcelQuest Lite 2022). By 1952, the subject property was in use as a nursery (*Contra Costa Times* 2005). Aerial photographs appear to show several buildings on the property sited parallel to the road through about 1980. The western side of the property was cleared of structures by the late 1980s. The property was sold and ceased being used as a nursery in approximately the late 2000s (Sullivan 2007; Bennett 2008).

LOCAL HISTORICAL GROUP CONSULTATION

Michael Baker International prepared a letter and figures describing the project, and sent a copy via email to the San Pablo Historical and Museum Society on January 18, 2022. The letter requested information or concerns regarding historical resources within the project area (**Attachment 2**). Janet Pottier, president of the San Pablo Historical and Museum Society, responded on January 31, 2022, via email with information regarding the project area and surrounding area. Ms. Pottier stated she was not aware of any historical significance of the property, but she knew the property operated as Ken's Nursery. She relayed that owner Ken Tokuyoshi was of Japanese descent and was interned by the U.S. government during World War II, but was able to reestablish his business after the war. She stated the nursery business was in operation through at least the 1990s. Ms. Pottier also stated she was aware of significant and large amounts of Native American artifacts and human remains found along San Pablo Creek. She provided two locations of previous archaeological finds, both within 0.5 miles of the project area. Although Ms. Pottier provided property names and addresses, that information is omitted here for confidentiality reasons.

On February 17, 2022, Michael Baker International emailed Ms. Pottier to inquire if she had additional information regarding other possible locations for the Ken's Nursery business. No reply has been received as of the date of this memorandum.

FIELD SURVEY

On February 1, 2022, Michael Baker International archaeologist Jacob Parsley conducted a pedestrian survey of the project area. The exposed ground surface was walked over in single transects spaced approximately 15 meters apart. The north half of the parcel along Road 20 is developed and includes a house with an attached deck that extends south toward San Pablo Creek, a large shed at the northeast corner of the parcel, and a smaller deck at the southeastern edge of the parcel. A paved area on the western half of the parcel is used as a parking lot. The majority of exposed ground surface was either paved or graveled with no visible exposed native soils. The south half of the project area along San Pablo Creek was heavily obscured with

vegetation with no visible or exposed soils. Disturbances include landscaping, grading, bioturbation, human habitation/camping, and modern refuse dumping. No cultural materials or anthropogenic soils were identified within the project area during the survey.

During the field effort, Michael Baker International conducted a survey of the property to assess the existing buildings and note their current condition, construction, materials, and any alterations to the buildings. Documentation included photographs and field notes, and photographs were incorporated into the California Department of Parks and Recreation (DPR) 523 series forms in **Attachment 3**.

ARCHAEOLOGICAL BURIED SITE SENSITIVITY ANALYSIS

Sensitivity for cultural resources consisting of archaeological sites is considered moderate based upon the known cultural resources in the vicinity of the project, the shallow previous disturbance in the project area, and various natural factors discussed below.

The project area is located adjacent to (on the north bank of) San Pablo Creek. Proximity to water, a critical resource, indicates a greater sensitivity of prehistoric occupation. Additionally, it is underlain by Holocene-age young alluvium (11,700 years ago to today). These deposits have the potential for capping prehistoric archaeological deposits.

The NWIC records search results and the field survey identified no cultural resources within the project area. However, five prehistoric archaeological sites, including the National Register-eligible Lower San Pablo Creek Archaeological District (P-07-004534), were identified within a half-mile to the west of the project area. Archaeological excavation at sites within the district documented historical and recent cultivation activities, and industrial and housing development has altered the surface and near-surface cultural deposits. However, intact midden deposits were present below 2 feet to 8 feet below the ground surface. During prehistoric and historic times, the Lower San Pablo Creek Archaeological District area was prone to flooding and archaeological sites in the district are known to contain surficial and buried deposits.

The project area was developed in 1943 and used as a nursery through the 2000s. Nurseries typically have shallow ground disturbance for the construction of greenhouses and would likely have added soil and manure over the life of the nursery to facilitate growing conditions. This would have led to an accumulating soil environment which would have capped subsurface archaeological deposits. According to the historical map review, the project area was first developed in 1943. Additionally, aerial photographs appear to show several buildings on the property sited parallel to the road through about 1980.

The sensitivity for the project area is moderate based upon the number of previously documented sites in the project vicinity, the accumulating soil environment, and the likely shallow ground disturbance from previous construction. The project area has moderate sensitivity for buried

significant or potentially significant prehistoric or historic-period archaeology sites as a result of historic and modern development.

CALIFORNIA REGISTER EVALUATION

A description and history of the property at 2364 Road 20 are included in the DPR forms in **Attachment 3**. Below is a summary of the evaluation of the property for eligibility for listing in the California Register.

Criterion 1 – The property at 2364 Road 20 functioned as a nursery from 1952 to approximately the late 2000s. Archival research did not indicate the property is associated with any significant events or trends in national, state, regional, or local history. While it is generally associated with post-World War II commercial development, the property did not play an important role in the history of commercial development in San Pablo, and is not significant within this context. Thus, it is recommended ineligible under Criterion 1.

Criterion 2 – While the property at 2364 Road 20 is associated with Kenichi (Ken) and Alice Tokuyoshi, business owners who successfully operated a nursery at the property between 1952 and approximately 2008, archival research did not demonstrate they made significant contributions to national, state, or local history. Therefore, the property is recommended ineligible under Criterion 2.

Criterion 3 – The extant residence on the property is suggestive of Minimal Traditional residential architecture, having been built during the period that the style was popular. However, the residence is comparatively large and has a more complex plan and roofline than is the norm for Minimal Traditional style homes. Therefore, it is not a good representative example of the style, or any other architectural style. The shed on the property is utilitarian. It is not representative of any particular architectural style, and displays modest and common building materials and features. Thus, while building permit records consulted for this study did not identify an architect or builder, it is unlikely the residence or shed was designed by a master architect or builder. In addition, two structures associated with the nursery have been demolished or removed from the property, and the residence has undergone various alterations between the time of its original construction through 1995, including an addition near the southwest end of the building, sheds attached to the east side of the building, and a large deck added to the rear of the building. The buildings on the property do not embody the distinctive characteristics of a type, period, region, or method of construction, nor do they represent the work of a master, or possess high artistic values. Thus, the property is recommended ineligible under Criterion 3.

Criterion 4 – Available information does not indicate the buildings or property have the potential to yield information important to the prehistory or history of the community, state, or nation; therefore, the property is recommended ineligible under Criterion 4.

FINDINGS AND RECOMMENDATIONS

No historical or archaeological resources as defined by CEQA Section 15064.5(a) were identified within the project area as a result of the NWIC records search, literature, map, and aerial photo review, historical society consultation, pedestrian survey, and California Register evaluation.

Sensitivity for buried archaeological resources is moderate. There is a potential for disturbing previously unknown archaeological resources during ground-disturbing activities associated with project construction.

Impacts will be avoided through implementation of the following City policies (OSC-1-15 and OSC-1-16), designed to protect known and unknown cultural resources in San Pablo as described in the San Pablo General Plan (City of San Pablo 2011):

OSC-1-15: Help to ensure that new development analyzes and avoids potential impacts to historic, archaeological resources by:

- Requiring a records review for development proposed in areas that are considered archaeologically or paleontologically sensitive;
- **Requiring pre-construction surveys and monitoring during any ground disturbance for all development in areas of historic or archaeological sensitivity;**
- Implementing appropriate measures as a condition of project approval—measures such as avoidance, preservation in place, excavation, documentation, and/or data recovery—in order to avoid any identified cultural resource impacts.

In the event that historical, archaeological, or paleontological resources are accidentally discovered during construction, grading activity in the immediate area shall cease and materials and their surroundings shall not be altered or collected. A qualified archaeologist or paleontologist must make an immediate evaluation and avoidance measures, or appropriate mitigation should be completed, according to CEQA Guidelines. The State Office of Historic Preservation has issued recommendations for the preparation of Archaeological Resource Management Reports that may be used as guidelines.

OCS-1-16: Work with local Native American tribes to protect recorded and unrecorded cultural and sacred sites, and **to educate developers and the community-at-large about the connections between Native American history and the environmental features that characterize the local landscape.**

Native American cultural resources in the Planning Area have been found near sources of water including perennial and intermittent streams and springs, on midslope terraces and elevated knolls above the floodplain, and near ecotones and other productive environments. There is a high likelihood that additional unrecorded Native American cultural sites also exist in the Planning Area.

Applicable state and federal laws include California Health and Safety Code Sections 7050.5-7055, and Section 5097.98 of the California Public Resources Code.

PREPARER QUALIFICATIONS

This memorandum was prepared by Michael Baker International Senior Archaeologist Kholood Abdo, MA, RPA and Senior Architectural Historian Susan Zamudio-Gurrola, MHP. Archaeologist Jacob Parsley conducted the field survey and Senior Cultural Resources Manager Margo Nayyar reviewed the document for quality control and assurance.

Kholood Abdo, Senior Archaeologist, is an archaeologist with 26 years of experience in prehistoric and historical archaeology and cultural resources management. Her experience includes writing technical reports, including National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and CEQA compliance documents. She has supervised and managed all phases of archaeological fieldwork, including survey, Phase II testing and evaluations and data recovery, and monitoring at sites throughout California and Arizona since 1999. In her current capacity as senior archaeologist and laboratory director, Ms. Abdo oversees the processing, analysis, and curation of artifact collections from both prehistoric and historical sites. Her cultural material analysis experience includes flaked and ground stone lithics, glass, prehistoric and historic ceramic, and bead analysis. Ms. Abdo meets the Secretary of the Interior's Professional Qualification Standards for prehistory and historical archaeology.

Susan Zamudio-Gurrola, Senior Architectural Historian, is an architectural historian with over eight years of experience in cultural resource management. Her experience includes conducting archival research and built environment surveys, conducting evaluations for the National and California Registers and local designations, assessing the integrity of historic resources, developing historic context statements, reviewing projects for conformance with the Secretary of the Interior's Standards, and preparing cultural resources studies in compliance with CEQA, NEPA, Section 106 of the NHPA, and local ordinances. She also prepares cultural resources sections for CEQA environmental documents such as initial studies and environmental impact reports, and has demonstrated experience preparing Caltrans-format cultural resources studies, finding of effect documents, and Historic American Buildings Survey/Historic American Engineering Record documentation for buildings and structures. Ms. Zamudio-Gurrola meets the Secretary of the Interior's Professional Qualification Standards for history and architectural history.

Jacob Parsley, Archaeologist, has worked in various capacities in cultural resource management since 2018. He is experienced in surveying, monitoring, and writing cultural resources constraints reports. Mr. Parsley is versed in conducting fieldwork within the frameworks of Section 106 of the NHPA, NEPA, and CEQA. He has participated in projects in several phases of archaeology: Phase I pedestrian and shovel test surveys, buried site testing, Phase III data recovery, and Phase IV monitoring. His project highlights include archaeological surveying to update and verify cultural resources found mostly in remote areas of California, many of which have included prehistoric components. Other project responsibilities include identifying and flagging historic and

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prehistoric resources, delineating best access routes and conducting post impact assessments, and reporting to the National Park Service, National Forest System, California State Parks, PG&E, and private clients.

Margo Nayyar, Senior Cultural Resources Manager, is a senior architectural historian with 12 years of cultural management experience in California, Nevada, Arizona, Idaho, Texas, and Mississippi. Her experience includes built environment surveys, evaluation of historic-era resources using guidelines outlined in the National and California Registers, and preparation of cultural resources technical studies pursuant to CEQA and Section 106 of the NHPA, including identification studies, finding of effect documents, memorandum of agreements, programmatic agreements, and Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscapes Survey mitigation documentation. She prepares cultural resources sections for CEQA environmental documents, including infill checklists, initial studies, and environmental impact reports, as well as NEPA environmental documents, including environmental impact statements and environmental assessments. She also specializes in municipal preservation planning, historic preservation ordinance updates, Native American consultation, and provision of Certified Local Government training to interested local governments. She develops Survey 123 and Esri Collector applications for large-scale historic resources surveys, and authors National Register nomination packets. Ms. Nayyar meets the Secretary of the Interior's Professional Qualification Standards for history and architectural history.

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Sincerely,



Kholood Abdo, RPA
Senior Archaeologist



Susan Zamudio-Gurrola, MHP
Senior Architectural Historian

Attachments:

Attachment 1 – Figures

Attachment 2 – Local Historical Group Consultation

Attachment 3 – DPR 523 series forms

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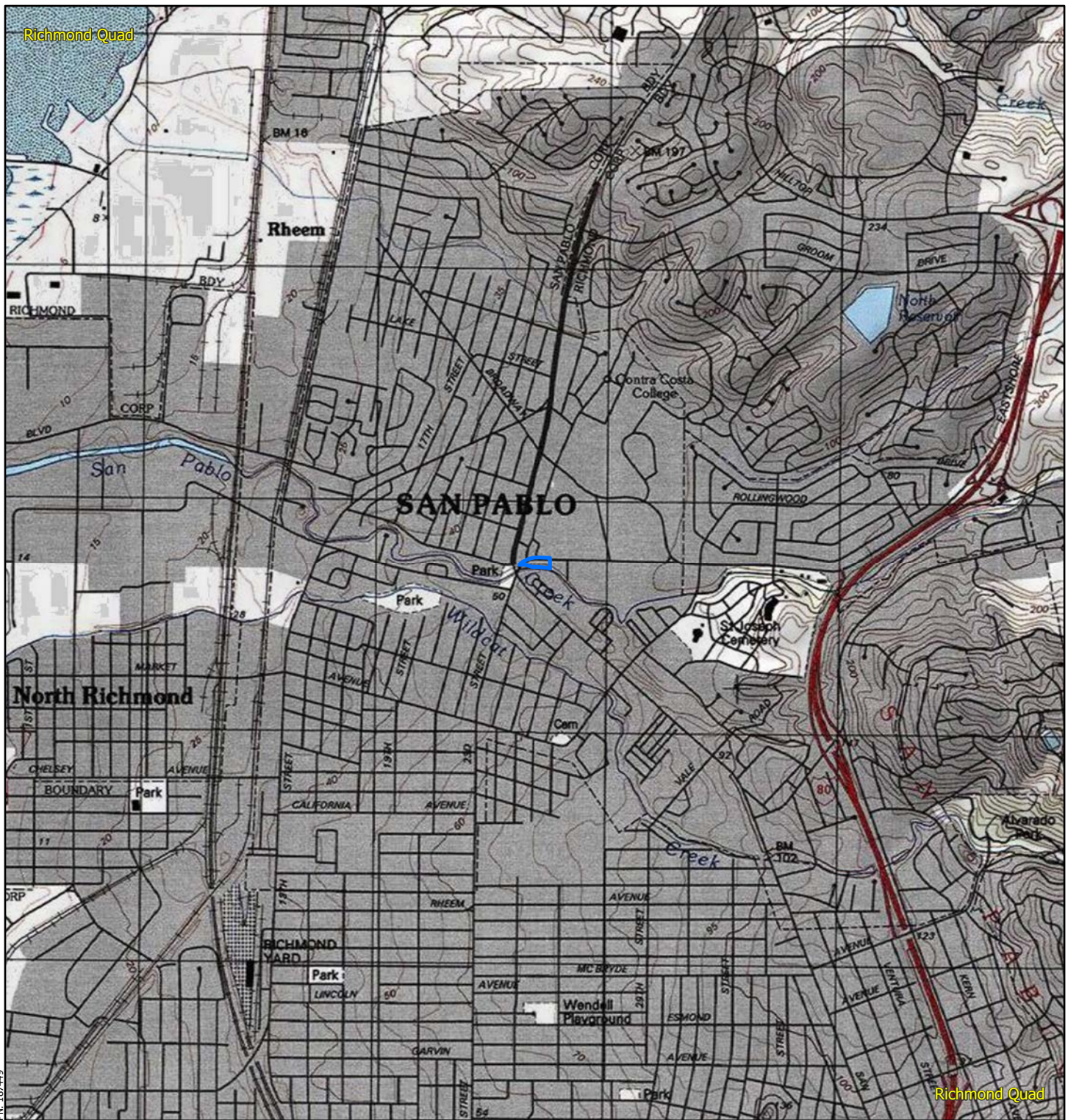
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Attachment 1

Figures



Project Location



 Project Area



PN: 187449



Project Area

Michael Baker
INTERNATIONAL



0 50 100 200
Feet

Source: Esri, ArcGIS Online, 2021 Nearmap Imagery: San Pablo, California

2364 ROAD 20
SAN PABLO, CALIFORNIA
Project Area

Figure 3

Attachment 2

Local Historical Group Consultation

January 28, 2022

SAN PABLO HISTORICAL SOCIETY

1 Alvarado Square

San Pablo, CA 94806

Via email: sanpablomuseums@gmail.com

RE: 2364 ROAD 20 DEVELOPMENT PROJECT, CITY OF SAN PABLO, CONTRA COSTA COUNTY, CALIFORNIA

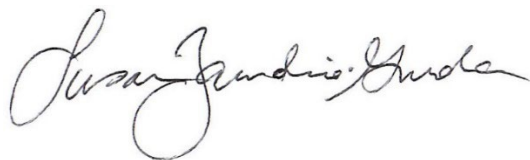
To Whom it May Concern:

Michael Baker International is conducting a cultural resources investigation for the 2364 Road 20 Development Project (project). The proposed project is located at 2364 Road 20 in San Pablo, California, (Assessor Parcel Number 416-120-029) as depicted in the accompanying figures (see Attachment 1).

The project site is currently developed with a residential building, an ancillary building, paved parking areas, and fencing. The proposed project entails demolition of the existing structures to construct a new multi-family five-story residential building which would include 64 multi-family rental units, a parking garage, surface parking, and parking lifts. No structures would be constructed within a 30-foot setback from the top of bank of San Pablo Creek which runs along the southern edge of the parcel. Two existing decks on the parcel extend through the setback and over the creek top of bank. The decks will be removed as part of the project.

Please notify us if your organization has any information or concerns about historical resources within the project site. This is not a research request; it is solely a request for public input related to any concerns that the San Pablo Historical Society may have pertaining to historical resources. If you have any questions or comments, please contact me at your earliest convenience at Susan.ZamudioGurrola@mbakerintl.com or (805) 384-4090.

Sincerely,



Susan Zamudio-Gurrola, MHP
Senior Architectural Historian

Attachments:

Attachment 1 - Figures



★ Project Location

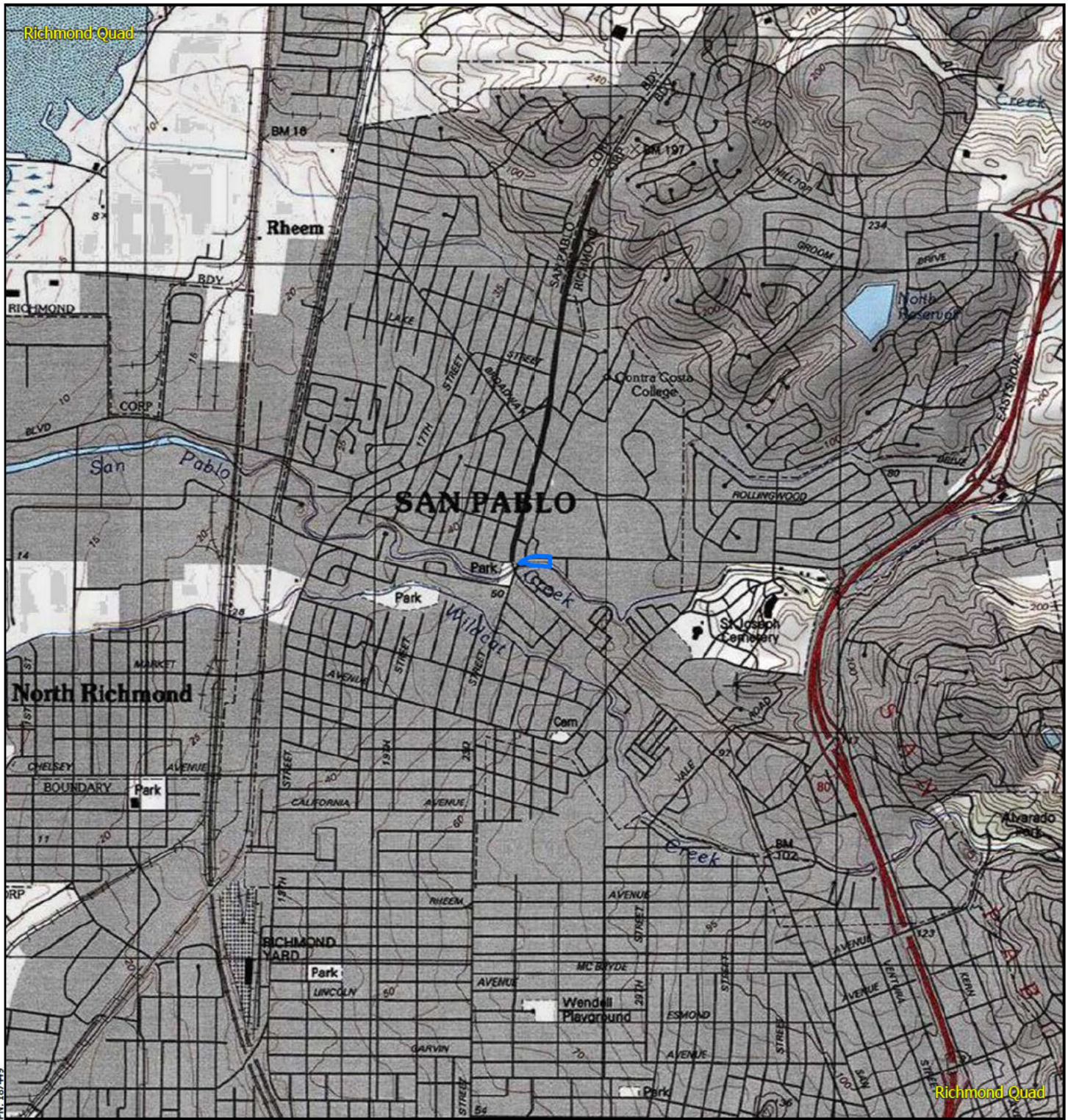
Michael Baker
INTERNATIONAL



Source: Esri, ArcGIS Online, National Geographic World Map: San Pablo, California

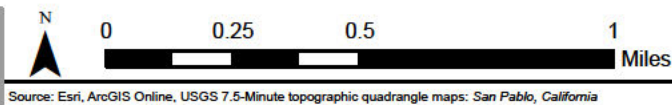
2364 ROAD 20
SAN PABLO, CALIFORNIA
Regional Vicinity

Figure 1



 Project Area

Michael Baker
INTERNATIONAL



2364 ROAD 20
SAN PABLO, CALIFORNIA
Project Vicinity

Figure 2



PH: 187449

 Project Area

Michael Baker
INTERNATIONAL



0 50 100 200
Feet

Source: Esri, ArcGIS Online, 2021 Nearmap Imagery: San Pablo, California

2364 ROAD 20
SAN PABLO, CALIFORNIA
Project Area

Figure 3

ZamudioGurrola, Susan

From: ZamudioGurrola, Susan
Sent: Thursday, February 17, 2022 4:06 PM
To: San Pablo Museums
Subject: Re: Local Historical Group Outreach re: 2364 Road 20 Development Project
Attachments: 1959 aerial with outline.png

Hello again, Janet,

I have been conducting research on Ken's Nursery in newspapers and general internet searches, but I feel there is a piece of information that is alluding me. Therefore, I wanted to ask if you knew any more information about the business prior to it being located at 2364 Road 20. You mentioned below Ken was interned during WWII, "but was able to reestablish his business after the war", so I thought you might know if he originally had a nursery elsewhere? And lastly, do you know anything about the buildings that were once located on the western half of the 2364 Road 20 property? They are visible on aerial photos, but the City building permit records don't seem to include them (perhaps they are filed under a different address, not 2364...). I have attached a 1959 aerial photo with a box generally around the property to demonstrate.

Thank you,

Susan Zamudio-Gurrola, MHP | Senior Architectural Historian | she/her
Michael Baker International | *We Make a Difference*
2945 Townsgate Road, Suite 200 | Thousand Oaks, CA 91361
[O] 805-384-4090 | [M] 310-592-0815
susan.zamudiogurrola@mbakerintl.com | www.mbakerintl.com

From: ZamudioGurrola, Susan
Sent: Monday, January 31, 2022 5:50 PM
To: San Pablo Museums <sanpablomuseums@gmail.com>
Subject: RE: EXTERNAL: Re: Local Historical Group Outreach re: 2364 Road 20 Development Project

Thank you very much for the information. That is very helpful.

Susan Zamudio-Gurrola, MHP | Senior Architectural Historian | she/her
Michael Baker International | *We Make a Difference*
5051 Verdugo Way, Suite 300 | Camarillo, CA 93012
[O] 805-384-4090 | [M] 310-592-0815
susan.zamudiogurrola@mbakerintl.com | www.mbakerintl.com

From: San Pablo Museums <sanpablomuseums@gmail.com>
Sent: Monday, January 31, 2022 4:58 PM
To: ZamudioGurrola, Susan <Susan.ZamudioGurrola@mbakerintl.com>
Subject: EXTERNAL: Re: Local Historical Group Outreach re: 2364 Road 20 Development Project

Hi,

We are an all volunteer organization with limited resources.

I am not aware of any historical significance of that particular property. However we are aware that there have been significant and large amounts of Native American [REDACTED] along San Pablo Creek. The closest ones we are aware of [REDACTED] San Pablo.

When [REDACTED] significant amounts of Native American artifacts were discovered, some of which are in our collection. There are numerous newspaper articles about the archeological digs done in this area.

The only thing we know about the specific property was that it was Ken's Nursery. The owner was Ken Tokuyoshi. He was Japanese and was interred by the Government during the Second World War but was able to reestablish his business after the war. The nursery was still operational at least until sometime in the 1990s.

I hope this has been helpful to you.

Janet Pottier, President
San Pablo Historical and Museum Society
13873 San Pablo Ave., San Pablo, CA 94806
(510) 255-7488
Facebook: [San Pablo Historical & Museum Society](#)
Website: [San Pablo Historical Society Museum](#)

On Fri, Jan 28, 2022 at 11:08 AM ZamudioGurrola, Susan <Susan.ZamudioGurrola@mbakerintl.com> wrote:

Good morning,

Michael Baker International is conducting a cultural resources investigation for the 2364 Road 20 Development Project in San Pablo, CA. Please see the attached letter for additional details about the project. We are conducting outreach to you, the local historical society, to ask if you have any information or concerns about historical resources within the project site. If you have any questions or comments, please contact me at the phone or email below.

Thank you for your time,

Susan Zamudio-Gurrola, MHP | Senior Architectural Historian | she/her
5051 Verdugo Way, Suite 300 | Camarillo, CA 93012 | [O] 805-384-4090 | [M] 310-592-0815
susan.zamudiogurrola@mbakerintl.com | www.mbakintl.com     

Michael Baker

| We Make a L

ZamudioGurrola, Susan

From: San Pablo Museums <sanpablomuseums@gmail.com>
Sent: Monday, January 31, 2022 4:58 PM
To: ZamudioGurrola, Susan
Subject: EXTERNAL: Re: Local Historical Group Outreach re: 2364 Road 20 Development Project

Follow Up Flag: Follow up
Flag Status: Flagged

Hi,

We are an all volunteer organization with limited resources.

I am not aware of any historical significance of that particular property. However we are aware that there have been significant and large amounts of Native American [REDACTED] along San Pablo Creek. The closest ones we are aware of [REDACTED] in San Pablo.

[REDACTED] these sites were developed significant amounts of Native American artifacts were discovered, some of which are in our collection. There are numerous newspaper articles about the archeological digs done in this area.

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Thank you for your time,

Susan Zamudio-Gurrola, MHP | Senior Architectural Historian | she/her
5051 Verdugo Way, Suite 300 | Camarillo, CA 93012 | [O] 805-384-4090 | [M] 310-592-0815
susan.zamudiogurrola@mbakerintl.com | www.mbakertnl.com     



Attachment 3

DPR 523 Series Forms

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial
NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 8

*Resource Name or #: 2364 Road 20

P1. Other Identifier: Ken's Nursery

***P2. Location:** ☒ **Unrestricted**

***a. County** Contra Costa **and** (P2c, P2e, and P2b or P2d.

***b. USGS 7.5' Quad** *Richmond, Calif.* **Date** T 1N; R 4W; (unsectioned) M.D.B.M

c. Address 2364 Road 20 City San Pablo Zip 94560

d. UTM: Zone 10 S, 557621.46 mE/ 4201928.21 mN

e. Other Locational Data: APN 416-120-029

***P3a. Description:**

The property at 2364 Road 20 in San Pablo consists of an irregularly shaped 1.04-acre parcel located at the southeast corner of the intersection of Road 20 and San Pablo Avenue. The commercially zoned property contains a one-story, 1,646-square-foot, wood-framed, single-family residence, and a shed-like ancillary building near the northeastern edge of the parcel. A paved surface parking lot occupies the majority of the western portion of the parcel. The southern edge of the parcel is adjacent to San Pablo Creek, and abundant vegetation is noted in that area.

Built in 1943, the residential building has an irregular footprint and rests on a concrete foundation. It is clad with rough stucco, and features a cross-gabled roof that has a shallow overhang and is covered with composite shingles. The building faces north toward Road 20 and has a large setback. The primary entrance on the façade is off-center and contains a paneled door and aluminum screen door, which are accessed via a set of concrete steps. Above the entrance is a small flat roof supported by a knee brace. Each end of the façade has a front-facing gabled bay containing a window. Continued on page 4.

***P3b. Resource Attributes:** HP2. Single Family Property HP4. Ancillary Building

***P4. Resources Present:** ☒ Building

P5a. Photograph or Drawing



P5b. Description of Photo:

Photo 1: Residence - north façade, view looking southwest, 2-2-2022.

P6. Date Constructed/Age and

Source: ☒ Historic

1943 (ParcelQuest Lite 2022)

***P7. Owner and Address:**

Unknown

***P8. Recorded by:**

Susan Zamudio-Gurrola, MHP
Michael Baker International
2729 Prospect Park Dr. Suite 220
Rancho Cordova, CA 95670

***P9. Date Recorded:** 2/1/2022

***P10. Survey Type:** Intensive
Pedestrian

***P11. Report Citation:**

Abdo, Kholood and Susan Zamudio-Gurrola. 2022. *Cultural Resources Identification Memorandum for the 2364 Road 20 Development Project, San Pablo, Contra Costa County, California.*

***Attachments:** ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record

BUILDING, STRUCTURE, AND OBJECT RECORD

Page 2 of 8

*NRHP Status Code:

*Resource Name or # 2364 Road 20

- B1. Historic Name: Ken's Nursery
B2. Common Name: Ken's Nursery
B3. Original Use: Nursery

B4. Present Use: Residence surrounded by vacant land

*B5. **Architectural Style:** Residence is suggestive of Minimal Traditional style; ancillary building has no discernible style

*B6. **Construction History:**

Per Contra Costa County Assessor records, the residence was constructed in 1943. City of San Pablo building permit records indicate work was completed in 1948, but the description, owner, and builder are illegible. New windows were installed in 1952. A concrete block storage shed was built in 1959. A patio with a plastic roof was built for nursery use in 1960.

Alterations/addition of two rooms to the residence were completed in 1965. A redwood deck was built at the rear of the residence in 1995. The residence was re-stuccoed in 1997. Re-roofing was completed in 1969, 1970, 1990, and 2007. Various electrical and plumbing permits indicate improvements such as wall heater installation, rewiring, and undergrounding electrical were completed between 1965 and 1986 (City of San Pablo, n.d.).

*B7. **Moved?** ☒ No

*B8. **Related Features:** N/A

B9a. Architect: Unknown

b. Builder: Unknown

*B10. **Significance: Theme** Commercial Development

Area: San Pablo

Period of Significance N/A

Property Type Residential

Applicable Criteria N/A

Contra Costa County was incorporated in 1850 as one of the original 27 counties in the state of California. The county developed into a hub for agricultural, industrial, and maritime industries, supported by the region's topography, climate, and natural resources. The area surrounding the city of San Pablo contained quality grazing and agricultural land. San Pablo developed on land that was once part of Rancho San Pablo or Rancho de los Cuchiyunes, granted in 1823 to Don Francisco Maria Castro, a former Mexican soldier and alcalde (mayor) of San Jose. The rancho became a local center of commerce and produced hide, tallow, and agricultural products to the presidios in San Francisco and Monterey. Following the Gold Rush and influx of newcomers to the area, the ranching families experienced financial difficulties partially stemming from legal battles relating to squatters and land claims. Settlement of the large rancho increased during this period (WSA Inc. 2017).

San Pablo grew slowly during the second half of the nineteenth century surrounded by agricultural uses. In 1878, the railway terminus was completed in Point Richmond, after which industrial facilities increased along the bay shoreline north and west of San Pablo. At the end of century, many local residents worked in explosive plants located on the bay shoreline. Explosive plants continued to operate in the area through the mid-twentieth century. World War II brought a boom in shipbuilding activity to the region, and drew thousands of new residents. San Pablo experienced considerable residential and commercial growth in the post-war years, similar to many communities throughout the state (WSA Inc. 2017). Continued on p 4.

B11. Additional Resource Attributes: N/A

*B12. **References:** See continuation sheet, page 5.

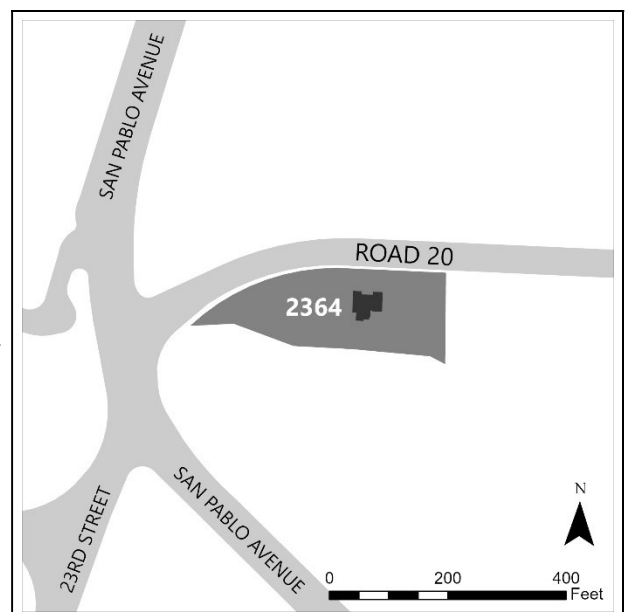
B13. Remarks: None.

*B14. **Evaluator:**

Susan Zamudio-Gurrola, Michael Baker International

*Date of Evaluation: 3-Feb-22

(This space reserved for official comments.)



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary #
HRI#
Trinomial

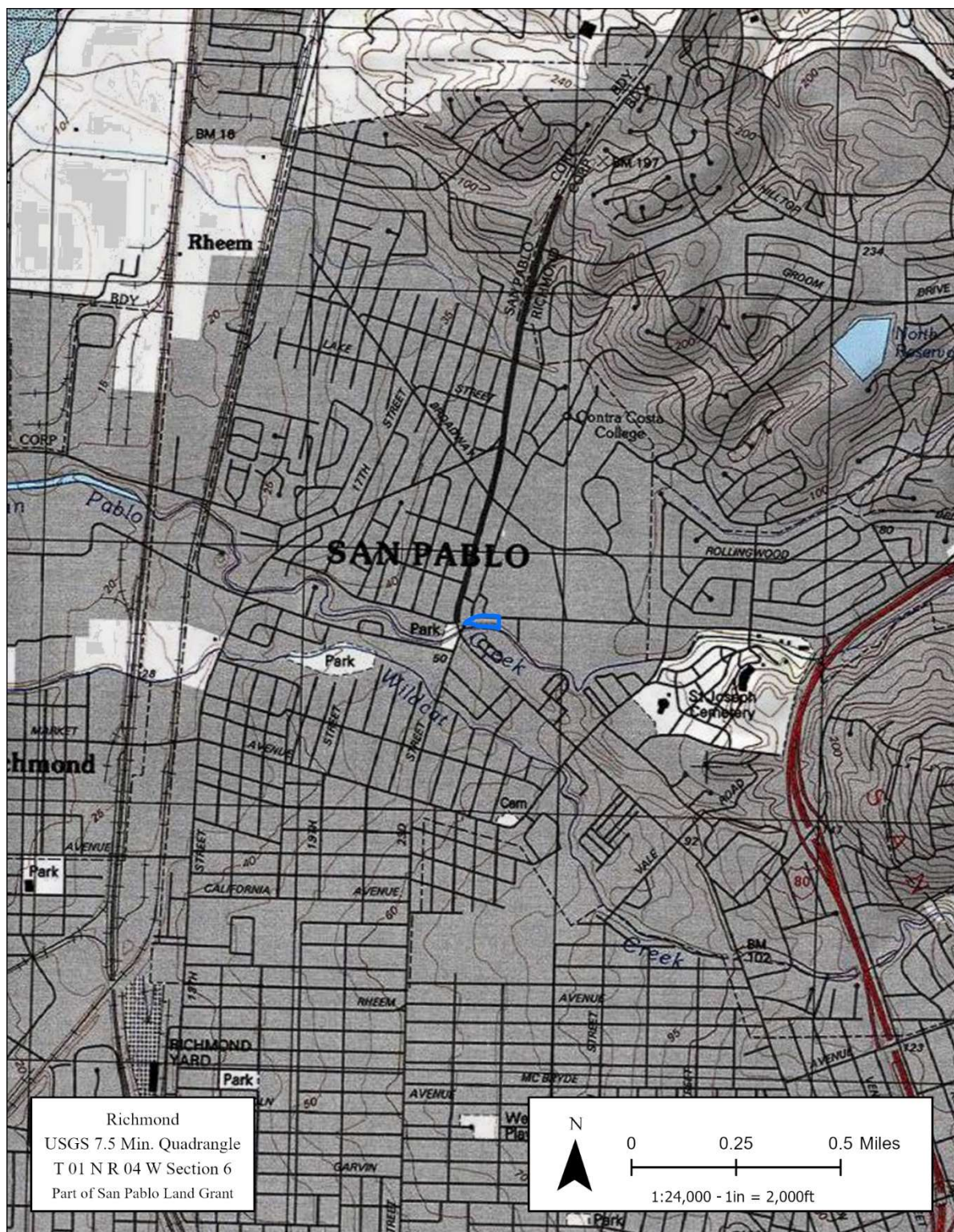
Page 3 of 8

*Map Name: *Richmond, Calif.*

*Scale: 1:24,000

*Resource Name or # 2364 Road 20

*Date of map: 1995 (1999 edition)



CONTINUATION SHEET

Page 4 of 8

*Resource Name or # 2364 Road 20

*Recorded by: Susan Zamudio-Gurrola, Michael Baker International

*Date: 3-Feb-22 ☒ Continuation

***P3a. Description, continued:**

Fenestration includes wood sash picture windows, 1/1 double-hung, and slider windows. Two sheds are attached to the east side of the building. A sunroom is located on the south elevation, as well as an addition which has a flat roof and aluminum sliding windows. A wooden staircase leads to a large wooden deck that is attached to the rear of the home and projects to the south. The edge of the deck is lined with a fence made of wooden posts and corrugated panels. The shed at the northeastern edge of the parcel has a rectangular footprint, and is constructed with concrete block and corrugated metal panels. It is topped by a shed roof with a wide fascia board across the west-facing façade, which features four bays. Two of the bays are open, one is enclosed by corrugated panels, and the fourth has a corrugated panel sliding door.

The property is encircled by a perimeter chain-link fence, and remnants of the primary entry monument remain near the northern property line. The entry monument once simulated a Japanese torii gate, but all that remains are two brick pillars. Adjacent to the east is a pole sign with mid-century modern styling. The rectangular sign board is topped by a geometric shape, and is supported by two cylindrical aluminum posts. Based on Google Street View archived photos, the sign once had lettering reading "Ken's Nursery" which is no longer extant.

***B10. Significance, continued:**

Property Development History

Aerial photographs show that in 1939 the property was undeveloped, and the neighboring parcels to the east and north were sparsely developed, and appear to have supported agricultural uses (Google Earth, n.d.). During World War II, the agricultural land across Road 20 to the north was developed with a temporary defense workers' housing project called El Portal Park. That property was later redeveloped; portions were used to build a shopping center, tract homes, and Contra Costa Community College (San Pablo Historical and Museum Society 2021; US Geological Survey 1960; US Department of Commerce Bureau of Public Roads 1957). In addition, the alignment of Road 20 near its intersection with San Pablo Avenue was modified throughout the decades (US Geological Survey 1947, 1949, 1952; University of California, Santa Barbara Library 1959, 1965, 1980, 1988).

USGS topographic quadrangle maps indicate the property contained more than one building sited parallel to Road 20 as early as 1947. County Assessor records indicate the extant residence on the property was constructed in 1943 (ParcelQuest Lite 2022). The earliest building permit on file with the city is dated 1948 and is illegible. Archival research did not uncover the original owner, architect, and builder.

In 1952, Kenichi (Ken) Tokuyoshi and his wife Alice established a business on the property called Ken's Nursery (*Contra Costa Times* 2005). According to Janet Pottier, president of the San Pablo Historical and Museum Society, Ken was interned during World War II because of his Japanese ancestry, but was able to reestablish his nursery business after the war (Pottier 2022). No additional information was located on whether Ken operated a nursery business elsewhere before the war, either in local newspapers, city directories, or inquiries with the San Pablo Historical and Museum Society. Building permit records show that Ken completed various improvements to the property between 1952 and 1997, including installing new windows in 1952, constructing a storage shed in 1959, constructing a patio for nursery use in 1960, building an addition to the residence in 1965, adding the redwood deck at the rear of the residence in 1995, re-stuccoing the residence in 1997, and electrical and re-roofing work (City of San Pablo, n.d.). Buildings on the western half of the property were removed by the late 1980s (UCSB 1980, 1988). Alice died in 2002, and Ken died in 2005 (*Contra Costa Times* 2005). Kikue or Kathy K. Tokuyoshi-Wong then became the property owner. As "big box" stores took business away from smaller nurseries, Ken's Nursery struggled, and the property was sold around 2008 (Sullivan 2007; Bennett 2008). Based on Google Street View archived photos, two of the structures associated with the nursery that were once located to the east of the residence have been removed. Additionally, most of the torii gate-like entry monument has been removed. These alterations occurred after 2019 (Google 2022).

Property Owner

Ken Tokuyoshi was born in 1918 in Sacramento, California. Alice Matsumoto was also born in 1918 in California. They were both Nisei (children of Japanese immigrants), and married in 1948. Archival research indicates Ken lived in

*Recorded by: Susan Zamudio-Gurrola, Michael Baker International *Date: 3-Feb-22 ☒ Continuation

Oakland between 1948 and 1951 (Ancestry 2022a, 2022b, 2022c, 2022e, 2022f; *Oakland Tribune* 1948). He opened Ken's Nursery on the property in 1952. Ken also had growing grounds in Richmond, California, during the late 1970s, in partnership with Jim Tokuyoshi, who appears to have been his son (*Contra Costa Times* 2005; *The Independent* 1977; Ancestry 2022d). Ken was said to be a member of the Beautification Committee (presumably a city committee), and donated plants to churches and organizations in the community. In 1975, he was honored as San Pablo's Man of the Year (*Contra Costa Times* 2005).

Architectural Style

The extant residence on the property is not representative of any particular architectural style, although, having been constructed in 1943, it is suggestive of Minimal Traditional residential architecture. The Minimal Traditional style emerged during the Great Depression and remained popular through the years immediately following World War II. The housing type was small, inexpensive, and could be rapidly built. Federal Housing Administration (FHA) home loans, and pre-approved FHA designs made Minimal Traditional homes a popular type that could be mass produced. Characteristics include a small scale; a single story; simple compact massing; low to moderately pitched rooflines, typically cross-gabled, side-gabled, or hipped; stucco or wood wall cladding; brick or stone accent cladding; small entrance porch or stoop; steel casement windows or wood windows, typically multi-pane, double-hung or fixed picture; and minimal ornamentation (McAlester 2013; Architectural Resources Group 2019). While the extant residence at 2364 Road 20 was built during the period Minimal Traditional homes were popular, it is comparatively large at 1,646 square feet, and has a more complex plan and roofline with two gabled bays projecting from the façade. Nevertheless, its modest styling, lack of ornamentation, stucco cladding, and small entry stoop are suggestive of a Minimal Traditional style home. In summary, the residence at 2364 Road 20 is not a good, representative example of the Minimal Traditional style or any other architectural style. The extant shed on the property, constructed with concrete block and corrugated metal panels, is a utilitarian structure with no particular architectural style.

California Register of Historical Resources Evaluation

Criterion 1 – The property at 2364 Road 20 functioned as a nursery from 1952 to approximately the late 2000s. Archival research did not indicate the property is associated with any significant events or trends in national, state, regional, or local history. While it is generally associated with post-World War II commercial development, the property did not play an important role in the history of commercial development in San Pablo, and is not significant within this context. Thus, it is recommended ineligible under Criterion 1.

Criterion 2 – While the property at 2364 Road 20 is associated with Kenichi (Ken) and Alice Tokuyoshi, business owners who successfully operated a nursery at the property between 1952 and approximately 2008, archival research did not demonstrate they made significant contributions to national, state or local history. Therefore, the property is recommended ineligible under Criterion 2.

Criterion 3 – The extant residence is suggestive of Minimal Traditional residential architecture, having been built during the period that the style was popular. However, the residence is comparatively large and has a more complex plan and roofline than is the norm for Minimal Traditional style homes. Therefore, it is not a good representative example of the style, or any other architectural style. The shed on the property is utilitarian. It is not representative of any particular architectural style, and displays modest and common building materials and features. Thus, while building permit records consulted for this study did not identify an architect or builder, it is unlikely the residence or shed was designed by a master architect or builder. In addition, two structures associated with the nursery have been demolished or removed from the property, and the residence has undergone various alterations between the time of its original construction through 1995, including an addition near the southwest end of the building, sheds attached to the east side of the building, and a large deck added to the rear of the building. The buildings on the property do not embody the distinctive characteristics of a type, period, region, or method of construction, nor do they represent the work of a master, or possess high artistic values. Thus, the property is recommended ineligible under Criterion 3.

Criterion 4 – Available information does not indicate the buildings or property have the potential to yield information important to the prehistory or history of the community, state, or nation; therefore, the property is recommended ineligible under Criterion 4.

CONTINUATION SHEET

Page 6 of 8

*Resource Name or # 2364 Road 20

*Recorded by: Susan Zamudio-Gurrola, Michael Baker International

*Date: 3-Feb-22 ☒ Continuation

***B12. References, continued:**

- Ancestry.com. 2022a. "Alice Matsumoto." *1930 United States Federal Census* [database online]. Lehi, UT: Ancestry.com Operations, Inc. https://www.ancestry.com/discoveryui-content/view/91660925:6224?_phsrc=jtj221&_phstart=successSource&gsfn=alice&gsln=matusmoto&ml_rpos=1&queryId=cc1a499a47d02716e0c2c867b024d4f6.
- — —. 2022b. "Kenichi Takayoshi." *1940 United States Federal Census* [database online]. Provo, UT, USA: Ancestry.com Operations, Inc. 2012. https://www.ancestry.com/imageviewer/collections/2442/images/m-t0627-00281-00418?treeid=&personid=&rc=&usePUB=true&_phsrc=jtj225&_phstart=successSource&pld=69362275
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- Google. 2022. Street View photos of 2364 Road 20, San Pablo, California dated June 2014, June 2019, and April 2021. Accessed February 3, 2022. <https://www.google.com/maps/@37.9633693,-122.3440334,3a,75y,198.15h,86.83t/data=!3m6!1e1!3m4!1sMi3ekiQi9DMzt70VhohEPg!2e0!7i16384!8i8192>.
- Google Earth. n.d. 1939 aerial imagery depicting 2364 Road 20, San Pablo, California, and surrounding vicinity.
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- ParcelQuest Lite. 2022. Property Detail for 2364 Road 20 San Pablo, CA 94806-3302. Accessed February 2, 2022. <https://assr.parcelquest.com/Statewide/Details/0>.
- Pottier, Janet. 2022. President, San Pablo Historical and Museum Society. Email communication with Susan Zamudio-Gurrola, Michael Baker International, January 31, 2022.
- San Pablo Historical and Museum Society. 2021. "San Pablo's Sugar Beet Fields." September 4, 2021. <https://sites.google.com/sanpablohistoricalsociety.com/museums/san-pablo-history>.

Page 7 of 8

*Resource Name or # 2364 Road 20

- *Recorded by: Susan Zamudio-Gurrola, Michael Baker International *Date: 3-Feb-22 ☒ Continuation
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Image of Road 20 with Ken's Nursery in the background, ca. 1950s. Note the residence near the road at the far right of the photo, which is no longer extant. Source: San Pablo Historical and Museum Society.

Page 8 of 8

*Resource Name or # 2364 Road 20

*Recorded by: Susan Zamudio-Gurrola, Michael Baker International

*Date: 3-Feb-22 ☒ Continuation

P5. Photographs and Descriptions, continued:



Photo 2: Residence, E and N elevations, looking SW.



Photo 3: Residence, S elevation, looking NW.



Photo 4: Residence, W elevation, looking SE.



Photo 5: Shed, W elevation, looking E.



Photo 6: Overview of property, looking S.



Photo 7: Entry monument pillars and sign, looking NW.



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July 26, 2022

Project No: 21-11698

Santosh Addagulla

San Pablo Road 20, LLC

PO Box 960

Newark, California 94560

Via email: marin.hayward@gmail.com

**Subject: Revised Biological Resources Technical Memorandum for the 2364 Road 20 Development Project
San Pablo, Contra Costa County, California**

Dear Mr. Addagullah:

Rincon Consultants, Inc. was retained by San Pablo Road 20, LLC to prepare a biological resources technical memorandum for the proposed 2364 Road 20 Development Project (project) in the City of San Pablo (City), Contra Costa County, California. Due to a potential lack of conformity to City zoning regulations, and potential for significant effects to sensitive biological resources, the City, acting as the lead agency, has decided to prepare addenda to the San Pablo General Plan EIR and San Pablo Avenue Specific Plan EIR as required under the California Environmental Quality Act (CEQA). This memorandum will support these addenda.

Project Description

The project proposes construction of a new multi-family five story residential building on the existing developed area of a 0.98-acre parcel (APN 416-120-029) southeast of the Road 20 and San Pablo Avenue intersection (Attachment A, Figures 1 and 2). The development will include 64 rental units, a parking garage, surface parking, and parking lifts. San Pablo Creek runs along the southern end of the parcel.

Local ordinance requires a 30-foot setback from the creek top of bank; however, the project is requesting a variance with parking areas, access driveways, paved pedestrian walkways, and bio-retention areas planned within portions of the setback. No walls or structures are planned for construction within the setback. It should be noted that two existing decks on the parcel extend through the setback and over the creek top of bank. These decks will be removed as part of the project.

Methods

Field Surveys

Rincon biologist Anastasia Ennis conducted a reconnaissance survey of the project site on September 8, 2021, between the hours of 1500 and 1600 to document existing site conditions, assess vegetation communities, and evaluate the potential for the sites to support special status species habitat, including



sensitive plant and wildlife species. A second site visit was conducted on April 15, 2022, between the hours of 1215 to 1315 to map the extent of riparian vegetation at the project site.

Literature and Desktop Review

Rincon conducted record searches of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDDB, nine-quad search). The California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants and the United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) were also accessed for this review to obtain comprehensive information regarding State- and federally-listed species, as well as other special status species and sensitive plant communities considered to have potential to occur or known to occur within the *Richmond, California* USGS 7.5-minute topographic quadrangle and/or surrounding eight quadrangles.

Existing Conditions

The project site includes developed area on the northern half of the site along Road 20, and a fragment of riparian woodland along San Pablo Creek at the southern edge of the site. (Attachment A, Figures 2 and 3). The developed area of the site is paved or graveled and surrounded by wooden or chain-link fencing (see photos in Attachment B). Existing structures occur on the eastern half of the site, including a house with an attached deck that extends south towards the creek, a large shed at the northeast corner of the site, and a smaller deck at the southeastern edge of the site. The house is currently occupied by tenants who operate a tow truck company from the site. A paved area on the western half of the site is used as a parking lot.

Although largely devoid of plants, small patches of ruderal vegetation and escaped ornamentals are present in the developed area, including wild oats (*Avena* sp.), fennel (*Foeniculum vulgare*), panicled willowherb (*Epilobium brachycarpum*), Algerian ivy (*Hedera canariensis*), wandering pellitory (*Parietaria judaica*), bristly oxtongue (*Helminthotheca echioides*), and tomato (*Solanum lycopersicum*). The riparian canopy surrounding San Pablo Creek is dominated by native tree species, including Arroyo willow (*Salix lasiolepis*), Northern California black walnut (*Juglans hindsii*), California buckeye (*Aesculus californica*), boxelder (*Acer negundo*), elderberry (*Sambucus nigra*), and redwood (*Sequoia sempervirens*), although the latter was likely planted. Non-native species, such as Canary Island palm (*Phoenix canariensis*) are also present, and shrubs and herbaceous plants on the banks of the creek are dominated by non-native species. Plants observed on the creek banks and beneath the riparian canopy include horsetail (*Equisetum* sp.), nasturtium (*Tropaeolum majus*), Bear's breeches (*Acanthus mollis*), Himalayan blackberry (*Rubus armeniacus*), and Algerian ivy. The ivy is the dominant herbaceous understory plant, covering creek banks and climbing up trees in the riparian woodland.

San Pablo Creek drains a 26,101-acre watershed, which includes San Pablo and Briones Reservoirs, and flows west into San Francisco Bay over two miles from the project site. Despite the presence of a perennial creek, the surrounding area is heavily developed and urbanized. Land use surrounding the project site is residential and commercial. The creek itself is disturbed by anthropogenic activity and invasive plant species. A homeless encampment was observed at the western edge of the site, on the creek bank at the entrance to the culvert where San Pablo Creek passes under San Pablo Avenue.



Bird species observed in or near the project sites included: Anna's hummingbird (*Calypte anna*), black phoebe (*Sayornis nigricans*), and American crow (*Corvus brachyrhynchos*).

Special Status Species

The review of the resource agency databases for known special-status species occurrences within the nine USGS quadrangles containing and surrounding the project sites identified 52 special status animal species and 72 special status plant species. The site was evaluated for its potential to provide habitat value for these species. Of the species known to occur in the region, the following rare or protected species (twelve [12] animals and four [4] plants) are known to occur in habitat types with characteristics similar to those in the vicinity of the project sites : California overwintering populations of monarch butterfly (*Danaus plexippus* population 1), green sturgeon (*Acipenser medirostris*), steelhead – central California coast Distinct Population Segment (DPS; *Oncorhynchus mykiss irideus*, population 8) California red-legged frog (*Rana draytonii*), western pond turtle (*Emys marmorata*), Cooper's hawk (*Accipiter cooperii*), peregrine falcon (*Falco peregrinus anatum*), bank swallow (*Riparia riparia*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western red bat (*Lasiurus blossevillei*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), Mt. Diablo fairy lantern (*Calochortus pulchellus*), western leatherwood (*Dirca occidentalis*), Diablo helianthella (*Helianthella castanea*) and Loma Prieta hoita (*Hoita strobilina*).

Overwintering populations of the monarch butterfly (federal candidate endangered species) have been observed within five miles of the project site in stands of eucalyptus (CDFW 2021a). Even in urban areas, monarch butterflies will settle in groves of trees along their migration route. While trees occur in the riparian woodland at the southern edge of the project site, the canopy contains no cypress or eucalyptus, typically preferred by the monarch butterfly, and the small strip of woodland is not well protected from the wind. While there is a low likelihood that monarchs would use trees along San Pablo Creek at the project site as overwintering sites, due to the heavily urbanized and disturbed nature of the surrounding area and lack of recorded occurrences near the project site, no impacts to the monarch butterfly are expected.

Green sturgeon and steelhead (central California coast DPS) are federally threatened fish species that have critical habitat at the mouth of San Pablo Creek, where it connects to the San Francisco Bay. Both species are anadromous and known to occur in drainages that connect to the Bay. Neither species has a recorded occurrence in CNDDb within five miles of the site (CDFW 2021a). No record of green sturgeon has been recorded in San Pablo Creek, thus no impacts to this species are expected. Steelhead have a low potential to occur in San Pablo Creek within the project site. The upper reaches of San Pablo Creek have been dammed to create reservoirs, and the creek passes through many culverts in urban areas, such as the one to the west of the project site, thus spawning habitat is marginal. However, a survey of the creek in 1999 did record steelhead east of the Interstate-80 culvert, 0.8-mile east of the project site, proving that fish passage is possible (Leidy 2005), although it is unlikely that a significant anadromous population will be re-established in San Pablo Creek without significant restoration efforts. Project construction will not impact waters in the creek, thus no impacts to steelhead are expected.

California red-legged frogs are federally threatened and a state species of special concern (SSC). This species is found in or near permanent sources of fresh water with dense, shrubby, or emergent riparian vegetation. Marginal habitat is present within San Pablo Creek, although there is little emergent



vegetation and creek banks are dominated by invasive species. Critical habitat for this species exists five miles to the east and one occurrence (in 2008) has been recorded 4.5 miles to the east of the project site just downstream of San Pablo Dam (CDFW 2021a). The disturbed section of the creek in the project site is surrounded by urban development and is unlikely to support California red-legged frog. Thus, although there is a low potential for this species to occur, impacts are not expected.

Western pond turtle (SSC) is found in ponds, rivers, streams, and irrigation ditches with aquatic vegetation; and within suitable adjacent grasslands for egg laying within 0.33 mile from water. Two CNDDDB occurrences have been recorded within five miles of the project site (CDFW 2021a), both recording deceased turtles found. Despite the presence of suitable aquatic habitat within the creek at the project site, frequent anthropogenic disturbance and urbanized surroundings result in marginal habitat for the western pond turtle. Suitable egg-laying habitat is absent. Thus, there is low potential for western pond turtle to occur within or adjacent to the project site and impacts are not expected.

The Cooper's hawk is a CDFW watchlist species that typically inhabits woodlands and forest edges but can also be found in urban parks and neighborhoods where trees are present. Nests are constructed 25-50 feet high in a variety of tree species, including pines, oaks, beeches, and spruces. Cooper's hawks are aerial predators that feed primarily on medium-sized birds, such as mourning dove (*Zenaida macroura*), American robin (*Turdus migratorius*), and European starling (*Sturnus vulgaris*). (Cornell Lab of Ornithology 2021a). One occurrence of the species (in 2014) is documented in the CNDDDB within five miles of the project site, four miles to the southwest in Miller-Knox Regional Park at the bayfront (CDFW 2021a). Two recent occurrences of the species are documented in eBird within one mile of the project site (Cornell Lab of Ornithology 2021b). Suitable nesting habitat for the species exists in the riparian woodland within the project site, although the surrounding area is developed. The species has a moderate potential to forage or nest in the riparian woodland at the project site. Development will be set back from the riparian area and no impacts to trees are expected.

The peregrine falcon (State fully protected species) has no CNDDDB occurrences recorded within five miles of the project site (CDFW 2021a). Two recent occurrences (in 2019) of the species are documented in eBird within two miles of the project site at the bayfront to the west (Cornell Lab of Ornithology 2021b). No suitable nesting habitat (e.g., cliffs or skyscrapers) for peregrine falcon occurs on or adjacent to the project site; however, this species has a low potential to forage within or near the project site.

Project impacts are limited to paved or disturbed areas and are unlikely to have significant effects on foraging grounds for this species, which typically hunts in the air. Thus, impacts are not expected.

The bank swallow (State threatened species) is a colonial nester in vertical banks of riparian habitat. Due to the presence of vertical banks along San Pablo Creek within the project site, there is a low potential for this species to occur; however, no swallows were observed during the site visit, and no CNDDDB occurrences are recorded within five miles of the project site (CDFW 2021a). Two recent occurrences (in 2019) of the species are documented in eBird within four miles of the project site, along the bayfront to the west (Cornell Lab of Ornithology 2021b). Due to the disturbed nature of the project site and dense vegetation on the banks of the creek within the site, impacts to bank swallow are not expected.

Pallid bat (SSC), Townsend's big-eared bat (SSC) and western red bat (SSC) have low potential to roost in trees on or adjacent to the project site. Two historic occurrences for pallid bat (in 1937 and 1940) are recorded within five miles of the project site (CDFW 2021a). Pallid bats are found in grasslands, shrublands, woodlands, and forests, and may roost in trees or buildings. Townsend's big-eared bat are



found in a wide variety of habitats and may roost in abandoned buildings or large trees. Western red bats roost in forests and woodlands and are typically found in riparian habitats. Bat species are sensitive to disturbance and are unlikely to roost in the buildings on site, which are inhabited, or in the culvert near the project site due to presence of a homeless encampment. Although trees in or near the project site provide marginal roosting sites, due to the disturbed and urbanized locations of the project site, impacts to these three bat species are not expected.

San Francisco dusky-footed woodrat (SSC) can occur in riparian woodlands such as those present on the project site; however, because the riparian woodland is a small, disturbed habitat fragment largely isolated by urban development, the dusky-footed woodrat is not expected to occur in the project site. No CNDDDB occurrences have been recorded within a five-mile radius of the project site and no woodrat middens were observed during the site visit. Impacts to the San Francisco dusky-footed woodrat are not expected.

Mt. Diablo fairy lantern, western leatherwood, and Diablo helianthella (CNPS List 1B.2 plants) and Loma Prieta hoita (CNPS List 1B.1) are rare plants that can all be found in riparian woodland and thus have low potential to occur in the disturbed fragment of riparian woodland on the project site. No occurrences of Mt. Diablo fairy lantern have been recorded within five miles of the project site. Western leatherwood has four recent occurrences within five miles of the project site in Wildcat Canyon Regional Park, with the closest 2.5 miles to the east. No western leatherwood was observed within the project site. Diablo helianthella has three recent occurrences within five miles of the project site from 2008 and earlier, with the closest occurring four miles to the east. Loma Prieta hoita has one recorded occurrence (from 2004) two miles east of the site. The project site does not currently provide suitable habitat for these rare plant species due to high levels of disturbance, presence of invasive vegetation (e.g., Algerian ivy, Himalayan blackberry) and the long-time development in and surrounding the project site, thus impacts to rare plants are not expected.

Jurisdictional Features

The San Pablo General Plan EIR and San Pablo Avenue Specific Plan EIR both contain suggested mitigation measures to reduce impacts to San Pablo Creek and associated wetlands and riparian areas to less than significant levels. The proposed project intends to seek an adjustment or variance from the San Pablo Specific Plan's required 30-foot setback from top of creekbank for a portion of the site. The project footprint is planned outside of both the top of bank and the canopy of the riparian woodland along San Pablo Creek at the southern edge of the project site (Figure 3). This riparian woodland would be considered a jurisdictional wetland by CDFW to the edge of the canopy (see Attachment A, Figure 3 for the approximate extent of riparian woodland). Development and ground disturbance within the riparian canopy and any disturbance to vegetation (tree removal or trimming) may trigger the need for a Streambed Alteration Agreement with CDFW. San Francisco Bay Regional Water Quality Control Board (RWQCB) may also take jurisdiction of the riparian woodland and any impacts to riparian vegetation are likely to trigger compliance through a Waste Discharge Requirement. The proposed project footprint does not appear to impact riparian woodland or areas below the top of bank. The stream itself is also likely regulated by the U.S. Army Corps of Engineers; however, the proposed project does not appear to impact the actual stream channel.



Conclusions

The existing conditions of the project site include developed and disturbed habitat bounded by busy urban roadways and additional development. The narrow band of riparian woodland on either side of San Pablo Creek within and adjacent to the project site contains both native and non-native species but is disturbed by anthropogenic activities and largely isolated as a result of surrounding residential and commercial development. Riparian vegetation and the aquatic habitat of San Pablo Creek within the project site may provide marginally suitable habitat for wildlife, including steelhead, Cooper's hawk, nesting birds, and roosting bats. However, the project is designed to minimize impacts by re-use of previously developed areas and would avoid significant disturbance of riparian habitat or areas below the top of bank. Thus, the project is unlikely to affect special status species.

The project footprint as currently designed would not impact riparian habitat or other jurisdictional areas surrounding San Pablo Creek. If any trees or vegetation must be impacted as part of construction, the City of San Pablo's General Plan (Implementing Policy OSC-I-8) requires scheduling of construction and vegetation removal outside of nesting bird season or conducting a preconstruction nesting bird survey. If removal of mature trees is required, the General Plan (Implementing Policy OSC I-9) requires a pre-construction acoustic survey to determine if bats are present. Any disturbance to San Pablo Creek water quality through removal of the deck structures will be avoided through implementation of best management practices, such as a stormwater pollution prevention plan, as required by Implementing Policy OSC I-9 in the General Plan and the Municipal Code (Chapter 17.40). Because protecting nesting birds, roosting bats, and water quality is standard city policy and would be implemented as a condition of approval for the project, potentially significant impacts to special status species and their habitats will be avoided.

Thank you for the opportunity to provide environmental support on this project service. Please contact us if you have questions, or if we can be of further assistance.

Sincerely,
Rincon Consultants, Inc.

A handwritten signature in blue ink that reads "Anastasia G. Ennis".

Anastasia G. Ennis, M.S.
Biologist

A handwritten signature in blue ink that reads "Sherri Miller".

Sherri Miller, M.S.
Vice President/Principal Biologist

Attachments

Attachment A	Figures
Attachment B	Site Photographs



References

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Attachment A

Figures

Figure 1 Regional Location

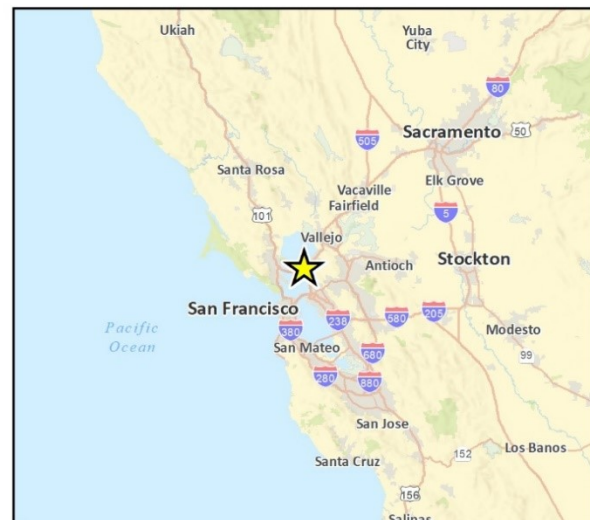
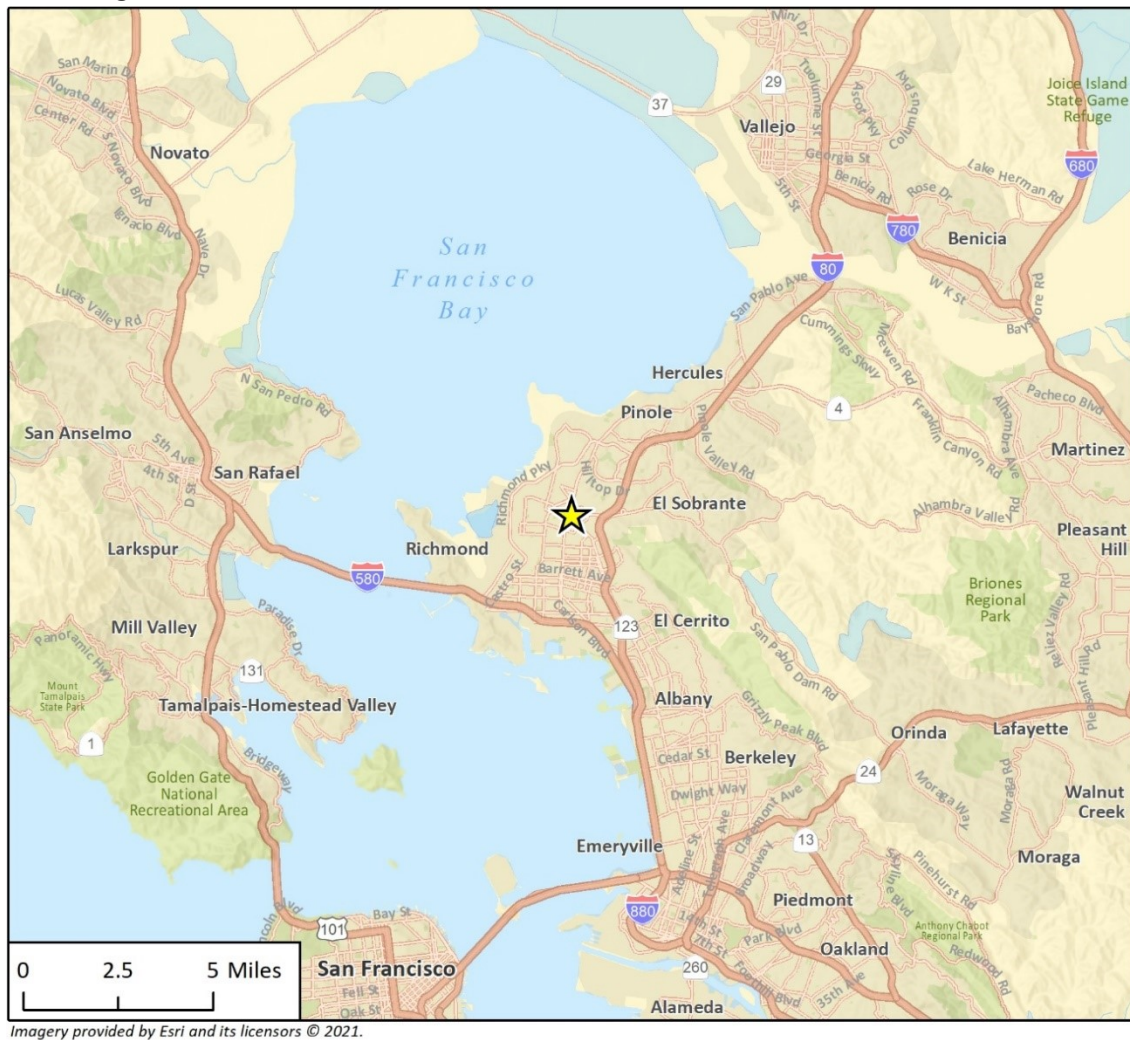


Figure 2 Project Location



Imagery provided by Microsoft Bing and its licensors © 2021.

Fig 2. Project Location

Figure 3 Project Footprint and Riparian Habitat





Attachment B

Site Photographs



Photograph 1. San Pablo Creek at east side of culvert under San Pablo Avenue, facing south-southwest.



Photograph 2. View of larger deck adjacent to house, facing west-southwest.



Photograph 3. View of smaller deck at southeast corner of property, facing south-southeast.



Photograph 4. View of San Pablo Creek from larger deck, facing south.



Photograph 5. Overview of site from the western end, showing house, shed, edge of riparian woodland at right, and graveled lot, facing east.



Photograph 6. Overview of western half of site, including edge of riparian woodland at left, paved lot, and graveled lot beyond, facing west-southwest.

March 9, 2020

Ms. Rita Azzolino and Mr. Joseph Azzolino

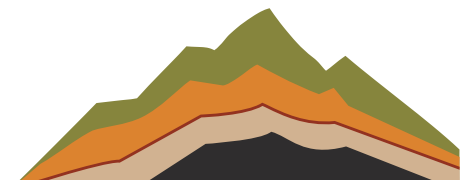
Subject: Soil Analytical Test Results
2364 Rd 20
San Pablo, California
Geo-Engineering Solutions Proposal No. 78-1225

Dear Ms. & Mr. Azzolino:

Pursuant to your request, Geo-Engineering Solutions, Inc. (Geo-Eng) provided analytical sampling and testing services of on-site soil for the subject site. On February 24, 2020, a Geo-Eng representative collected three soil discrete samples (S1 through S3) from the subject site. Geo-Eng was not made aware of any past environmental issues or concerns at the site. The soil samples were transported on-ice, under a Chain-of-Custody, to a California State-Certified laboratory for testing.

The soil sample were analyzed on a standard turnaround time for the presence of Asbestos by CARB 435, Organochlorine Pesticides by EPA Method 8081A, PCBs by EPA Method 8082, Volatile Organic Compounds by EPA Method 8260B, Semi-Volatile Organics by EPA Method 8270C, California Metals by EPA Method 6020, Total Petroleum Hydrocarbon (TPH) as Gasoline with BTEX and MTBE by EPA Method 8021B/8015Bm, and TPH-diesel and TPH-motor oil by EPA Method 8015B.

For your assistance, the attached Table 1 compares the analytical results to the January 2019 California Regional Water Quality Control Board (RWQCB) Environmental Screening Levels (ESLs), assuming direct exposure to human health risk levels for shallow soils under residential and commercial/industrial land use scenarios, as well as for direct exposure to human health risk levels under and land use at any depth for construction workers. These screening levels are assumed to be conservative. Constituents whose concentrations exceeded the noted SFRWQCB ESLs are noted in bold in the table. We note that waste facilities provide their own criteria for acceptance of off-haul material and these results should be provided and screened by them for acceptance or further testing requirements as applicable. We recommend that the results be reviewed immediately to determine whether any additional testing or extraction requirements are warranted. Additional testing may require additional sampling depending on the quantity of sample remaining in the analytical testing laboratory's custody.




Only arsenic was detected in the three soil samples S1 through S3 at concentration of 6.2 mg/kg, 6.5 mg/kg and 9.4 mg/kg, respectively, exceeding the ESL standards. However, the indicated level is not considered to be high enough to be a concern since background arsenic levels are naturally elevated in the Bay Area, and in any case are not high enough to warrant STLC testing. The San Francisco RWQCB website references a 2011 Master's thesis that evaluates background arsenic concentrations in the San Francisco Bay Region. This thesis proposes an upper (99th percentile) estimate of background arsenic of 11 mg/kg within undifferentiated urbanized Bay Area flatland soils.

Chromium was detected in soil sample S2 at a concentration of 67 mg/kg, above the Tier 1-ESLs. Soluble Threshold Limit Concentrations (STLC) is used to define the "soluble fraction" that classifies a "waste" as California hazardous. Non-hazardous disposal facilities utilize a rule-of-thumb guideline to interpret total contaminant concentrations relative to the STLC hazardous waste criteria. Soils or waste with total contaminant concentrations in excess of 10 times the STLC (50 mg/kg) have the potential to be classified as hazardous and they are also analyzed by the California Waste Extraction Test (WET) when the subsequent solute analysis results exceeds the STLC for Cr (5 mg/L). The result of the STLC for chromium was not detected in the lab. Therefore, the soil is not considered to be a California hazardous waste.

It is our pleasure to be of service to you. If you should have any questions regarding this letter or would like to request additional sampling or testing, undersigned at (925) 433--0450; or by e-mail at eswenson@geo-eng.net.

Sincerely,
GEO-ENGINEERING SOLUTIONS, INC.



Nicolas Haddad, PE
Senior Geotechnical Engineer



Eric J. Swenson, G.E., C.E.G.
President



Attachments: Table 1, Soil Analytical Results
McCampbell Analytical Reports with chain of custody

Table 1
Summary of Soil Analytical Results
2364 Rd 20, San Pablo, CA

Sample ID	S1	S2	S3	Direct Exposure Human Health Risk Levels		
						Construction Worker Any Land Use Any Depth Soil Exposure
				Residential	Commercial	
				Shallow Soil Exposure		
(mg/kg)						
CAM 17 Metals						
Antimony	0.59	0.58	0.59	11	160	50
Arsenic	6.2	6.5	9.4	0.26	3.6	0.98
Barium	180	170	120	15,000	220,000	3,000
Beryllium	ND	0.61	ND	16	230	27
Cadmium	0.27	ND	0.94	78	1,100	51
Chromium	43	67	44	-	-	-
Cobalt	10	12	9.3	23	350	28
Copper	22	27	130	3,100	47,000	14,000
Lead (TTLC)	23	14	37	80	320	160
Mercury	0.5	0.37	0.21	13	190	44
Molybdenum	ND	0.72	ND	390	5,800	1,800
Nickel	47	72	42	820	11,000	86
Selenium	1.2	1.2	1	390	5,800	1,700
Silver	ND	ND	ND	390	5,800	1,800
Thallium	ND	ND	ND	78	12	4
Vanadium	44	62	43	390	5,800	470
Zinc	70	66	91	23,000	350,000	110,000
Pesticides/PCBs						
Chlordane	ND	ND	ND	36	500	130
p,p-DDD	ND	ND	ND	-	-	-
p,p-DDE	ND	ND	ND	-	-	-
p,p-DDT	ND	ND	ND	37	520	140
Volatile Organics						
TPH (gasoline)	ND	ND	ND	430	200	1,800
TPH (diesel)	17	8.7	3.2	260	1,200	1,100
TPH (motor Oil)	140	71	88	12,000	180,000	54,000
Benzene	ND	ND	ND	11	47	45
Ethylbenzene	ND	ND	ND	3,400	21,000	15,000
MTBE	ND	ND	ND	16,000	66,000	65,000
Toluene	ND	ND	ND	1,100	5,300	4,700
Total Xylenes	ND	ND	ND	580	2,500	2,400
Semi-Volatile Organics						
Acenphthylene	ND	0.028	ND	3,600	45,000	10,000
Anthracene	ND	0.078	0.022	18,000	230,000	50,000
Benzo (a) anthracene	ND	0.14	ND	-	-	-
Benzo (a) pyrene	ND	0.061	ND	18	220	10
Benzo (b) fluoranthene	ND	ND	ND	-	-	-
Benzo (g,h,i) perylene	0.042	0.041	ND	-	-	-
Benzo (K) fluoranthene	0.025	0.046	ND	-	-	-
Bis (2-ethylhexyl) Phthalate	ND	ND	ND	1,300	16,000	3,800
Chrysene	ND	0.11	ND	-	-	-
Dibenzo (a,h) anthracene	ND	ND	ND	-	-	-
Fluoranthene	0.044	0.24	0.076	2,400	30,000	6,700
Fluorene	ND	ND	ND	2,400	30,000	6,700
2-Methylnaphthalene	ND	ND	ND	240	3,000	670
Indeno (1,2,3-cd) pyrene	ND	ND	ND	-	-	-
Pentachlorophenol	ND	ND	ND	250	2,800	560
Phenanthrene	ND	0.27	ND	-	-	-
Phenol	ND	ND	ND	23,000	350,000	98,000
Pyrene	0.044	0.19	0.064	1,800	230,000	5,000

ND Not Detectable

TTLC = Total Threshold Limit Concentrations

STLC = Soluble Threshold Limit Concentrations

Reported Concentrations in bold exceed the corresponding January 2019 SFRWQCB ESL standards



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2002874

Report Created for: Geo-Engineering Solutions, Inc.

2570 San Ramon Valley Blvd A102
San Ramon, CA 94583

Project Contact: Nicolas Haddad

Project P.O.: 1225

Project: 78-1225; San Pablo

Project Received: 02/24/2020

Analytical Report reviewed & approved for release on 03/02/2020 by:

Christine Askari
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.





Glossary of Terms & Qualifier Definitions

Client: Geo-Engineering Solutions, Inc.
Project: 78-1225; San Pablo
WorkOrder: 2002874

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)



Glossary of Terms & Qualifier Definitions

Client: Geo-Engineering Solutions, Inc.
Project: 78-1225; San Pablo
WorkOrder: 2002874

Analytical Qualifiers

B	Analyte detected in the associated Method Blank and in the sample
J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
a3	Sample diluted due to high organic content.
a4	Reporting limits raised due to the sample's matrix prohibiting a full volume extraction.
c2	Surrogate recovery outside of the control limits due to matrix interference.
e2	Diesel range compounds are significant; no recognizable pattern
e7	Oil range compounds are significant
e8	Pattern resembles kerosene/kerosene range/jet fuel range
k10	CARB 435 Exception 1 - No asbestos detected. The limit of quantitation (LOQ) = 0.25%.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.
F2	LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria.
F3	The surrogate standard recovery and/or RPD is outside of acceptance limits.
F16	RawVal < LQL.



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8081A/8082
Unit: mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	GC23 02242039.d	194497

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.10	100	02/25/2020 02:56
a-BHC	ND	0.10	100	02/25/2020 02:56
b-BHC	ND	0.10	100	02/25/2020 02:56
d-BHC	ND	0.10	100	02/25/2020 02:56
g-BHC	ND	0.10	100	02/25/2020 02:56
Chlordane (Technical)	ND	2.5	100	02/25/2020 02:56
a-Chlordane	ND	0.10	100	02/25/2020 02:56
g-Chlordane	ND	0.10	100	02/25/2020 02:56
p,p-DDD	ND	0.10	100	02/25/2020 02:56
p,p-DDE	ND	0.10	100	02/25/2020 02:56
p,p-DDT	ND	0.10	100	02/25/2020 02:56
Dieldrin	ND	0.10	100	02/25/2020 02:56
Endosulfan I	ND	0.10	100	02/25/2020 02:56
Endosulfan II	ND	0.10	100	02/25/2020 02:56
Endosulfan sulfate	ND	0.10	100	02/25/2020 02:56
Endrin	ND	0.10	100	02/25/2020 02:56
Endrin aldehyde	ND	0.10	100	02/25/2020 02:56
Endrin ketone	ND	0.10	100	02/25/2020 02:56
Heptachlor	ND	0.10	100	02/25/2020 02:56
Heptachlor epoxide	ND	0.10	100	02/25/2020 02:56
Hexachlorobenzene	ND	1.0	100	02/25/2020 02:56
Hexachlorocyclopentadiene	ND	2.0	100	02/25/2020 02:56
Methoxychlor	ND	0.10	100	02/25/2020 02:56
Toxaphene	ND	5.0	100	02/25/2020 02:56
Aroclor1016	ND	5.0	100	02/25/2020 02:56
Aroclor1221	ND	5.0	100	02/25/2020 02:56
Aroclor1232	ND	5.0	100	02/25/2020 02:56
Aroclor1242	ND	5.0	100	02/25/2020 02:56
Aroclor1248	ND	5.0	100	02/25/2020 02:56
Aroclor1254	ND	5.0	100	02/25/2020 02:56
Aroclor1260	ND	5.0	100	02/25/2020 02:56
PCBs, total	ND	5.0	100	02/25/2020 02:56

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	112	69-143	02/25/2020 02:56

Analyst(s): LT

Analytical Comments: a3

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8081A/8082
Unit: mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020		GC23 02242053.d	194497
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>	
Aldrin	ND		0.020	20	02/25/2020 06:36	
a-BHC	ND		0.020	20	02/25/2020 06:36	
b-BHC	ND		0.020	20	02/25/2020 06:36	
d-BHC	ND		0.020	20	02/25/2020 06:36	
g-BHC	ND		0.020	20	02/25/2020 06:36	
Chlordane (Technical)	ND		0.50	20	02/25/2020 06:36	
a-Chlordane	ND		0.020	20	02/25/2020 06:36	
g-Chlordane	ND		0.020	20	02/25/2020 06:36	
p,p-DDD	ND		0.020	20	02/25/2020 06:36	
p,p-DDE	ND		0.020	20	02/25/2020 06:36	
p,p-DDT	ND		0.020	20	02/25/2020 06:36	
Dieldrin	ND		0.020	20	02/25/2020 06:36	
Endosulfan I	ND		0.020	20	02/25/2020 06:36	
Endosulfan II	ND		0.020	20	02/25/2020 06:36	
Endosulfan sulfate	ND		0.020	20	02/25/2020 06:36	
Endrin	ND		0.020	20	02/25/2020 06:36	
Endrin aldehyde	ND		0.020	20	02/25/2020 06:36	
Endrin ketone	ND		0.020	20	02/25/2020 06:36	
Heptachlor	ND		0.020	20	02/25/2020 06:36	
Heptachlor epoxide	ND		0.020	20	02/25/2020 06:36	
Hexachlorobenzene	ND		0.20	20	02/25/2020 06:36	
Hexachlorocyclopentadiene	ND		0.40	20	02/25/2020 06:36	
Methoxychlor	ND		0.020	20	02/25/2020 06:36	
Toxaphene	ND		1.0	20	02/25/2020 06:36	
Aroclor1016	ND		1.0	20	02/25/2020 06:36	
Aroclor1221	ND		1.0	20	02/25/2020 06:36	
Aroclor1232	ND		1.0	20	02/25/2020 06:36	
Aroclor1242	ND		1.0	20	02/25/2020 06:36	
Aroclor1248	ND		1.0	20	02/25/2020 06:36	
Aroclor1254	ND		1.0	20	02/25/2020 06:36	
Aroclor1260	ND		1.0	20	02/25/2020 06:36	
PCBs, total	ND		1.0	20	02/25/2020 06:36	

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	
Decachlorobiphenyl	120	69-143	02/25/2020 06:36

Analyst(s): LT

Analytical Comments: a3

(Cont.)

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8081A/8082
Unit: mg/kg

Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	GC23 02242054.d	194497

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.050	50	02/25/2020 06:51
a-BHC	ND	0.050	50	02/25/2020 06:51
b-BHC	ND	0.050	50	02/25/2020 06:51
d-BHC	ND	0.050	50	02/25/2020 06:51
g-BHC	ND	0.050	50	02/25/2020 06:51
Chlordane (Technical)	ND	1.2	50	02/25/2020 06:51
a-Chlordane	ND	0.050	50	02/25/2020 06:51
g-Chlordane	ND	0.050	50	02/25/2020 06:51
p,p-DDD	ND	0.050	50	02/25/2020 06:51
p,p-DDE	ND	0.050	50	02/25/2020 06:51
p,p-DDT	ND	0.050	50	02/25/2020 06:51
Dieldrin	ND	0.050	50	02/25/2020 06:51
Endosulfan I	ND	0.050	50	02/25/2020 06:51
Endosulfan II	ND	0.050	50	02/25/2020 06:51
Endosulfan sulfate	ND	0.050	50	02/25/2020 06:51
Endrin	ND	0.050	50	02/25/2020 06:51
Endrin aldehyde	ND	0.050	50	02/25/2020 06:51
Endrin ketone	ND	0.050	50	02/25/2020 06:51
Heptachlor	ND	0.050	50	02/25/2020 06:51
Heptachlor epoxide	ND	0.050	50	02/25/2020 06:51
Hexachlorobenzene	ND	0.50	50	02/25/2020 06:51
Hexachlorocyclopentadiene	ND	1.0	50	02/25/2020 06:51
Methoxychlor	ND	0.050	50	02/25/2020 06:51
Toxaphene	ND	2.5	50	02/25/2020 06:51
Aroclor1016	ND	2.5	50	02/25/2020 06:51
Aroclor1221	ND	2.5	50	02/25/2020 06:51
Aroclor1232	ND	2.5	50	02/25/2020 06:51
Aroclor1242	ND	2.5	50	02/25/2020 06:51
Aroclor1248	ND	2.5	50	02/25/2020 06:51
Aroclor1254	ND	2.5	50	02/25/2020 06:51
Aroclor1260	ND	2.5	50	02/25/2020 06:51
PCBs, total	ND	2.5	50	02/25/2020 06:51

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	98	69-143	02/25/2020 06:51

Analyst(s): LT

Analytical Comments: a3



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	GC10 02252012.D	194475
<u>Analytes</u>	<u>Result</u>		<u>RL</u> <u>DF</u>		<u>Date Analyzed</u>
Acetone	ND		0.10 1		02/25/2020 14:37
tert-Amyl methyl ether (TAME)	ND		0.0050 1		02/25/2020 14:37
Benzene	ND		0.0050 1		02/25/2020 14:37
Bromobenzene	ND		0.0050 1		02/25/2020 14:37
Bromochloromethane	ND		0.0050 1		02/25/2020 14:37
Bromodichloromethane	ND		0.0050 1		02/25/2020 14:37
Bromoform	ND		0.0050 1		02/25/2020 14:37
Bromomethane	ND		0.0050 1		02/25/2020 14:37
2-Butanone (MEK)	ND		0.050 1		02/25/2020 14:37
t-Butyl alcohol (TBA)	ND		0.050 1		02/25/2020 14:37
n-Butyl benzene	ND		0.0050 1		02/25/2020 14:37
sec-Butyl benzene	ND		0.0050 1		02/25/2020 14:37
tert-Butyl benzene	ND		0.0050 1		02/25/2020 14:37
Carbon Disulfide	ND		0.0050 1		02/25/2020 14:37
Carbon Tetrachloride	ND		0.0050 1		02/25/2020 14:37
Chlorobenzene	ND		0.0050 1		02/25/2020 14:37
Chloroethane	ND		0.0050 1		02/25/2020 14:37
Chloroform	ND		0.0050 1		02/25/2020 14:37
Chloromethane	ND		0.0050 1		02/25/2020 14:37
2-Chlorotoluene	ND		0.0050 1		02/25/2020 14:37
4-Chlorotoluene	ND		0.0050 1		02/25/2020 14:37
Dibromochloromethane	ND		0.0050 1		02/25/2020 14:37
1,2-Dibromo-3-chloropropane	ND		0.0050 1		02/25/2020 14:37
1,2-Dibromoethane (EDB)	ND		0.0040 1		02/25/2020 14:37
Dibromomethane	ND		0.0050 1		02/25/2020 14:37
1,2-Dichlorobenzene	ND		0.0050 1		02/25/2020 14:37
1,3-Dichlorobenzene	ND		0.0050 1		02/25/2020 14:37
1,4-Dichlorobenzene	ND		0.0050 1		02/25/2020 14:37
Dichlorodifluoromethane	ND		0.0050 1		02/25/2020 14:37
1,1-Dichloroethane	ND		0.0050 1		02/25/2020 14:37
1,2-Dichloroethane (1,2-DCA)	ND		0.0040 1		02/25/2020 14:37
1,1-Dichloroethene	ND		0.0050 1		02/25/2020 14:37
cis-1,2-Dichloroethene	ND		0.0050 1		02/25/2020 14:37
trans-1,2-Dichloroethene	ND		0.0050 1		02/25/2020 14:37
1,2-Dichloropropane	ND		0.0050 1		02/25/2020 14:37
1,3-Dichloropropane	ND		0.0050 1		02/25/2020 14:37
2,2-Dichloropropane	ND		0.0050 1		02/25/2020 14:37

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	GC10 02252012.D	194475
<u>Analytes</u>	<u>Result</u>		<u>RL</u> <u>DF</u>		<u>Date Analyzed</u>
1,1-Dichloropropene	ND		0.0050 1		02/25/2020 14:37
cis-1,3-Dichloropropene	ND		0.0050 1		02/25/2020 14:37
trans-1,3-Dichloropropene	ND		0.0050 1		02/25/2020 14:37
Diisopropyl ether (DIPE)	ND		0.0050 1		02/25/2020 14:37
Ethylbenzene	ND		0.0050 1		02/25/2020 14:37
Ethyl tert-butyl ether (ETBE)	ND		0.0050 1		02/25/2020 14:37
Freon 113	ND		0.0050 1		02/25/2020 14:37
Hexachlorobutadiene	ND		0.0050 1		02/25/2020 14:37
Hexachloroethane	ND		0.0050 1		02/25/2020 14:37
2-Hexanone	ND		0.0050 1		02/25/2020 14:37
Isopropylbenzene	ND		0.0050 1		02/25/2020 14:37
4-Isopropyl toluene	ND		0.0050 1		02/25/2020 14:37
Methyl-t-butyl ether (MTBE)	ND		0.0050 1		02/25/2020 14:37
Methylene chloride	ND		0.020 1		02/25/2020 14:37
4-Methyl-2-pentanone (MIBK)	ND		0.0050 1		02/25/2020 14:37
Naphthalene	ND		0.0050 1		02/25/2020 14:37
n-Propyl benzene	ND		0.0050 1		02/25/2020 14:37
Styrene	ND		0.0050 1		02/25/2020 14:37
1,1,1,2-Tetrachloroethane	ND		0.0050 1		02/25/2020 14:37
1,1,2,2-Tetrachloroethane	ND		0.0050 1		02/25/2020 14:37
Tetrachloroethene	ND		0.0050 1		02/25/2020 14:37
Toluene	ND		0.0050 1		02/25/2020 14:37
1,2,3-Trichlorobenzene	ND		0.0050 1		02/25/2020 14:37
1,2,4-Trichlorobenzene	ND		0.0050 1		02/25/2020 14:37
1,1,1-Trichloroethane	ND		0.0050 1		02/25/2020 14:37
1,1,2-Trichloroethane	ND		0.0050 1		02/25/2020 14:37
Trichloroethene	ND		0.0050 1		02/25/2020 14:37
Trichlorofluoromethane	ND		0.0050 1		02/25/2020 14:37
1,2,3-Trichloropropane	ND		0.0050 1		02/25/2020 14:37
1,2,4-Trimethylbenzene	ND		0.0050 1		02/25/2020 14:37
1,3,5-Trimethylbenzene	ND		0.0050 1		02/25/2020 14:37
Vinyl Chloride	ND		0.0050 1		02/25/2020 14:37
m,p-Xylene	ND		0.0050 1		02/25/2020 14:37
o-Xylene	ND		0.0050 1		02/25/2020 14:37
Xylenes, Total	ND		0.0050 1		02/25/2020 14:37

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	GC10 02252012.D	194475

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	89	66-116		02/25/2020 14:37
Toluene-d8	108	86-110		02/25/2020 14:37
4-BFB	89	71-114		02/25/2020 14:37
Benzene-d6	76	62-122		02/25/2020 14:37
Ethylbenzene-d10	94	69-130		02/25/2020 14:37
1,2-DCB-d4	72	55-108		02/25/2020 14:37

Analyst(s): KF



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	GC38 02272030.D	194475
<u>Analytes</u>	<u>Result</u>		<u>RL</u> <u>DF</u>		<u>Date Analyzed</u>
Acetone	ND		0.10 1		02/28/2020 02:52
tert-Amyl methyl ether (TAME)	ND		0.0050 1		02/28/2020 02:52
Benzene	ND		0.0050 1		02/28/2020 02:52
Bromobenzene	ND		0.0050 1		02/28/2020 02:52
Bromochloromethane	ND		0.0050 1		02/28/2020 02:52
Bromodichloromethane	ND		0.0050 1		02/28/2020 02:52
Bromoform	ND		0.0050 1		02/28/2020 02:52
Bromomethane	ND		0.0050 1		02/28/2020 02:52
2-Butanone (MEK)	ND		0.050 1		02/28/2020 02:52
t-Butyl alcohol (TBA)	ND		0.050 1		02/28/2020 02:52
n-Butyl benzene	ND		0.0050 1		02/28/2020 02:52
sec-Butyl benzene	ND		0.0050 1		02/28/2020 02:52
tert-Butyl benzene	ND		0.0050 1		02/28/2020 02:52
Carbon Disulfide	ND		0.0050 1		02/28/2020 02:52
Carbon Tetrachloride	ND		0.0050 1		02/28/2020 02:52
Chlorobenzene	ND		0.0050 1		02/28/2020 02:52
Chloroethane	ND		0.0050 1		02/28/2020 02:52
Chloroform	ND		0.0050 1		02/28/2020 02:52
Chloromethane	ND		0.0050 1		02/28/2020 02:52
2-Chlorotoluene	ND		0.0050 1		02/28/2020 02:52
4-Chlorotoluene	ND		0.0050 1		02/28/2020 02:52
Dibromochloromethane	ND		0.0050 1		02/28/2020 02:52
1,2-Dibromo-3-chloropropane	ND		0.0050 1		02/28/2020 02:52
1,2-Dibromoethane (EDB)	ND		0.0040 1		02/28/2020 02:52
Dibromomethane	ND		0.0050 1		02/28/2020 02:52
1,2-Dichlorobenzene	ND		0.0050 1		02/28/2020 02:52
1,3-Dichlorobenzene	ND		0.0050 1		02/28/2020 02:52
1,4-Dichlorobenzene	ND		0.0050 1		02/28/2020 02:52
Dichlorodifluoromethane	ND		0.0050 1		02/28/2020 02:52
1,1-Dichloroethane	ND		0.0050 1		02/28/2020 02:52
1,2-Dichloroethane (1,2-DCA)	ND		0.0040 1		02/28/2020 02:52
1,1-Dichloroethene	ND		0.0050 1		02/28/2020 02:52
cis-1,2-Dichloroethene	ND		0.0050 1		02/28/2020 02:52
trans-1,2-Dichloroethene	ND		0.0050 1		02/28/2020 02:52
1,2-Dichloropropane	ND		0.0050 1		02/28/2020 02:52
1,3-Dichloropropane	ND		0.0050 1		02/28/2020 02:52
2,2-Dichloropropane	ND		0.0050 1		02/28/2020 02:52

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	GC38 02272030.D	194475
<u>Analytes</u>	<u>Result</u>		<u>RL</u> <u>DF</u>		<u>Date Analyzed</u>
1,1-Dichloropropene	ND		0.0050 1		02/28/2020 02:52
cis-1,3-Dichloropropene	ND		0.0050 1		02/28/2020 02:52
trans-1,3-Dichloropropene	ND		0.0050 1		02/28/2020 02:52
Diisopropyl ether (DIPE)	ND		0.0050 1		02/28/2020 02:52
Ethylbenzene	ND		0.0050 1		02/28/2020 02:52
Ethyl tert-butyl ether (ETBE)	ND		0.0050 1		02/28/2020 02:52
Freon 113	ND		0.0050 1		02/28/2020 02:52
Hexachlorobutadiene	ND		0.0050 1		02/28/2020 02:52
Hexachloroethane	ND		0.0050 1		02/28/2020 02:52
2-Hexanone	ND		0.0050 1		02/28/2020 02:52
Isopropylbenzene	ND		0.0050 1		02/28/2020 02:52
4-Isopropyl toluene	ND		0.0050 1		02/28/2020 02:52
Methyl-t-butyl ether (MTBE)	ND		0.0050 1		02/28/2020 02:52
Methylene chloride	ND		0.020 1		02/28/2020 02:52
4-Methyl-2-pentanone (MIBK)	ND		0.0050 1		02/28/2020 02:52
Naphthalene	ND		0.0050 1		02/28/2020 02:52
n-Propyl benzene	ND		0.0050 1		02/28/2020 02:52
Styrene	ND		0.0050 1		02/28/2020 02:52
1,1,1,2-Tetrachloroethane	ND		0.0050 1		02/28/2020 02:52
1,1,2,2-Tetrachloroethane	ND		0.0050 1		02/28/2020 02:52
Tetrachloroethene	ND		0.0050 1		02/28/2020 02:52
Toluene	ND		0.0050 1		02/28/2020 02:52
1,2,3-Trichlorobenzene	ND		0.0050 1		02/28/2020 02:52
1,2,4-Trichlorobenzene	ND		0.0050 1		02/28/2020 02:52
1,1,1-Trichloroethane	ND		0.0050 1		02/28/2020 02:52
1,1,2-Trichloroethane	ND		0.0050 1		02/28/2020 02:52
Trichloroethene	ND		0.0050 1		02/28/2020 02:52
Trichlorofluoromethane	ND		0.0050 1		02/28/2020 02:52
1,2,3-Trichloropropane	ND		0.0050 1		02/28/2020 02:52
1,2,4-Trimethylbenzene	ND		0.0050 1		02/28/2020 02:52
1,3,5-Trimethylbenzene	ND		0.0050 1		02/28/2020 02:52
Vinyl Chloride	ND		0.0050 1		02/28/2020 02:52
m,p-Xylene	ND		0.0050 1		02/28/2020 02:52
o-Xylene	ND		0.0050 1		02/28/2020 02:52
Xylenes, Total	ND		0.0050 1		02/28/2020 02:52

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	GC38 02272030.D	194475

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	100	66-116		02/28/2020 02:52
Toluene-d8	101	86-110		02/28/2020 02:52
4-BFB	87	71-114		02/28/2020 02:52
Benzene-d6	69	62-122		02/28/2020 02:52
Ethylbenzene-d10	81	69-130		02/28/2020 02:52
1,2-DCB-d4	69	55-108		02/28/2020 02:52

Analyst(s): KF



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	GC38 02272031.D	194475
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	0.10	1	02/28/2020 03:30	
tert-Amyl methyl ether (TAME)	ND	0.0050	1	02/28/2020 03:30	
Benzene	ND	0.0050	1	02/28/2020 03:30	
Bromobenzene	ND	0.0050	1	02/28/2020 03:30	
Bromochloromethane	ND	0.0050	1	02/28/2020 03:30	
Bromodichloromethane	ND	0.0050	1	02/28/2020 03:30	
Bromoform	ND	0.0050	1	02/28/2020 03:30	
Bromomethane	ND	0.0050	1	02/28/2020 03:30	
2-Butanone (MEK)	ND	0.050	1	02/28/2020 03:30	
t-Butyl alcohol (TBA)	ND	0.050	1	02/28/2020 03:30	
n-Butyl benzene	ND	0.0050	1	02/28/2020 03:30	
sec-Butyl benzene	ND	0.0050	1	02/28/2020 03:30	
tert-Butyl benzene	ND	0.0050	1	02/28/2020 03:30	
Carbon Disulfide	ND	0.0050	1	02/28/2020 03:30	
Carbon Tetrachloride	ND	0.0050	1	02/28/2020 03:30	
Chlorobenzene	ND	0.0050	1	02/28/2020 03:30	
Chloroethane	ND	0.0050	1	02/28/2020 03:30	
Chloroform	ND	0.0050	1	02/28/2020 03:30	
Chloromethane	ND	0.0050	1	02/28/2020 03:30	
2-Chlorotoluene	ND	0.0050	1	02/28/2020 03:30	
4-Chlorotoluene	ND	0.0050	1	02/28/2020 03:30	
Dibromochloromethane	ND	0.0050	1	02/28/2020 03:30	
1,2-Dibromo-3-chloropropane	ND	0.0050	1	02/28/2020 03:30	
1,2-Dibromoethane (EDB)	ND	0.0040	1	02/28/2020 03:30	
Dibromomethane	ND	0.0050	1	02/28/2020 03:30	
1,2-Dichlorobenzene	ND	0.0050	1	02/28/2020 03:30	
1,3-Dichlorobenzene	ND	0.0050	1	02/28/2020 03:30	
1,4-Dichlorobenzene	ND	0.0050	1	02/28/2020 03:30	
Dichlorodifluoromethane	ND	0.0050	1	02/28/2020 03:30	
1,1-Dichloroethane	ND	0.0050	1	02/28/2020 03:30	
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	02/28/2020 03:30	
1,1-Dichloroethene	ND	0.0050	1	02/28/2020 03:30	
cis-1,2-Dichloroethene	ND	0.0050	1	02/28/2020 03:30	
trans-1,2-Dichloroethene	ND	0.0050	1	02/28/2020 03:30	
1,2-Dichloropropane	ND	0.0050	1	02/28/2020 03:30	
1,3-Dichloropropane	ND	0.0050	1	02/28/2020 03:30	
2,2-Dichloropropane	ND	0.0050	1	02/28/2020 03:30	

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	GC38 02272031.D	194475
<u>Analytes</u>	<u>Result</u>		<u>RL</u> <u>DF</u>		<u>Date Analyzed</u>
1,1-Dichloropropene	ND		0.0050 1		02/28/2020 03:30
cis-1,3-Dichloropropene	ND		0.0050 1		02/28/2020 03:30
trans-1,3-Dichloropropene	ND		0.0050 1		02/28/2020 03:30
Diisopropyl ether (DIPE)	ND		0.0050 1		02/28/2020 03:30
Ethylbenzene	ND		0.0050 1		02/28/2020 03:30
Ethyl tert-butyl ether (ETBE)	ND		0.0050 1		02/28/2020 03:30
Freon 113	ND		0.0050 1		02/28/2020 03:30
Hexachlorobutadiene	ND		0.0050 1		02/28/2020 03:30
Hexachloroethane	ND		0.0050 1		02/28/2020 03:30
2-Hexanone	ND		0.0050 1		02/28/2020 03:30
Isopropylbenzene	ND		0.0050 1		02/28/2020 03:30
4-Isopropyl toluene	ND		0.0050 1		02/28/2020 03:30
Methyl-t-butyl ether (MTBE)	ND		0.0050 1		02/28/2020 03:30
Methylene chloride	ND		0.020 1		02/28/2020 03:30
4-Methyl-2-pentanone (MIBK)	ND		0.0050 1		02/28/2020 03:30
Naphthalene	ND		0.0050 1		02/28/2020 03:30
n-Propyl benzene	ND		0.0050 1		02/28/2020 03:30
Styrene	ND		0.0050 1		02/28/2020 03:30
1,1,1,2-Tetrachloroethane	ND		0.0050 1		02/28/2020 03:30
1,1,2,2-Tetrachloroethane	ND		0.0050 1		02/28/2020 03:30
Tetrachloroethene	ND		0.0050 1		02/28/2020 03:30
Toluene	ND		0.0050 1		02/28/2020 03:30
1,2,3-Trichlorobenzene	ND		0.0050 1		02/28/2020 03:30
1,2,4-Trichlorobenzene	ND		0.0050 1		02/28/2020 03:30
1,1,1-Trichloroethane	ND		0.0050 1		02/28/2020 03:30
1,1,2-Trichloroethane	ND		0.0050 1		02/28/2020 03:30
Trichloroethene	ND		0.0050 1		02/28/2020 03:30
Trichlorofluoromethane	ND		0.0050 1		02/28/2020 03:30
1,2,3-Trichloropropane	ND		0.0050 1		02/28/2020 03:30
1,2,4-Trimethylbenzene	ND		0.0050 1		02/28/2020 03:30
1,3,5-Trimethylbenzene	ND		0.0050 1		02/28/2020 03:30
Vinyl Chloride	ND		0.0050 1		02/28/2020 03:30
m,p-Xylene	ND		0.0050 1		02/28/2020 03:30
o-Xylene	ND		0.0050 1		02/28/2020 03:30
Xylenes, Total	ND		0.0050 1		02/28/2020 03:30

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	GC38 02272031.D	194475

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	100	66-116		02/28/2020 03:30
Toluene-d8	102	86-110		02/28/2020 03:30
4-BFB	88	71-114		02/28/2020 03:30
Benzene-d6	67	62-122		02/28/2020 03:30
Ethylbenzene-d10	78	69-130		02/28/2020 03:30
1,2-DCB-d4	66	55-108		02/28/2020 03:30

Analyst(s): KF



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020		GC17 02252017.D	194583
Analytes	Result	RL	DF	Date Analyzed		
Acenaphthene	ND	0.021	2	02/25/2020 16:56		
Acenaphthylene	ND	0.021	2	02/25/2020 16:56		
Acetochlor	ND	4.0	2	02/25/2020 16:56		
Anthracene	ND	0.021	2	02/25/2020 16:56		
Benzidine	ND	20	2	02/25/2020 16:56		
Benzo (a) anthracene	ND	0.080	2	02/25/2020 16:56		
Benzo (a) pyrene	ND	0.040	2	02/25/2020 16:56		
Benzo (b) fluoranthene	ND	0.10	2	02/25/2020 16:56		
Benzo (g,h,i) perylene	0.042	0.040	2	02/25/2020 16:56		
Benzo (k) fluoranthene	0.025	0.021	2	02/25/2020 16:56		
Benzyl Alcohol	ND	20	2	02/25/2020 16:56		
1,1-Biphenyl	ND	0.21	2	02/25/2020 16:56		
Bis (2-chloroethoxy) Methane	ND	4.0	2	02/25/2020 16:56		
Bis (2-chloroethyl) Ether	ND	0.040	2	02/25/2020 16:56		
Bis (2-chloroisopropyl) Ether	ND	0.040	2	02/25/2020 16:56		
Bis (2-ethylhexyl) Adipate	ND	8.0	2	02/25/2020 16:56		
Bis (2-ethylhexyl) Phthalate	ND	0.080	2	02/25/2020 16:56		
4-Bromophenyl Phenyl Ether	ND	4.0	2	02/25/2020 16:56		
Butylbenzyl Phthalate	ND	0.40	2	02/25/2020 16:56		
4-Chloroaniline	ND	0.040	2	02/25/2020 16:56		
4-Chloro-3-methylphenol	ND	4.0	2	02/25/2020 16:56		
2-Chloronaphthalene	ND	4.0	2	02/25/2020 16:56		
2-Chlorophenol	ND	0.080	2	02/25/2020 16:56		
4-Chlorophenyl Phenyl Ether	ND	4.0	2	02/25/2020 16:56		
Chrysene	ND	0.040	2	02/25/2020 16:56		
Dibenzo (a,h) anthracene	ND	0.040	2	02/25/2020 16:56		
Dibenzofuran	ND	4.0	2	02/25/2020 16:56		
Di-n-butyl Phthalate	ND	0.080	2	02/25/2020 16:56		
1,2-Dichlorobenzene	ND	4.0	2	02/25/2020 16:56		
1,3-Dichlorobenzene	ND	4.0	2	02/25/2020 16:56		
1,4-Dichlorobenzene	ND	4.0	2	02/25/2020 16:56		
3,3-Dichlorobenzidine	ND	0.040	2	02/25/2020 16:56		
2,4-Dichlorophenol	ND	0.21	2	02/25/2020 16:56		
Diethyl Phthalate	ND	0.080	2	02/25/2020 16:56		
2,4-Dimethylphenol	ND	4.0	2	02/25/2020 16:56		
Dimethyl Phthalate	ND	0.040	2	02/25/2020 16:56		
4,6-Dinitro-2-methylphenol	ND	20	2	02/25/2020 16:56		

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020		GC17 02252017.D	194583
Analytes	Result	RL	DF	Date Analyzed		
2,4-Dinitrophenol	ND	2.1	2	02/25/2020 16:56		
2,4-Dinitrotoluene	ND	0.10	2	02/25/2020 16:56		
2,6-Dinitrotoluene	ND	0.040	2	02/25/2020 16:56		
Di-n-octyl Phthalate	ND	0.080	2	02/25/2020 16:56		
1,2-Diphenylhydrazine	ND	4.0	2	02/25/2020 16:56		
Fluoranthene	0.044	0.021	2	02/25/2020 16:56		
Fluorene	ND	0.040	2	02/25/2020 16:56		
Hexachlorobenzene	ND	0.021	2	02/25/2020 16:56		
Hexachlorobutadiene	ND	0.040	2	02/25/2020 16:56		
Hexachlorocyclopentadiene	ND	32	2	02/25/2020 16:56		
Hexachloroethane	ND	0.040	2	02/25/2020 16:56		
Indeno (1,2,3-cd) pyrene	ND	0.040	2	02/25/2020 16:56		
Isophorone	ND	4.0	2	02/25/2020 16:56		
1-Methylnaphthalene	ND	0.021	2	02/25/2020 16:56		
2-Methylnaphthalene	ND	0.040	2	02/25/2020 16:56		
2-Methylphenol (o-Cresol)	ND	8.0	2	02/25/2020 16:56		
3 & 4-Methylphenol (m,p-Cresol)	ND	4.0	2	02/25/2020 16:56		
Naphthalene	ND	0.021	2	02/25/2020 16:56		
2-Nitroaniline	ND	20	2	02/25/2020 16:56		
3-Nitroaniline	ND	20	2	02/25/2020 16:56		
4-Nitroaniline	ND	20	2	02/25/2020 16:56		
Nitrobenzene	ND	4.0	2	02/25/2020 16:56		
2-Nitrophenol	ND	20	2	02/25/2020 16:56		
4-Nitrophenol	ND	20	2	02/25/2020 16:56		
N-Nitrosodiphenylamine	ND	4.0	2	02/25/2020 16:56		
N-Nitrosodi-n-propylamine	ND	4.0	2	02/25/2020 16:56		
Pentachlorophenol	ND	0.50	2	02/25/2020 16:56		
Phenanthrene	ND	0.080	2	02/25/2020 16:56		
Phenol	ND	0.080	2	02/25/2020 16:56		
Pyrene	0.044	0.040	2	02/25/2020 16:56		
Pyridine	ND	4.0	2	02/25/2020 16:56		
1,2,4-Trichlorobenzene	ND	4.0	2	02/25/2020 16:56		
2,4,5-Trichlorophenol	ND	0.040	2	02/25/2020 16:56		
2,4,6-Trichlorophenol	ND	0.21	2	02/25/2020 16:56		

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	GC17 02252017.D	194583

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
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<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	
2-Fluorophenol	114	56-152	02/25/2020 16:56
Phenol-d5	100	54-146	02/25/2020 16:56
Nitrobenzene-d5	93	47-147	02/25/2020 16:56
2-Fluorobiphenyl	81	46-141	02/25/2020 16:56
2,4,6-Tribromophenol	71	25-166	02/25/2020 16:56
4-Terphenyl-d14	67	39-153	02/25/2020 16:56

Analyst(s): REB

Analytical Comments: a4



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020		GC17 02252018.D	194583
Analytes	Result	Qualifiers	RL	DF	Date Analyzed	
Acenaphthene	0.028		0.021	2	02/25/2020 17:24	
Acenaphthylene	ND		0.021	2	02/25/2020 17:24	
Acetochlor	ND		4.0	2	02/25/2020 17:24	
Anthracene	0.078		0.021	2	02/25/2020 17:24	
Benidine	ND		20	2	02/25/2020 17:24	
Benzo (a) anthracene	0.14		0.080	2	02/25/2020 17:24	
Benzo (a) pyrene	0.061		0.040	2	02/25/2020 17:24	
Benzo (b) fluoranthene	ND		0.10	2	02/25/2020 17:24	
Benzo (g,h,i) perylene	0.041		0.040	2	02/25/2020 17:24	
Benzo (k) fluoranthene	0.046		0.021	2	02/25/2020 17:24	
Benzyl Alcohol	ND		20	2	02/25/2020 17:24	
1,1-Biphenyl	ND		0.21	2	02/25/2020 17:24	
Bis (2-chloroethoxy) Methane	ND		4.0	2	02/25/2020 17:24	
Bis (2-chloroethyl) Ether	ND		0.040	2	02/25/2020 17:24	
Bis (2-chloroisopropyl) Ether	ND		0.040	2	02/25/2020 17:24	
Bis (2-ethylhexyl) Adipate	ND		8.0	2	02/25/2020 17:24	
Bis (2-ethylhexyl) Phthalate	ND		0.080	2	02/25/2020 17:24	
4-Bromophenyl Phenyl Ether	ND		4.0	2	02/25/2020 17:24	
Butylbenzyl Phthalate	ND		0.40	2	02/25/2020 17:24	
4-Chloroaniline	ND		0.040	2	02/25/2020 17:24	
4-Chloro-3-methylphenol	ND		4.0	2	02/25/2020 17:24	
2-Chloronaphthalene	ND		4.0	2	02/25/2020 17:24	
2-Chlorophenol	ND		0.080	2	02/25/2020 17:24	
4-Chlorophenyl Phenyl Ether	ND		4.0	2	02/25/2020 17:24	
Chrysene	0.11	B	0.040	2	02/25/2020 17:24	
Dibenzo (a,h) anthracene	ND		0.040	2	02/25/2020 17:24	
Dibenzofuran	ND		4.0	2	02/25/2020 17:24	
Di-n-butyl Phthalate	ND		0.080	2	02/25/2020 17:24	
1,2-Dichlorobenzene	ND		4.0	2	02/25/2020 17:24	
1,3-Dichlorobenzene	ND		4.0	2	02/25/2020 17:24	
1,4-Dichlorobenzene	ND		4.0	2	02/25/2020 17:24	
3,3-Dichlorobenzidine	ND		0.040	2	02/25/2020 17:24	
2,4-Dichlorophenol	ND		0.21	2	02/25/2020 17:24	
Diethyl Phthalate	ND		0.080	2	02/25/2020 17:24	
2,4-Dimethylphenol	ND		4.0	2	02/25/2020 17:24	
Dimethyl Phthalate	ND		0.040	2	02/25/2020 17:24	
4,6-Dinitro-2-methylphenol	ND		20	2	02/25/2020 17:24	

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020		GC17 02252018.D	194583
Analytes	Result	Qualifiers	RL	DF	Date Analyzed	
2,4-Dinitrophenol	ND		2.1	2	02/25/2020 17:24	
2,4-Dinitrotoluene	ND		0.10	2	02/25/2020 17:24	
2,6-Dinitrotoluene	ND		0.040	2	02/25/2020 17:24	
Di-n-octyl Phthalate	ND		0.080	2	02/25/2020 17:24	
1,2-Diphenylhydrazine	ND		4.0	2	02/25/2020 17:24	
Fluoranthene	0.24	B	0.021	2	02/25/2020 17:24	
Fluorene	ND		0.040	2	02/25/2020 17:24	
Hexachlorobenzene	ND		0.021	2	02/25/2020 17:24	
Hexachlorobutadiene	ND		0.040	2	02/25/2020 17:24	
Hexachlorocyclopentadiene	ND		32	2	02/25/2020 17:24	
Hexachloroethane	ND		0.040	2	02/25/2020 17:24	
Indeno (1,2,3-cd) pyrene	ND		0.040	2	02/25/2020 17:24	
Isophorone	ND		4.0	2	02/25/2020 17:24	
1-Methylnaphthalene	ND		0.021	2	02/25/2020 17:24	
2-Methylnaphthalene	ND		0.040	2	02/25/2020 17:24	
2-Methylphenol (o-Cresol)	ND		8.0	2	02/25/2020 17:24	
3 & 4-Methylphenol (m,p-Cresol)	ND		4.0	2	02/25/2020 17:24	
Naphthalene	ND		0.021	2	02/25/2020 17:24	
2-Nitroaniline	ND		20	2	02/25/2020 17:24	
3-Nitroaniline	ND		20	2	02/25/2020 17:24	
4-Nitroaniline	ND		20	2	02/25/2020 17:24	
Nitrobenzene	ND		4.0	2	02/25/2020 17:24	
2-Nitrophenol	ND		20	2	02/25/2020 17:24	
4-Nitrophenol	ND		20	2	02/25/2020 17:24	
N-Nitrosodiphenylamine	ND		4.0	2	02/25/2020 17:24	
N-Nitrosodi-n-propylamine	ND		4.0	2	02/25/2020 17:24	
Pentachlorophenol	ND		0.50	2	02/25/2020 17:24	
Phenanthrene	0.27		0.080	2	02/25/2020 17:24	
Phenol	ND		0.080	2	02/25/2020 17:24	
Pyrene	0.19		0.040	2	02/25/2020 17:24	
Pyridine	ND		4.0	2	02/25/2020 17:24	
1,2,4-Trichlorobenzene	ND		4.0	2	02/25/2020 17:24	
2,4,5-Trichlorophenol	ND		0.040	2	02/25/2020 17:24	
2,4,6-Trichlorophenol	ND		0.21	2	02/25/2020 17:24	

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	GC17 02252018.D	194583

<u>Analytes</u>	<u>Result</u>	<u>Qualifiers</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
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<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	
2-Fluorophenol	142	56-152	02/25/2020 17:24
Phenol-d5	108	54-146	02/25/2020 17:24
Nitrobenzene-d5	82	47-147	02/25/2020 17:24
2-Fluorobiphenyl	82	46-141	02/25/2020 17:24
2,4,6-Tribromophenol	73	25-166	02/25/2020 17:24
4-Terphenyl-d14	66	39-153	02/25/2020 17:24

Analyst(s): REB

Analytical Comments: a4,c2



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020		GC17 02252019.D	194583
Analytes	Result	Qualifiers	RL	DF	Date Analyzed	
Acenaphthene	ND		0.021	2	02/25/2020 17:51	
Acenaphthylene	ND		0.021	2	02/25/2020 17:51	
Acetochlor	ND		4.0	2	02/25/2020 17:51	
Anthracene	0.022		0.021	2	02/25/2020 17:51	
Benzidine	ND		20	2	02/25/2020 17:51	
Benzo (a) anthracene	ND		0.080	2	02/25/2020 17:51	
Benzo (a) pyrene	ND		0.040	2	02/25/2020 17:51	
Benzo (b) fluoranthene	ND		0.10	2	02/25/2020 17:51	
Benzo (g,h,i) perylene	ND		0.040	2	02/25/2020 17:51	
Benzo (k) fluoranthene	ND		0.021	2	02/25/2020 17:51	
Benzyl Alcohol	ND		20	2	02/25/2020 17:51	
1,1-Biphenyl	ND		0.21	2	02/25/2020 17:51	
Bis (2-chloroethoxy) Methane	ND		4.0	2	02/25/2020 17:51	
Bis (2-chloroethyl) Ether	ND		0.040	2	02/25/2020 17:51	
Bis (2-chloroisopropyl) Ether	ND		0.040	2	02/25/2020 17:51	
Bis (2-ethylhexyl) Adipate	ND		8.0	2	02/25/2020 17:51	
Bis (2-ethylhexyl) Phthalate	ND		0.080	2	02/25/2020 17:51	
4-Bromophenyl Phenyl Ether	ND		4.0	2	02/25/2020 17:51	
Butylbenzyl Phthalate	ND		0.40	2	02/25/2020 17:51	
4-Chloroaniline	ND		0.040	2	02/25/2020 17:51	
4-Chloro-3-methylphenol	ND		4.0	2	02/25/2020 17:51	
2-Chloronaphthalene	ND		4.0	2	02/25/2020 17:51	
2-Chlorophenol	ND		0.080	2	02/25/2020 17:51	
4-Chlorophenyl Phenyl Ether	ND		4.0	2	02/25/2020 17:51	
Chrysene	ND		0.040	2	02/25/2020 17:51	
Dibenzo (a,h) anthracene	ND		0.040	2	02/25/2020 17:51	
Dibenzofuran	ND		4.0	2	02/25/2020 17:51	
Di-n-butyl Phthalate	ND		0.080	2	02/25/2020 17:51	
1,2-Dichlorobenzene	ND		4.0	2	02/25/2020 17:51	
1,3-Dichlorobenzene	ND		4.0	2	02/25/2020 17:51	
1,4-Dichlorobenzene	ND		4.0	2	02/25/2020 17:51	
3,3-Dichlorobenzidine	ND		0.040	2	02/25/2020 17:51	
2,4-Dichlorophenol	ND		0.21	2	02/25/2020 17:51	
Diethyl Phthalate	ND		0.080	2	02/25/2020 17:51	
2,4-Dimethylphenol	ND		4.0	2	02/25/2020 17:51	
Dimethyl Phthalate	ND		0.040	2	02/25/2020 17:51	
4,6-Dinitro-2-methylphenol	ND		20	2	02/25/2020 17:51	

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020		GC17 02252019.D	194583
Analytes	Result	Qualifiers	RL	DF	Date Analyzed	
2,4-Dinitrophenol	ND		2.1	2	02/25/2020 17:51	
2,4-Dinitrotoluene	ND		0.10	2	02/25/2020 17:51	
2,6-Dinitrotoluene	ND		0.040	2	02/25/2020 17:51	
Di-n-octyl Phthalate	ND		0.080	2	02/25/2020 17:51	
1,2-Diphenylhydrazine	ND		4.0	2	02/25/2020 17:51	
Fluoranthene	0.076	B	0.021	2	02/25/2020 17:51	
Fluorene	ND		0.040	2	02/25/2020 17:51	
Hexachlorobenzene	ND		0.021	2	02/25/2020 17:51	
Hexachlorobutadiene	ND		0.040	2	02/25/2020 17:51	
Hexachlorocyclopentadiene	ND		32	2	02/25/2020 17:51	
Hexachloroethane	ND		0.040	2	02/25/2020 17:51	
Indeno (1,2,3-cd) pyrene	ND		0.040	2	02/25/2020 17:51	
Isophorone	ND		4.0	2	02/25/2020 17:51	
1-Methylnaphthalene	ND		0.021	2	02/25/2020 17:51	
2-Methylnaphthalene	ND		0.040	2	02/25/2020 17:51	
2-Methylphenol (o-Cresol)	ND		8.0	2	02/25/2020 17:51	
3 & 4-Methylphenol (m,p-Cresol)	ND		4.0	2	02/25/2020 17:51	
Naphthalene	ND		0.021	2	02/25/2020 17:51	
2-Nitroaniline	ND		20	2	02/25/2020 17:51	
3-Nitroaniline	ND		20	2	02/25/2020 17:51	
4-Nitroaniline	ND		20	2	02/25/2020 17:51	
Nitrobenzene	ND		4.0	2	02/25/2020 17:51	
2-Nitrophenol	ND		20	2	02/25/2020 17:51	
4-Nitrophenol	ND		20	2	02/25/2020 17:51	
N-Nitrosodiphenylamine	ND		4.0	2	02/25/2020 17:51	
N-Nitrosodi-n-propylamine	ND		4.0	2	02/25/2020 17:51	
Pentachlorophenol	ND		0.50	2	02/25/2020 17:51	
Phenanthrene	ND		0.080	2	02/25/2020 17:51	
Phenol	ND		0.080	2	02/25/2020 17:51	
Pyrene	0.064		0.040	2	02/25/2020 17:51	
Pyridine	ND		4.0	2	02/25/2020 17:51	
1,2,4-Trichlorobenzene	ND		4.0	2	02/25/2020 17:51	
2,4,5-Trichlorophenol	ND		0.040	2	02/25/2020 17:51	
2,4,6-Trichlorophenol	ND		0.21	2	02/25/2020 17:51	

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Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/25/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	GC17 02252019.D	194583

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
2-Fluorophenol	117		56-152		02/25/2020 17:51
Phenol-d5	94		54-146		02/25/2020 17:51
Nitrobenzene-d5	75		47-147		02/25/2020 17:51
2-Fluorobiphenyl	79		46-141		02/25/2020 17:51
2,4,6-Tribromophenol	67		25-166		02/25/2020 17:51
4-Terphenyl-d14	54		39-153		02/25/2020 17:51

Analyst(s): REB

Analytical Comments: a4



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	ICP-MS4 174SMPL.d	194493
<u>Analytes</u>	<u>Result</u>	<u>Qualifiers</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Antimony	0.59		0.50	1	02/25/2020 16:53
Arsenic	6.2		0.50	1	02/25/2020 16:53
Barium	180		5.0	1	02/25/2020 16:53
Beryllium	ND		0.50	1	02/25/2020 16:53
Cadmium	0.27		0.25	1	02/25/2020 16:53
Chromium	43		0.50	1	02/25/2020 16:53
Cobalt	10		0.50	1	02/25/2020 16:53
Copper	22		0.50	1	02/25/2020 16:53
Lead	23		0.50	1	02/25/2020 16:53
Mercury	0.50	B	0.050	1	02/25/2020 16:53
Molybdenum	ND		0.50	1	02/25/2020 16:53
Nickel	47		0.50	1	02/25/2020 16:53
Selenium	1.2		0.50	1	02/25/2020 16:53
Silver	ND		0.50	1	02/25/2020 16:53
Thallium	ND		0.50	1	02/25/2020 16:53
Vanadium	44		0.50	1	02/25/2020 16:53
Zinc	70		5.0	1	02/25/2020 16:53
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
Terbium	91		70-130		02/25/2020 16:53
Analyst(s): ND					

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020		ICP-MS4 175SMPL.d	194493
<u>Analytes</u>	<u>Result</u>	<u>Qualifiers</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>	
Antimony	0.58		0.50	1	02/25/2020 16:58	
Arsenic	6.5		0.50	1	02/25/2020 16:58	
Barium	170		5.0	1	02/25/2020 16:58	
Beryllium	0.61		0.50	1	02/25/2020 16:58	
Cadmium	ND		0.25	1	02/25/2020 16:58	
Chromium	67		0.50	1	02/25/2020 16:58	
Cobalt	12		0.50	1	02/25/2020 16:58	
Copper	27		0.50	1	02/25/2020 16:58	
Lead	14		0.50	1	02/25/2020 16:58	
Mercury	0.37	B	0.050	1	02/25/2020 16:58	
Molybdenum	0.72		0.50	1	02/25/2020 16:58	
Nickel	72		0.50	1	02/25/2020 16:58	
Selenium	1.2		0.50	1	02/25/2020 16:58	
Silver	ND		0.50	1	02/25/2020 16:58	
Thallium	ND		0.50	1	02/25/2020 16:58	
Vanadium	62		0.50	1	02/25/2020 16:58	
Zinc	66		5.0	1	02/25/2020 16:58	
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>			
Terbium	109		70-130		02/25/2020 16:58	
<u>Analyst(s):</u> ND						

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	ICP-MS4 176SMPL.d	194493

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Antimony	0.59		0.50	1	02/25/2020 17:02
Arsenic	9.4		0.50	1	02/25/2020 17:02
Barium	120		5.0	1	02/25/2020 17:02
Beryllium	ND		0.50	1	02/25/2020 17:02
Cadmium	0.94		0.25	1	02/25/2020 17:02
Chromium	44		0.50	1	02/25/2020 17:02
Cobalt	9.3		0.50	1	02/25/2020 17:02
Copper	130		0.50	1	02/25/2020 17:02
Lead	37		0.50	1	02/25/2020 17:02
Mercury	0.21	B	0.050	1	02/25/2020 17:02
Molybdenum	ND		0.50	1	02/25/2020 17:02
Nickel	42		0.50	1	02/25/2020 17:02
Selenium	1.0		0.50	1	02/25/2020 17:02
Silver	ND		0.50	1	02/25/2020 17:02
Thallium	ND		0.50	1	02/25/2020 17:02
Vanadium	43		0.50	1	02/25/2020 17:02
Zinc	91		5.0	1	02/25/2020 17:02

Surrogates	REC (%)	Limits	
Terbium	109	70-130	02/25/2020 17:02

Analyst(s): ND



Analytical Report

Client: Geo-Engineering Solutions, Inc.

Date Received: 02/24/2020 13:04

Date Prepared: 02/24/2020

Project: 78-1225; San Pablo

WorkOrder: 2002874

Extraction Method: CARB 435 Asbestos

Analytical Method: 435 CARB

Unit: %

Asbestos (CARB 435) 400 Point Count

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	Microscope	194666

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Asbestos	ND	NA	1	02/26/2020 10:50

Analyst(s): DA

Analytical Comments: k10

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	Microscope	194666

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Asbestos	ND	NA	1	02/26/2020 11:15

Analyst(s): DA

Analytical Comments: k10

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	Microscope	194666

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
Asbestos	ND	NA	1	02/26/2020 11:40

Analyst(s): DA

Analytical Comments: k10



Analytical Report

Client: Geo-Engineering Solutions, Inc.

Date Received: 02/24/2020 13:04

Date Prepared: 02/24/2020-02/27/2020

Project: 78-1225; San Pablo

WorkOrder: 2002874

Extraction Method: SW5035

Analytical Method: SW8021B/8015Bm

Unit: mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	GC19 02242038.D	194495

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	02/25/2020 04:19
MTBE	ND	0.050	1	02/25/2020 04:19
Benzene	ND	0.0050	1	02/25/2020 04:19
Toluene	ND	0.0050	1	02/25/2020 04:19
Ethylbenzene	ND	0.0050	1	02/25/2020 04:19
m,p-Xylene	ND	0.010	1	02/25/2020 04:19
o-Xylene	ND	0.0050	1	02/25/2020 04:19
Xylenes	ND	0.0050	1	02/25/2020 04:19

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	93	62-126	02/25/2020 04:19

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	GC19 02242039.D	194495

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	02/25/2020 04:49
MTBE	ND	0.050	1	02/25/2020 04:49
Benzene	ND	0.0050	1	02/25/2020 04:49
Toluene	ND	0.0050	1	02/25/2020 04:49
Ethylbenzene	ND	0.0050	1	02/25/2020 04:49
m,p-Xylene	ND	0.010	1	02/25/2020 04:49
o-Xylene	ND	0.0050	1	02/25/2020 04:49
Xylenes	ND	0.0050	1	02/25/2020 04:49

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	92	62-126	02/25/2020 04:49

Analyst(s): IA

(Cont.)



Analytical Report

Client: Geo-Engineering Solutions, Inc.

Date Received: 02/24/2020 13:04

Date Prepared: 02/24/2020-02/27/2020

Project: 78-1225; San Pablo

WorkOrder: 2002874

Extraction Method: SW5035

Analytical Method: SW8021B/8015Bm

Unit: mg/Kg

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	GC3 02272016.D	194701

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	02/27/2020 21:50
MTBE	ND	0.050	1	02/27/2020 21:50
Benzene	ND	0.0050	1	02/27/2020 21:50
Toluene	ND	0.0050	1	02/27/2020 21:50
Ethylbenzene	ND	0.0050	1	02/27/2020 21:50
m,p-Xylene	ND	0.010	1	02/27/2020 21:50
o-Xylene	ND	0.0050	1	02/27/2020 21:50
Xylenes	ND	0.0050	1	02/27/2020 21:50

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	91	62-126	02/27/2020 21:50

Analyst(s): IA



Analytical Report

Client: Geo-Engineering Solutions, Inc.
Date Received: 02/24/2020 13:04
Date Prepared: 02/24/2020
Project: 78-1225; San Pablo

WorkOrder: 2002874
Extraction Method: SW3550B
Analytical Method: SW8015B
Unit: mg/Kg

Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-1	2002874-001A	Soil	02/24/2020	GC31A 03022018.D	194496

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	17	1.0	1	03/02/2020 15:12
TPH-Motor Oil (C18-C36)	140	5.0	1	03/02/2020 15:12

Surrogates	REC (%)	Limits	
C9	102	70-130	03/02/2020 15:12

Analyst(s): JIS

Analytical Comments: e7,e2,e8

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	GC31B 02252027.D	194496

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	8.7	2.0	2	02/25/2020 18:35
TPH-Motor Oil (C18-C36)	71	10	2	02/25/2020 18:35

Surrogates	REC (%)	Limits	
C9	92	70-130	02/25/2020 18:35

Analyst(s): JIS

Analytical Comments: e7,e2,e8

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-3	2002874-003A	Soil	02/24/2020	GC9b 03022017.D	194496

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	3.2	1.0	1	03/02/2020 15:14
TPH-Motor Oil (C18-C36)	88	5.0	1	03/02/2020 15:14

Surrogates	REC (%)	Limits	
C9	88	70-130	03/02/2020 15:14

Analyst(s): JIS

Analytical Comments: e7,e2



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/25/2020
Instrument: GC23
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194497
Extraction Method: SW3550B
Analytical Method: SW8081A/8082
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194497
2002874-001AMS/MSD

QC Summary Report for SW8081A/8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.000270	0.00100	-	-	-
a-BHC	ND	0.000100	0.00100	-	-	-
b-BHC	ND	0.000250	0.00100	-	-	-
d-BHC	ND	0.000370	0.00100	-	-	-
g-BHC	ND	0.0000970	0.00100	-	-	-
Chlordane (Technical)	ND	0.0160	0.0250	-	-	-
a-Chlordane	ND	0.000470	0.00100	-	-	-
g-Chlordane	ND	0.000210	0.00100	-	-	-
p,p-DDD	ND	0.000140	0.00100	-	-	-
p,p-DDE	ND	0.000320	0.00100	-	-	-
p,p-DDT	ND	0.000430	0.00100	-	-	-
Dieldrin	ND	0.000330	0.00100	-	-	-
Endosulfan I	ND	0.000650	0.00100	-	-	-
Endosulfan II	ND	0.000200	0.00100	-	-	-
Endosulfan sulfate	ND	0.000630	0.00100	-	-	-
Endrin	ND	0.000420	0.00100	-	-	-
Endrin aldehyde	ND	0.000200	0.00100	-	-	-
Endrin ketone	ND	0.000130	0.00100	-	-	-
Heptachlor	ND	0.000210	0.00100	-	-	-
Heptachlor epoxide	ND	0.000200	0.00100	-	-	-
Hexachlorobenzene	ND	0.000270	0.0100	-	-	-
Hexachlorocyclopentadiene	ND	0.000400	0.0200	-	-	-
Methoxychlor	ND	0.000890	0.00100	-	-	-
Toxaphene	ND	0.0350	0.0500	-	-	-
Aroclor1016	ND	0.00510	0.0500	-	-	-
Aroclor1221	ND	0.0110	0.0500	-	-	-
Aroclor1232	ND	0.00630	0.0500	-	-	-
Aroclor1242	ND	0.00670	0.0500	-	-	-
Aroclor1248	ND	0.00400	0.0500	-	-	-
Aroclor1254	ND	0.00680	0.0500	-	-	-
Aroclor1260	ND	0.00610	0.0500	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.0531			0.05	106	75-136

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/25/2020
Instrument: GC23
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194497
Extraction Method: SW3550B
Analytical Method: SW8081A/8082
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194497
2002874-001AMS/MSD

QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.0583	0.0608	0.050	117	122	92-133	4.19	20
a-BHC	0.0532	0.0550	0.050	106	110	96-140	3.43	20
b-BHC	0.0568	0.0591	0.050	114	118	77-137	3.99	20
d-BHC	0.0616	0.0649	0.050	123	130	89-145	5.26	20
g-BHC	0.0532	0.0556	0.050	106	111	92-134	4.44	20
a-Chlordane	0.0497	0.0522	0.050	99	104	72-134	4.90	20
g-Chlordane	0.0551	0.0581	0.050	110	116	86-132	5.19	20
p,p-DDD	0.0465	0.0499	0.050	93	100	35-140	7.05	20
p,p-DDE	0.0531	0.0564	0.050	106	113	83-138	5.96	20
p,p-DDT	0.0517	0.0563	0.050	103	113	70-137	8.47	20
Dieldrin	0.0509	0.0538	0.050	102	108	99-141	5.60	20
Endosulfan I	0.0481	0.0506	0.050	96	101	93-121	5.07	20
Endosulfan II	0.0485	0.0517	0.050	97	103	74-125	6.34	20
Endosulfan sulfate	0.0515	0.0556	0.050	103	111	66-138	7.63	20
Endrin	0.0467	0.0499	0.050	93	100	92-137	6.56	20
Endrin aldehyde	0.0466	0.0499	0.050	93	100	77-135	6.76	20
Endrin ketone	0.0487	0.0519	0.050	97	104	72-126	6.47	20
Heptachlor	0.0550	0.0587	0.050	110	117	89-136	6.38	20
Heptachlor epoxide	0.0522	0.0546	0.050	104	109	85-121	4.43	20
Hexachlorobenzene	0.0461	0.0485	0.050	92	97	87-127	4.99	20
Hexachlorocyclopentadiene	0.0489	0.0520	0.050	98	104	41-145	6.01	20
Methoxychlor	0.0472	0.0510	0.050	94	102	82-142	7.66	20
Aroclor1016	0.161	0.159	0.15	107	106	90-125	0.877	20
Aroclor1260	0.161	0.160	0.15	108	107	77-122	0.881	20

Surrogate Recovery

Decachlorobiphenyl	0.0498	0.0519	0.050	100	104	75-136	3.96	20
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Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aldrin	100	0.0439	0.0502	0.050	ND<0.10	88	100	59-143	13.3	20
a-BHC	100	0.0371	0.0424	0.050	ND<0.10	74	85	42-159	13.3	20
b-BHC	100	0.0565	0.0652	0.050	ND<0.10	113	130	67-141	14.4	20
d-BHC	100	0.0395	0.0463	0.050	ND<0.10	79	93	38-164	15.7	20
g-BHC	100	0.0361	0.0423	0.050	ND<0.10	72	85	51-148	15.8	20
a-Chlordane	100	0.0706	0.0765	0.050	ND<0.10	141,F1	153,F1	70-130	7.96	20
g-Chlordane	100	0.0888	0.0948	0.050	ND<0.10	121	133	61-146	6.49	20

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Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/24/2020

Date Analyzed: 02/25/2020

Instrument: GC23

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194497

Extraction Method: SW3550B

Analytical Method: SW8081A/8082

Unit: mg/kg

Sample ID: MB/LCS/LCSD-194497
2002874-001AMS/MSD

QC Summary Report for SW8081A/8082

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
p,p-DDD	100	0.0368	0.0438	0.050	ND<0.10	74	88	10-158	17.5	20
p,p-DDE	100	0.0404	0.0477	0.050	ND<0.10	81	95	52-151	16.7	20
p,p-DDT	100	0.0534	0.0586	0.050	ND<0.10	107	117	53-137	9.25	20
Dieldrin	100	0.0421	0.0494	0.050	ND<0.10	84	99	58-163	15.9	20
Endosulfan I	100	0.0431	0.0516	0.050	ND<0.10	86	103	64-136	17.9	20
Endosulfan II	100	0.0469	0.0542	0.050	ND<0.10	94	108	46-141	14.4	20
Endosulfan sulfate	100	0.0399	0.0490	0.050	ND<0.10	80	98	45-144	20.4,F1	20
Endrin	100	0.0391	0.0453	0.050	ND<0.10	78	91	56-153	14.7	20
Endrin aldehyde	100	0.0429	0.0505	0.050	ND<0.10	86	101	63-134	16.2	20
Endrin ketone	100	0.0406	0.0478	0.050	ND<0.10	81	96	53-130	16.4	20
Heptachlor	100	0.0471	0.0539	0.050	ND<0.10	94	108	55-147	13.5	20
Heptachlor epoxide	100	0.0504	0.0534	0.050	ND<0.10	101	107	63-128	5.80	20
Hexachlorobenzene	100	0.0451	0.0516	0.050	ND<1.0	90	103	71-132	13.5	20
Hexachlorocyclopentadiene	100	0.0392	0.0447	0.050	ND<2.0	78	89	12-144	13.0	20
Methoxychlor	100	0.0454	0.0525	0.050	ND<0.10	91	105	70-150	14.5	20
Surrogate Recovery										
Decachlorobiphenyl	100	0.0702	0.0842	0.050		140	168,F3	69-143	18.2	20



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Acetone	ND	0.0390	0.100	-	-	-
tert-Amyl methyl ether (TAME)	ND	0.00100	0.00500	-	-	-
Benzene	ND	0.00160	0.00500	-	-	-
Bromobenzene	ND	0.00300	0.00500	-	-	-
Bromochloromethane	ND	0.00150	0.00500	-	-	-
Bromodichloromethane	ND	0.00120	0.00500	-	-	-
Bromoform	ND	0.00120	0.00500	-	-	-
Bromomethane	ND	0.00200	0.00500	-	-	-
2-Butanone (MEK)	ND	0.0210	0.0500	-	-	-
t-Butyl alcohol (TBA)	ND	0.00530	0.0500	-	-	-
n-Butyl benzene	ND	0.00350	0.00500	-	-	-
sec-Butyl benzene	ND	0.00340	0.00500	-	-	-
tert-Butyl benzene	ND	0.00290	0.00500	-	-	-
Carbon Disulfide	ND	0.00360	0.00500	-	-	-
Carbon Tetrachloride	ND	0.00170	0.00500	-	-	-
Chlorobenzene	ND	0.00180	0.00500	-	-	-
Chloroethane	ND	0.00160	0.00500	-	-	-
Chloroform	ND	0.00160	0.00500	-	-	-
Chloromethane	ND	0.00170	0.00500	-	-	-
2-Chlorotoluene	ND	0.00220	0.00500	-	-	-
4-Chlorotoluene	ND	0.00240	0.00500	-	-	-
Dibromochloromethane	ND	0.00110	0.00500	-	-	-
1,2-Dibromo-3-chloropropane	ND	0.00370	0.00500	-	-	-
1,2-Dibromoethane (EDB)	ND	0.00130	0.00400	-	-	-
Dibromomethane	ND	0.00140	0.00500	-	-	-
1,2-Dichlorobenzene	ND	0.00320	0.00500	-	-	-
1,3-Dichlorobenzene	ND	0.00180	0.00500	-	-	-
1,4-Dichlorobenzene	ND	0.00180	0.00500	-	-	-
Dichlorodifluoromethane	ND	0.00110	0.00500	-	-	-
1,1-Dichloroethane	ND	0.00170	0.00500	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	0.00140	0.00400	-	-	-
1,1-Dichloroethene	ND	0.00170	0.00500	-	-	-
cis-1,2-Dichloroethene	ND	0.00150	0.00500	-	-	-
trans-1,2-Dichloroethene	ND	0.00160	0.00500	-	-	-
1,2-Dichloropropane	ND	0.00140	0.00500	-	-	-
1,3-Dichloropropane	ND	0.00160	0.00500	-	-	-
2,2-Dichloropropane	ND	0.00130	0.00500	-	-	-
1,1-Dichloropropene	ND	0.00180	0.00500	-	-	-

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
cis-1,3-Dichloropropene	ND	0.00150	0.00500	-	-	-
trans-1,3-Dichloropropene	ND	0.00140	0.00500	-	-	-
Diisopropyl ether (DIPE)	ND	0.00140	0.00500	-	-	-
Ethylbenzene	ND	0.00250	0.00500	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	0.00130	0.00500	-	-	-
Freon 113	ND	0.00160	0.00500	-	-	-
Hexachlorobutadiene	ND	0.00500	0.00500	-	-	-
Hexachloroethane	ND	0.00250	0.00500	-	-	-
2-Hexanone	ND	0.00220	0.00500	-	-	-
Isopropylbenzene	ND	0.00320	0.00500	-	-	-
4-Isopropyl toluene	ND	0.00320	0.00500	-	-	-
Methyl-t-butyl ether (MTBE)	ND	0.00130	0.00500	-	-	-
Methylene chloride	ND	0.0100	0.0200	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	0.000800	0.00500	-	-	-
Naphthalene	ND	0.00440	0.00500	-	-	-
n-Propyl benzene	ND	0.00290	0.00500	-	-	-
Styrene	ND	0.00300	0.00500	-	-	-
1,1,1,2-Tetrachloroethane	ND	0.00160	0.00500	-	-	-
1,1,2,2-Tetrachloroethane	ND	0.00130	0.00500	-	-	-
Tetrachloroethene	ND	0.00230	0.00500	-	-	-
Toluene	ND	0.00240	0.00500	-	-	-
1,2,3-Trichlorobenzene	ND	0.00300	0.00500	-	-	-
1,2,4-Trichlorobenzene	ND	0.00290	0.00500	-	-	-
1,1,1-Trichloroethane	ND	0.00180	0.00500	-	-	-
1,1,2-Trichloroethane	ND	0.00190	0.00500	-	-	-
Trichloroethene	ND	0.00170	0.00500	-	-	-
Trichlorofluoromethane	ND	0.00160	0.00500	-	-	-
1,2,3-Trichloropropane	ND	0.00190	0.00500	-	-	-
1,2,4-Trimethylbenzene	ND	0.00280	0.00500	-	-	-
1,3,5-Trimethylbenzene	ND	0.00260	0.00500	-	-	-
Vinyl Chloride	ND	0.00150	0.00500	-	-	-
m,p-Xylene	ND	0.00400	0.00500	-	-	-
o-Xylene	ND	0.00180	0.00500	-	-	-

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery						
Dibromofluoromethane	0.110			0.125	88	66-112
Toluene-d8	0.130			0.125	104	92-109
4-BFB	0.0100			0.0125	80	72-112
Benzene-d6	0.0860			0.1	86	81-126
Ethylbenzene-d10	0.104			0.1	103	92-138
1,2-DCB-d4	0.0784			0.1	78	68-108



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acetone	0.256	0.265	0.20	128,F2	133,F2	59-127	3.78	20
tert-Amyl methyl ether (TAME)	0.0181	0.0188	0.020	91	94	54-98	3.53	20
Benzene	0.0201	0.0210	0.020	100	105	71-115	4.49	20
Bromobenzene	0.0176	0.0181	0.020	88	90	69-120	2.56	20
Bromochloromethane	0.0200	0.0206	0.020	100	103	63-117	2.85	20
Bromodichloromethane	0.0192	0.0201	0.020	96	100	61-109	4.24	20
Bromoform	0.0144	0.0149	0.020	72	74	46-87	3.47	20
Bromomethane	0.0171	0.0178	0.020	85	89	22-195	4.05	20
2-Butanone (MEK)	0.0810	0.0888	0.080	101	111	53-124	9.21	20
t-Butyl alcohol (TBA)	0.0846	0.0887	0.080	106	111	29-142	4.74	20
n-Butyl benzene	0.0266	0.0271	0.020	133	135	102-169	1.97	20
sec-Butyl benzene	0.0262	0.0270	0.020	131	135	100-166	3.25	20
tert-Butyl benzene	0.0232	0.0236	0.020	116	118	91-153	1.89	20
Carbon Disulfide	0.0194	0.0201	0.020	97	100	60-125	3.40	20
Carbon Tetrachloride	0.0198	0.0208	0.020	99	104	69-124	4.76	20
Chlorobenzene	0.0185	0.0191	0.020	93	96	73-116	3.06	20
Chloroethane	0.0181	0.0186	0.020	91	93	47-140	2.58	20
Chloroform	0.0205	0.0215	0.020	103	108	69-118	4.59	20
Chloromethane	0.0142	0.0145	0.020	71	73	30-132	2.07	20
2-Chlorotoluene	0.0205	0.0211	0.020	102	105	75-147	2.88	20
4-Chlorotoluene	0.0202	0.0208	0.020	101	104	75-137	2.71	20
Dibromochloromethane	0.0180	0.0188	0.020	90	94	57-105	4.55	20
1,2-Dibromo-3-chloropropane	0.00853	0.00897	0.010	85	90	36-103	5.10	20
1,2-Dibromoethane (EDB)	0.00933	0.00986	0.010	93	99	66-101	5.56	20
Dibromomethane	0.0183	0.0193	0.020	92	96	61-103	4.97	20
1,2-Dichlorobenzene	0.0162	0.0168	0.020	81	84	59-104	3.88	20
1,3-Dichlorobenzene	0.0187	0.0194	0.020	93	97	70-133	3.69	20
1,4-Dichlorobenzene	0.0191	0.0196	0.020	96	98	68-123	2.62	20
Dichlorodifluoromethane	0.00452	0.00478	0.020	23	24	13-107	5.70	20
1,1-Dichloroethane	0.0208	0.0216	0.020	104	108	69-118	4.06	20
1,2-Dichloroethane (1,2-DCA)	0.0204	0.0213	0.020	102	106	59-112	4.56	20
1,1-Dichloroethene	0.0196	0.0206	0.020	98	103	69-126	4.63	20
cis-1,2-Dichloroethene	0.0198	0.0206	0.020	99	103	69-116	4.31	20
trans-1,2-Dichloroethene	0.0200	0.0208	0.020	100	104	73-116	4.24	20
1,2-Dichloropropane	0.0189	0.0198	0.020	94	99	65-111	4.70	20
1,3-Dichloropropane	0.0196	0.0201	0.020	98	100	67-110	2.08	20
2,2-Dichloropropane	0.0225	0.0233	0.020	112	116	65-125	3.37	20
1,1-Dichloropropene	0.0204	0.0213	0.020	102	107	70-123	4.19	20

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
cis-1,3-Dichloropropene	0.0215	0.0224	0.020	107	112	68-126	4.48	20
trans-1,3-Dichloropropene	0.0204	0.0214	0.020	102	107	69-117	4.75	20
Diisopropyl ether (DIPE)	0.0194	0.0202	0.020	97	101	57-110	4.11	20
Ethylbenzene	0.0203	0.0210	0.020	101	105	80-128	3.33	20
Ethyl tert-butyl ether (ETBE)	0.0194	0.0202	0.020	97	101	54-106	4.04	20
Freon 113	0.0169	0.0178	0.020	85	89	60-108	5.35	20
Hexachlorobutadiene	0.0263	0.0271	0.020	132	136	67-182	3.09	20
Hexachloroethane	0.0213	0.0220	0.020	107	110	85-156	3.23	20
2-Hexanone	0.0160	0.0166	0.020	80	83	37-90	3.80	20
Isopropylbenzene	0.0234	0.0241	0.020	117	121	64-167	3.00	20
4-Isopropyl toluene	0.0243	0.0251	0.020	121	125	88-167	3.20	20
Methyl-t-butyl ether (MTBE)	0.0195	0.0203	0.020	97	101	60-102	4.22	20
Methylene chloride	0.0207	0.0214	0.020	104	107	71-117	3.35	20
4-Methyl-2-pentanone (MIBK)	0.0165	0.0170	0.020	83	85	48-90	2.59	20
Naphthalene	0.0112	0.0114	0.020	56	57	29-65	1.10	20
n-Propyl benzene	0.0240	0.0244	0.020	120	122	88-161	1.84	20
Styrene	0.0164	0.0169	0.020	82	85	70-108	3.01	20
1,1,1,2-Tetrachloroethane	0.0190	0.0197	0.020	95	98	69-117	3.42	20
1,1,2,2-Tetrachloroethane	0.0182	0.0185	0.020	91	92	53-96	1.54	20
Tetrachloroethene	0.0216	0.0224	0.020	108	112	78-128	3.76	20
Toluene	0.0198	0.0204	0.020	99	102	78-121	2.83	20
1,2,3-Trichlorobenzene	0.0115	0.0115	0.020	57	58	35-80	0.427	20
1,2,4-Trichlorobenzene	0.0149	0.0155	0.020	75	77	46-101	3.78	20
1,1,1-Trichloroethane	0.0201	0.0212	0.020	100	106	69-121	5.59	20
1,1,2-Trichloroethane	0.0197	0.0205	0.020	98	103	64-104	4.27	20
Trichloroethene	0.0202	0.0214	0.020	101	107	73-118	5.83	20
Trichlorofluoromethane	0.0178	0.0185	0.020	89	93	31-119	4.09	20
1,2,3-Trichloropropane	0.00982	0.00995	0.010	98	100	65-107	1.33	20
1,2,4-Trimethylbenzene	0.0212	0.0217	0.020	106	108	80-147	2.05	20
1,3,5-Trimethylbenzene	0.0228	0.0232	0.020	114	116	83-156	1.71	20
Vinyl Chloride	0.00765	0.00793	0.010	77	79	40-125	3.56	20
m,p-Xylene	0.0385	0.0400	0.040	96	100	80-122	3.79	20
o-Xylene	0.0182	0.0190	0.020	91	95	79-116	4.29	20

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Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Surrogate Recovery								
Dibromofluoromethane	0.116	0.118	0.12	92	95	66-112	2.50	20
Toluene-d8	0.133	0.135	0.12	106	108	92-109	1.58	20
4-BFB	0.0136	0.0132	0.012	109	105	72-112	3.10	20
Benzene-d6	0.112	0.115	0.10	112	115	81-126	2.84	20
Ethylbenzene-d10	0.132	0.137	0.10	132	137	92-138	3.15	20
1,2-DCB-d4	0.0840	0.0856	0.10	84	86	68-108	1.87	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	1	0.164	0.164	0.20	ND	82	82	48-114	0.120	20
tert-Amyl methyl ether (TAME)	1	0.0122	0.0129	0.020	ND	61	64	44-94	5.65	20
Benzene	1	0.0137	0.0146	0.020	ND	68	73	50-115	6.32	20
Bromobenzene	1	0.0135	0.0141	0.020	ND	67	70	60-114	4.07	20
Bromochloromethane	1	0.0130	0.0138	0.020	ND	65	69	50-113	6.03	20
Bromodichloromethane	1	0.0123	0.0130	0.020	ND	62	65	46-109	5.49	20
Bromoform	1	0.00923	0.00941	0.020	ND	46	47	38-83	1.99	20
Bromomethane	1	0.0192	0.0210	0.020	ND	96	105	10-149	9.09	20
2-Butanone (MEK)	1	0.0499	0.0507	0.080	ND	62	63	46-111	1.58	20
t-Butyl alcohol (TBA)	1	0.0494	0.0529	0.080	ND	62	66	32-112	6.91	20
n-Butyl benzene	1	0.0196	0.0202	0.020	ND	98	101	71-156	2.71	20
sec-Butyl benzene	1	0.0185	0.0193	0.020	ND	92	97	28-190	4.69	20
tert-Butyl benzene	1	0.0171	0.0180	0.020	ND	86	90	69-145	5.13	20
Carbon Disulfide	1	0.0115	0.0122	0.020	ND	58	61	19-135	5.20	20
Carbon Tetrachloride	1	0.0121	0.0126	0.020	ND	60	63	51-120	4.60	20
Chlorobenzene	1	0.0147	0.0156	0.020	ND	73	78	63-108	5.67	20
Chloroethane	1	0.0143	0.0151	0.020	ND	71	76	40-122	5.64	20
Chloroform	1	0.0138	0.0145	0.020	ND	69	73	55-114	5.23	20
Chloromethane	1	0.00621	0.00670	0.020	ND	31	33	14-128	7.58	20
2-Chlorotoluene	1	0.0162	0.0170	0.020	ND	81	85	45-153	4.59	20
4-Chlorotoluene	1	0.0164	0.0171	0.020	ND	82	86	65-126	4.34	20
Dibromochloromethane	1	0.0116	0.0123	0.020	ND	58	61	48-97	5.61	20
1,2-Dibromo-3-chloropropane	1	0.00471	0.00561	0.010	ND	47	56	32-95	17.5	20
1,2-Dibromoethane (EDB)	1	0.00651	0.00679	0.010	ND	65	68	52-99	4.20	20
Dibromomethane	1	0.0120	0.0129	0.020	ND	60	64	50-100	7.07	20
1,2-Dichlorobenzene	1	0.0124	0.0131	0.020	ND	62	65	38-116	5.79	20

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Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,3-Dichlorobenzene	1	0.0149	0.0156	0.020	ND	74	78	58-127	4.67	20
1,4-Dichlorobenzene	1	0.0142	0.0151	0.020	ND	71	75	54-123	5.78	20
Dichlorodifluoromethane	1	0.00288	0.00317	0.020	ND	14	16	8-93	9.67	20
1,1-Dichloroethane	1	0.0140	0.0148	0.020	ND	70	74	53-115	5.93	20
1,2-Dichloroethane (1,2-DCA)	1	0.0135	0.0145	0.020	ND	68	73	48-105	7.21	20
1,1-Dichloroethene	1	0.0126	0.0133	0.020	ND	63	66	47-127	5.07	20
cis-1,2-Dichloroethene	1	0.0135	0.0142	0.020	ND	67	71	56-111	5.40	20
trans-1,2-Dichloroethene	1	0.0131	0.0138	0.020	ND	66	69	51-115	5.19	20
1,2-Dichloropropane	1	0.0135	0.0144	0.020	ND	68	72	51-111	6.55	20
1,3-Dichloropropane	1	0.0141	0.0146	0.020	ND	70	73	51-109	3.59	20
2,2-Dichloropropane	1	0.0136	0.0144	0.020	ND	68	72	50-116	6.22	20
1,1-Dichloropropene	1	0.0133	0.0139	0.020	ND	66	69	46-124	4.73	20
cis-1,3-Dichloropropene	1	0.0136	0.0143	0.020	ND	68	72	41-127	4.85	20
trans-1,3-Dichloropropene	1	0.0135	0.0142	0.020	ND	68	71	50-111	4.99	20
Diisopropyl ether (DIPE)	1	0.0131	0.0138	0.020	ND	66	69	50-103	5.09	20
Ethylbenzene	1	0.0154	0.0162	0.020	ND	77	81	65-119	4.89	20
Ethyl tert-butyl ether (ETBE)	1	0.0135	0.0142	0.020	ND	68	71	47-100	4.61	20
Freon 113	1	0.0113	0.0118	0.020	ND	56	59	48-98	4.69	20
Hexachlorobutadiene	1	0.0132	0.0146	0.020	ND	66	73	36-166	10.3	20
Hexachloroethane	1	0.0163	0.0173	0.020	ND	81	86	61-146	6.07	20
2-Hexanone	1	0.0117	0.0128	0.020	ND	58	64	31-87	9.73	20
Isopropylbenzene	1	0.0158	0.0166	0.020	ND	79	83	24-171	4.62	20
4-Isopropyl toluene	1	0.0181	0.0189	0.020	ND	91	95	69-150	4.25	20
Methyl-t-butyl ether (MTBE)	1	0.0129	0.0135	0.020	ND	65	68	50-95	4.36	20
Methylene chloride	1	0.0134	0.0142	0.020	ND	67	71	39-123	6.34	20
4-Methyl-2-pentanone (MIBK)	1	0.0113	0.0119	0.020	ND	56	59	41-83	5.43	20
Naphthalene	1	0.00940	0.0101	0.020	ND	47	50	13-77	6.89	20
n-Propyl benzene	1	0.0171	0.0177	0.020	ND	85	88	26-184	3.44	20
Styrene	1	0.0130	0.0139	0.020	ND	65	69	54-105	6.67	20
1,1,1,2-Tetrachloroethane	1	0.0138	0.0144	0.020	ND	69	72	60-108	4.27	20
1,1,2,2-Tetrachloroethane	1	0.0128	0.0137	0.020	ND	64	69	37-108	7.18	20
Tetrachloroethene	1	0.0138	0.0144	0.020	ND	69	72	54-127	4.51	20
Toluene	1	0.0158	0.0165	0.020	ND	79	82	63-114	4.48	20
1,2,3-Trichlorobenzene	1	0.00912	0.00966	0.020	ND	46	48	14-97	5.72	20
1,2,4-Trichlorobenzene	1	0.0107	0.0111	0.020	ND	53	55	31-106	3.64	20
1,1,1-Trichloroethane	1	0.0126	0.0134	0.020	ND	63	67	55-114	6.13	20
1,1,2-Trichloroethane	1	0.0134	0.0140	0.020	ND	67	70	50-104	3.90	20
Trichloroethene	1	0.0128	0.0135	0.020	ND	64	68	47-127	5.58	20

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Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC10, GC16, GC18
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194475
Extraction Method: SW5030B
Analytical Method: SW8260B
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194475
2002874-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Trichlorofluoromethane	1	0.0112	0.0118	0.020	ND	56	59	9-119	5.74	20
1,2,3-Trichloropropane	1	0.00636	0.00707	0.010	ND	64	71	45-115	10.5	20
1,2,4-Trimethylbenzene	1	0.0174	0.0182	0.020	ND	87	91	69-133	4.75	20
1,3,5-Trimethylbenzene	1	0.0181	0.0188	0.020	ND	90	94	27-172	3.84	20
Vinyl Chloride	1	0.00568	0.00605	0.010	ND	57	61	33-114	6.26	20
m,p-Xylene	1	0.0299	0.0316	0.040	ND	75	79	62-117	5.64	20
o-Xylene	1	0.0147	0.0155	0.020	ND	73	78	19-144	5.55	20
Surrogate Recovery										
Dibromofluoromethane	1	0.111	0.111	0.12		89	89	66-116	0.357	20
Toluene-d8	1	0.135	0.136	0.12		108	108	86-110	0.207	20
4-BFB	1	0.0107	0.0106	0.012		85	85	71-114	0.383	20
Benzene-d6	1	0.0752	0.0765	0.10		75	77	62-122	1.79	20
Ethylbenzene-d10	1	0.0928	0.0937	0.10		93	94	69-130	0.986	20
1,2-DCB-d4	1	0.0732	0.0732	0.10		73	73	55-108	0.0402	20



Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/25/2020

Date Analyzed: 02/26/2020

Instrument: GC21

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194583

Extraction Method: SW3550B

Analytical Method: SW8270C

Unit: mg/Kg

Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
1,1-Biphenyl	ND	0.00230	0.0130	-	-	-
1,2,4-Trichlorobenzene	ND	0.150	0.250	-	-	-
1,2-Dichlorobenzene	ND	0.150	0.250	-	-	-
1,2-Diphenylhydrazine	ND	0.150	0.250	-	-	-
1,3-Dichlorobenzene	ND	0.130	0.250	-	-	-
1,4-Dichlorobenzene	ND	0.180	0.250	-	-	-
1-Methylnaphthalene	ND	0.00110	0.00130	-	-	-
2,4,5-Trichlorophenol	ND	0.00130	0.00250	-	-	-
2,4,6-Trichlorophenol	ND	0.00120	0.0130	-	-	-
2,4-Dichlorophenol	ND	0.00170	0.0130	-	-	-
2,4-Dimethylphenol	ND	0.160	0.250	-	-	-
2,4-Dinitrophenol	ND	0.0510	0.130	-	-	-
2,4-Dinitrotoluene	ND	0.00110	0.00630	-	-	-
2,6-Dinitrotoluene	ND	0.00130	0.00250	-	-	-
2-Chloronaphthalene	ND	0.140	0.250	-	-	-
2-Chlorophenol	ND	0.00200	0.00500	-	-	-
2-Methylnaphthalene	ND	0.00170	0.00250	-	-	-
2-Methylphenol (o-Cresol)	ND	0.270	0.500	-	-	-
2-Nitroaniline	ND	0.690	1.20	-	-	-
2-Nitrophenol	ND	0.660	1.20	-	-	-
3 & 4-Methylphenol (m,p-Cresol)	ND	0.240	0.250	-	-	-
3,3-Dichlorobenzidine	ND	0.00160	0.00250	-	-	-
3-Nitroaniline	ND	0.840	1.20	-	-	-
4,6-Dinitro-2-methylphenol	ND	0.810	1.20	-	-	-
4-Bromophenyl Phenyl Ether	ND	0.150	0.250	-	-	-
4-Chloro-3-methylphenol	ND	0.200	0.250	-	-	-
4-Chloroaniline	ND	0.00160	0.00250	-	-	-
4-Chlorophenyl Phenyl Ether	ND	0.160	0.250	-	-	-
4-Nitroaniline	ND	1.10	1.20	-	-	-
4-Nitrophenol	ND	0.770	1.20	-	-	-
Acenaphthene	ND	0.000770	0.00130	-	-	-
Acenaphthylene	ND	0.000410	0.00130	-	-	-
Acetochlor	ND	0.250	0.250	-	-	-
Anthracene	ND	0.000820	0.00130	-	-	-
Benzidine	ND	0.670	1.20	-	-	-
Benzo (a) anthracene	ND	0.00430	0.00500	-	-	-
Benzo (a) pyrene	ND	0.00120	0.00250	-	-	-
Benzo (b) fluoranthene	ND	0.00160	0.00630	-	-	-

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/25/2020

Date Analyzed: 02/26/2020

Instrument: GC21

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194583

Extraction Method: SW3550B

Analytical Method: SW8270C

Unit: mg/Kg

Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Benzo (g,h,i) perylene	ND	0.00110	0.00250	-	-	-
Benzo (k) fluoranthene	ND	0.000790	0.00130	-	-	-
Benzyl Alcohol	ND	0.760	1.20	-	-	-
Bis (2-chloroethoxy) Methane	ND	0.150	0.250	-	-	-
Bis (2-chloroethyl) Ether	ND	0.00160	0.00250	-	-	-
Bis (2-chloroisopropyl) Ether	ND	0.00140	0.00250	-	-	-
Bis (2-ethylhexyl) Adipate	ND	0.150	0.500	-	-	-
Bis (2-ethylhexyl) Phthalate	ND	0.00340	0.00500	-	-	-
Butylbenzyl Phthalate	ND	0.0210	0.0250	-	-	-
Chrysene	0.00114,J	0.000800	0.00250	-	-	-
Dibenzo (a,h) anthracene	ND	0.00150	0.00250	-	-	-
Dibenzofuran	ND	0.160	0.250	-	-	-
Diethyl Phthalate	ND	0.00360	0.00500	-	-	-
Dimethyl Phthalate	ND	0.00250	0.00250	-	-	-
Di-n-butyl Phthalate	0.00259,J	0.00250	0.00500	-	-	-
Di-n-octyl Phthalate	ND	0.00430	0.00500	-	-	-
Fluoranthene	0.00112,J	0.00110	0.00130	-	-	-
Fluorene	ND	0.000860	0.00250	-	-	-
Hexachlorobenzene	ND	0.000570	0.00130	-	-	-
Hexachlorobutadiene	ND	0.000420	0.00250	-	-	-
Hexachlorocyclopentadiene	ND	0.110	2.00	-	-	-
Hexachloroethane	ND	0.00110	0.00250	-	-	-
Indeno (1,2,3-cd) pyrene	0.00177,J	0.00100	0.00250	-	-	-
Isophorone	ND	0.150	0.250	-	-	-
Naphthalene	ND	0.000690	0.00130	-	-	-
Nitrobenzene	ND	0.160	0.250	-	-	-
N-Nitrosodimethylamine	ND	0.650	1.20	-	-	-
N-Nitrosodi-n-propylamine	ND	0.140	0.250	-	-	-
N-Nitrosodiphenylamine	ND	0.150	0.250	-	-	-
Pentachlorophenol	ND	0.0140	0.0310	-	-	-
Phenanthrene	ND	0.000670	0.00500	-	-	-
Phenol	ND	0.000940	0.00500	-	-	-
Pyrene	ND	0.00140	0.00250	-	-	-
Pyridine	ND	0.180	0.250	-	-	-

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/25/2020

Date Analyzed: 02/26/2020

Instrument: GC21

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194583

Extraction Method: SW3550B

Analytical Method: SW8270C

Unit: mg/Kg

Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery						
2-Fluorophenol	1.21			1.25	97	54-131
Phenol-d5	1.21			1.25	97	52-129
Nitrobenzene-d5	1.13			1.25	90	43-127
2-Fluorobiphenyl	1.13			1.25	91	42-116
2,4,6-Tribromophenol	0.434			1.25	35,F3	39-119
4-Terphenyl-d14	0.919			1.25	74	36-118



Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/25/2020

Date Analyzed: 02/26/2020

Instrument: GC21

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194583

Extraction Method: SW3550B

Analytical Method: SW8270C

Unit: mg/Kg

Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,1-Biphenyl	0.115	0.119	0.12	92	95	67-130	3.57	30
1,2,4-Trichlorobenzene	2.81	2.85	2.5	112	114	69-130	1.54	30
1,2-Dichlorobenzene	2.08	2.03	2.5	83	81	68-114	2.21	30
1,2-Diphenylhydrazine	2.66	2.67	2.5	106	107	62-142	0.579	30
1,3-Dichlorobenzene	2.13	2.05	2.5	85	82	69-116	3.76	30
1,4-Dichlorobenzene	2.18	2.13	2.5	87	85	64-117	2.23	30
1-Methylnaphthalene	0.115	0.117	0.12	92	93	65-134	1.63	30
2,4,5-Trichlorophenol	0.128	0.139	0.12	102	111	68-150	8.57	30
2,4,6-Trichlorophenol	0.120	0.132	0.12	96	105	70-144	9.46	30
2,4-Dichlorophenol	0.134	0.145	0.12	107	116	78-144	8.06	30
2,4-Dimethylphenol	2.73	2.79	2.5	109	111	71-152	2.08	30
2,4-Dinitrophenol	0.369	0.496	2.5	15	20	1-156	29.4	30
2,4-Dinitrotoluene	0.135	0.145	0.12	108	116	68-144	7.00	30
2,6-Dinitrotoluene	0.117	0.126	0.12	94	101	69-148	7.01	30
2-Chloronaphthalene	2.48	2.77	2.5	99	111	71-133	11.1	30
2-Chlorophenol	0.109	0.111	0.12	87	89	73-133	1.89	30
2-Methylnaphthalene	0.110	0.112	0.12	88	90	72-139	2.35	30
2-Methylphenol (o-Cresol)	2.83	2.78	2.5	113	111	69-138	1.88	30
2-Nitroaniline	13.9	14.3	12.5	111	114	72-143	2.68	30
2-Nitrophenol	13.2	13.9	12.5	106	111	80-141	4.80	30
3 & 4-Methylphenol (m,p-Cresol)	2.60	2.48	2.5	104	99	69-128	4.68	30
3,3-Dichlorobenzidine	0.110	0.115	0.12	88	92	11-163	4.36	30
3-Nitroaniline	13.8	13.9	12.5	110	111	57-122	0.710	30
4,6-Dinitro-2-methylphenol	3.20	4.12	12.5	26	33	14-155	25.3	30
4-Bromophenyl Phenyl Ether	2.47	2.52	2.5	99	101	68-136	1.66	30
4-Chloro-3-methylphenol	2.65	2.80	2.5	106	112	78-149	5.60	30
4-Chloroaniline	0.116	0.120	0.12	93	96	46-130	3.42	30
4-Chlorophenyl Phenyl Ether	2.46	2.57	2.5	98	103	71-132	4.18	30
4-Nitroaniline	13.9	13.9	12.5	111	112	68-133	0.452	30
4-Nitrophenol	12.6	13.2	12.5	101	105	67-144	4.08	30
Acenaphthene	0.131	0.136	0.12	105	109	68-134	3.77	30
Acenaphthylene	0.0936	0.0976	0.12	75	78	65-141	4.18	30
Acetochlor	2.59	2.66	2.5	104	106	65-136	2.82	30
Anthracene	0.150	0.152	0.12	120	121	65-147	1.25	30
Benzo (a) anthracene	0.108	0.113	0.12	87	90	61-136	4.37	30
Benzo (a) pyrene	0.101	0.109	0.12	81	87	59-150	7.72	30
Benzo (b) fluoranthene	0.0863	0.0905	0.12	69	72	43-160	4.73	30

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Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/25/2020

Date Analyzed: 02/26/2020

Instrument: GC21

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194583

Extraction Method: SW3550B

Analytical Method: SW8270C

Unit: mg/Kg

Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Benzo (g,h,i) perylene	0.114	0.121	0.12	91	97	54-142	6.27	30
Benzo (k) fluoranthene	0.140	0.142	0.12	112	114	59-141	1.12	30
Benzyl Alcohol	12.4	12.1	12.5	100	97	48-145	2.51	30
Bis (2-chloroethoxy) Methane	2.57	2.57	2.5	103	103	71-138	0.0662	30
Bis (2-chloroethyl) Ether	0.0929	0.0909	0.12	74	73	60-128	2.11	30
Bis (2-chloroisopropyl) Ether	0.105	0.102	0.12	84	82	67-129	2.25	30
Bis (2-ethylhexyl) Adipate	2.42	2.52	2.5	97	101	56-162	4.10	30
Bis (2-ethylhexyl) Phthalate	0.104	0.110	0.12	83	88	49-168	5.92	30
Butylbenzyl Phthalate	0.107	0.115	0.12	86	92	57-161	7.31	30
Chrysene	0.123	0.126	0.12	99	100	58-140	1.86	30
Dibenzo (a,h) anthracene	0.107	0.114	0.12	85	92	57-151	7.06	30
Dibenzofuran	2.39	2.48	2.5	96	99	70-134	3.63	30
Diethyl Phthalate	0.130	0.136	0.12	104	109	67-146	4.46	30
Dimethyl Phthalate	0.120	0.125	0.12	96	100	70-135	3.80	30
Di-n-butyl Phthalate	0.110	0.114	0.12	88	91	65-147	4.05	30
Di-n-octyl Phthalate	0.0958	0.104	0.12	77	83	51-175	8.23	30
Fluoranthene	0.115	0.117	0.12	92	94	66-146	1.83	30
Fluorene	0.130	0.136	0.12	104	109	72-142	4.34	30
Hexachlorobenzene	0.120	0.119	0.12	96	95	65-127	1.12	30
Hexachlorobutadiene	0.116	0.119	0.12	93	96	68-131	2.54	30
Hexachlorocyclopentadiene	12.2	13.3	12.5	97	106	38-134	8.58	30
Hexachloroethane	0.101	0.0995	0.12	81	80	57-117	1.47	30
Indeno (1,2,3-cd) pyrene	0.104	0.111	0.12	83	89	57-145	6.56	30
Isophorone	2.50	2.55	2.5	100	102	69-139	2.00	30
Naphthalene	0.108	0.109	0.12	86	87	64-127	1.41	30
Nitrobenzene	2.46	2.56	2.5	98	102	66-136	3.83	30
N-Nitrosodi-n-propylamine	2.14	2.08	2.5	86	83	74-118	3.06	30
N-Nitrosodiphenylamine	2.66	2.65	2.5	106	106	67-138	0.568	30
Pentachlorophenol	0.412	0.474	0.62	66	76	50-153	14.0	30
Phenanthrene	0.126	0.126	0.12	100	101	66-129	0.406	30
Phenol	0.496	0.485	0.50	99	97	58-136	2.25	30
Pyrene	0.128	0.131	0.12	102	105	55-148	2.70	30
Pyridine	1.56	1.56	2.5	62	62	46-93	0.165	30

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/25/2020
Date Analyzed: 02/26/2020
Instrument: GC21
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194583
Extraction Method: SW3550B
Analytical Method: SW8270C
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Surrogate Recovery								
2-Fluorophenol	1.04	1.04	1.25	83	83	68-128	0.277	30
Phenol-d5	1.06	1.07	1.25	85	86	73-121	1.39	30
Nitrobenzene-d5	1.05	1.12	1.25	84	90	59-138	7.17	30
2-Fluorobiphenyl	1.05	1.12	1.25	84	90	59-129	6.09	30
2,4,6-Tribromophenol	1.07	1.11	1.25	86	89	46-142	3.76	30
4-Terphenyl-d14	0.885	0.929	1.25	71	74	50-143	4.91	30

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Biphenyl	2	0.121	0.131	0.12	ND<0.21	97	105	2-199	7.64	30
1,2,4-Trichlorobenzene	2	3.21	3.11	2.5	ND<4.0	129	124	36-129	3.38	30
1,2-Dichlorobenzene	2	2.70	2.83	2.5	ND<4.0	108	113	31-136	4.63	30
1,2-Diphenylhydrazine	2	2.45	2.48	2.5	ND<4.0	98	99	37-127	1.01	30
1,3-Dichlorobenzene	2	2.65	2.80	2.5	ND<4.0	106	112	33-129	5.37	30
1,4-Dichlorobenzene	2	2.73	2.90	2.5	ND<4.0	109	116	30-129	6.16	30
1-Methylnaphthalene	2	0.118	0.126	0.12	ND<0.021	94	101	28-150	6.65	30
2,4,5-Trichlorophenol	2	0.108	0.113	0.12	ND<0.040	87	90	36-143	4.22	30
2,4,6-Trichlorophenol	2	0.100	0.112	0.12	ND<0.21	80	90	30-139	11.6	30
2,4-Dichlorophenol	2	0.115	0.126	2.5	ND<0.21	5,F1	5,F1	45-134	9.48	30
2,4-Dimethylphenol	2	2.17	2.52	2.5	ND<4.0	87	101	27-149	15.0	30
2,4-Dinitrophenol	2	4.56	4.66	2.5	ND<2.1	182,F1	187,F1	2-153	2.29	30
2,4-Dinitrotoluene	2	0.168	0.171	0.12	ND<0.10	NR,F16	137	20-153	NR	30
2,6-Dinitrotoluene	2	0.133	0.144	0.12	ND<0.040	106	115	24-153	8.33	30
2-Chloronaphthalene	2	2.53	2.92	2.5	ND<4.0	101	117	35-124	14.3	30
2-Chlorophenol	2	0.120	0.130	0.12	ND<0.080	96	104	44-140	7.91	30
2-Methylnaphthalene	2	0.117	0.126	0.12	ND<0.040	93	101	38-139	7.81	30
2-Methylphenol (o-Cresol)	2	2.85	3.60	2.5	ND<8.0	114	144	36-145	23.2	30
2-Nitroaniline	2	10.1	11.7	12.5	ND<20	81	94	35-133	14.8	30
2-Nitrophenol	2	9.93	10.4	12.5	ND<20	79	83	38-127	4.46	30
3 & 4-Methylphenol (m,p-Cresol)	2	2.66	2.67	2.5	ND<4.0	106	107	29-158	0.601	30
3,3-Dichlorobenzidine	2	0.114	0.134	0.12	ND<0.040	91	107	16-152	16.1	30
3-Nitroaniline	2	10.2	11.5	12.5	ND<20	82	92	32-127	11.8	30
4,6-Dinitro-2-methylphenol	2	21.8	22.4	12.5	ND<20	175,F1	180,F1	2-145	2.69	30
4-Bromophenyl Phenyl Ether	2	2.32	2.50	2.5	ND<4.0	93	100	34-128	7.64	30
4-Chloro-3-methylphenol	2	2.02	2.23	2.5	ND<4.0	81	89	37-148	9.92	30

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Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/25/2020

Date Analyzed: 02/26/2020

Instrument: GC21

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194583

Extraction Method: SW3550B

Analytical Method: SW8270C

Unit: mg/Kg

Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
4-Chloroaniline	2	0.0976	0.115	0.12	ND<0.040	78	92	25-134	16.0	30
4-Chlorophenyl Phenyl Ether	2	2.63	2.68	2.5	ND<4.0	105	107	35-131	2.07	30
4-Nitroaniline	2	11.2	12.2	12.5	ND<20	89	97	34-132	8.50	30
4-Nitrophenol	2	10.2	11.5	12.5	ND<20	81	92	28-137	12.3	30
Acenaphthene	2	0.146	0.163	0.12	ND<0.021	117	130	31-140	10.7	30
Acenaphthylene	2	0.0902	0.101	0.12	ND<0.021	72	80	23-142	10.9	30
Acetochlor	2	1.78	1.89	2.5	ND<4.0	71	75	3-151	5.69	30
Anthracene	2	0.155	0.176	0.12	0.02157	107	124	27-142	12.8	30
Benzidine	2	3.49	4.20	12.5	ND<20	28	34	2-88	18.3	30
Benzo (a) anthracene	2	0.164	0.186	0.12	ND<0.080	71	88	2-149	12.3	30
Benzo (a) pyrene	2	0.127	0.150	0.12	ND<0.040	80	98	15-158	16.3	30
Benzo (b) fluoranthene	2	0.0968	0.118	0.62	ND<0.10	9	13	2-145	20.0	30
Benzo (g,h,i) perylene	2	0.147	0.182	0.12	ND<0.040	88	116	4-155	21.5	30
Benzo (k) fluoranthene	2	0.160	0.192	0.12	ND<0.021	112	138	19-148	18.4	30
Benzyl Alcohol	2	11.7	12.5	12.5	ND<20	94	100	2-163	6.85	30
Bis (2-chloroethoxy) Methane	2	2.46	2.58	2.5	ND<4.0	98	103	35-132	4.88	30
Bis (2-chloroethyl) Ether	2	0.108	0.117	0.12	ND<0.040	87	94	40-140	7.97	30
Bis (2-chloroisopropyl) Ether	2	0.125	0.133	0.12	ND<0.040	100	106	33-147	6.45	30
Bis (2-ethylhexyl) Adipate	2	2.61	3.06	2.5	ND<8.0	104	122	31-138	15.7	30
Bis (2-ethylhexyl) Phthalate	2	0.117	0.159	0.12	ND<0.080	94	127	6-195	30.0	30
Butylbenzyl Phthalate	2	0.103	0.128	0.12	ND<0.40	82	102	32-143	22.0	30
Chrysene	2	0.161	0.176	0.12	ND<0.040	100	113	18-137	9.22	30
Dibenzo (a,h) anthracene	2	0.0985	0.119	0.12	ND<0.040	79	96	18-149	19.1	30
Dibenzofuran	2	2.60	2.75	2.5	ND<4.0	104	110	34-132	5.49	30
Diethyl Phthalate	2	0.110	0.128	0.12	ND<0.080	88	102	38-146	14.6	30
Dimethyl Phthalate	2	0.105	0.118	0.12	ND<0.040	84	94	36-133	11.7	30
Di-n-butyl Phthalate	2	0.104	0.120	0.12	ND<0.080	83	96	42-145	14.6	30
Di-n-octyl Phthalate	2	0.117	0.163	0.12	ND<0.080	94	130	23-198	32.7,F1	30
Fluoranthene	2	0.165	0.192	0.12	0.07625	71	92	9-169	14.8	30
Fluorene	2	0.136	0.151	0.12	ND<0.040	109	121	31-148	10.0	30
Hexachlorobenzene	2	0.123	0.135	0.12	ND<0.021	98	108	33-124	8.99	30
Hexachlorobutadiene	2	0.128	0.134	0.12	ND<0.040	102	107	32-131	4.43	30
Hexachlorocyclopentadiene	2	12.8	14.6	12.5	ND<32	103	117,F1	2-108	12.8	30
Hexachloroethane	2	0.131	0.139	0.12	ND<0.040	105	111	25-134	5.78	30
Indeno (1,2,3-cd) pyrene	2	0.125	0.157	0.12	ND<0.040	85	111	11-152	23.0	30
Isophorone	2	2.16	2.38	2.5	ND<4.0	87	95	34-126	9.63	30
Naphthalene	2	0.118	0.125	0.12	ND<0.021	94	100	20-146	6.17	30
Nitrobenzene	2	2.21	2.48	2.5	ND<4.0	88	99	29-139	11.5	30

(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.

Date Prepared: 02/25/2020

Date Analyzed: 02/26/2020

Instrument: GC21

Matrix: Soil

Project: 78-1225; San Pablo

WorkOrder: 2002874

BatchID: 194583

Extraction Method: SW3550B

Analytical Method: SW8270C

Unit: mg/Kg

Sample ID: MB/LCS/LCSD-194583
2002874-003AMS/MSD

QC Summary Report for SW8270C

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
N-Nitrosodi-n-propylamine	2	2.65	2.50	2.5	ND<4.0	106	100	29-146	5.71	30
N-Nitrosodiphenylamine	2	2.36	2.68	2.5	ND<4.0	94	107	27-130	12.4	30
Pentachlorophenol	2	0.336	0.362	0.62	ND<0.50	54	58	3-129	7.62	30
Phenanthrene	2	0.199	0.218	0.12	ND<0.080	97	112	2-176	9.05	30
Phenol	2	0.500	0.556	0.50	ND<0.080	100	111	24-151	10.6	30
Pyrene	2	0.167	0.188	0.12	0.06383	82	99	17-144	12.0	30
Pyridine	2	ND<4.00	2.10	2.5	ND<4.0	NR,F1	84	2-110	NR	30

Surrogate Recovery

2-Fluorophenol	2	1.13	1.15	1.25		91	92	56-152	1.40	30
Phenol-d5	2	0.989	1.12	1.25		79	90	54-146	12.5	30
Nitrobenzene-d5	2	1.01	1.02	1.25		81	81	47-147	0.711	30
2-Fluorobiphenyl	2	1.04	1.19	1.25		83	95	46-141	13.4	30
2,4,6-Tribromophenol	2	0.793	0.892	1.25		63	71	25-166	11.7	30
4-Terphenyl-d14	2	0.772	0.886	1.25		62	71	39-153	13.8	30



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/25/2020
Instrument: ICP-MS4
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194493
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194493

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Antimony	ND	0.0940	0.500	-	-	-
Arsenic	ND	0.140	0.500	-	-	-
Barium	ND	0.970	5.00	-	-	-
Beryllium	ND	0.0720	0.500	-	-	-
Cadmium	ND	0.0580	0.250	-	-	-
Chromium	ND	0.0920	0.500	-	-	-
Cobalt	ND	0.0560	0.500	-	-	-
Copper	ND	0.0690	0.500	-	-	-
Lead	ND	0.0940	0.500	-	-	-
Mercury	0.00900,J	0.00500	0.0500	-	-	-
Molybdenum	ND	0.230	0.500	-	-	-
Nickel	ND	0.0720	0.500	-	-	-
Selenium	ND	0.130	0.500	-	-	-
Silver	ND	0.0550	0.500	-	-	-
Thallium	ND	0.100	0.500	-	-	-
Vanadium	ND	0.0640	0.500	-	-	-
Zinc	ND	1.40	5.00	-	-	-
Surrogate Recovery						
Terbium	526			500	105	70-130



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/25/2020
Instrument: ICP-MS4
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194493
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/kg
Sample ID: MB/LCS/LCSD-194493

QC Summary Report for Metals

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Antimony	57.6	60.3	50	115	121	75-125	4.66	20
Arsenic	55.7	59.9	50	111	120	75-125	7.32	20
Barium	534	566	500	107	113	75-125	5.81	20
Beryllium	56.2	59.4	50	112	119	75-125	5.57	20
Cadmium	56.5	60.7	50	113	121	75-125	7.21	20
Chromium	54.5	58.5	50	109	117	75-125	7.01	20
Cobalt	55.4	58.0	50	111	116	75-125	4.62	20
Copper	55.8	59.6	50	112	119	75-125	6.59	20
Lead	54.0	57.1	50	108	114	75-125	5.70	20
Mercury	1.34	1.44	1.25	107	115	75-125	7.12	20
Molybdenum	55.2	58.2	50	110	116	75-125	5.25	20
Nickel	55.7	60.0	50	111	120	75-125	7.44	20
Selenium	55.1	59.8	50	110	120	75-125	8.09	20
Silver	52.5	55.7	50	105	111	75-125	5.93	20
Thallium	53.2	56.4	50	106	113	75-125	5.89	20
Vanadium	54.6	58.6	50	109	117	75-125	7.09	20
Zinc	557	602	500	111	120	75-125	7.69	20
Surrogate Recovery								
Terbium	576	605	500	115	121	70-130	4.94	20



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC19, GC7
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194495
Extraction Method: SW5035
Analytical Method: SW8021B/8015Bm
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-194495
2002874-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.700	1.00	-	-	-
MTBE	ND	0.00400	0.0500	-	-	-
Benzene	ND	0.00300	0.00500	-	-	-
Toluene	ND	0.00200	0.00500	-	-	-
Ethylbenzene	ND	0.00220	0.00500	-	-	-
m,p-Xylene	ND	0.00300	0.0100	-	-	-
o-Xylene	ND	0.00100	0.00500	-	-	-
Surrogate Recovery						
2-Fluorotoluene	0.0944			0.1	94	75-134



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 02/25/2020
Instrument: GC19, GC7
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194495
Extraction Method: SW5035
Analytical Method: SW8021B/8015Bm
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-194495
2002874-001AMS/MSD

QC Summary Report for SW8021B/8015Bm

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.529	0.520	0.60	88	87	82-118	1.54	20
MTBE	0.0779	0.0786	0.10	78	79	61-119	0.794	20
Benzene	0.0987	0.0954	0.10	99	95	77-128	3.36	20
Toluene	0.0997	0.0969	0.10	100	97	74-132	2.79	20
Ethylbenzene	0.101	0.0982	0.10	101	98	84-127	2.66	20
m,p-Xylene	0.208	0.203	0.20	104	102	80-120	2.35	20
o-Xylene	0.101	0.0995	0.10	101	99	80-120	1.94	20

Surrogate Recovery

2-Fluorotoluene	0.0977	0.0962	0.10	98	96	75-134	1.49	20
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Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	1	0.588	0.596	0.60	ND	98	99	58-129	1.34	20
MTBE	1	0.110	0.108	0.10	ND	104	102	47-118	1.47	20
Benzene	1	0.0946	0.0959	0.10	ND	95	96	55-129	1.37	20
Toluene	1	0.0992	0.100	0.10	ND	96	97	56-130	1.09	20
Ethylbenzene	1	0.0986	0.0998	0.10	ND	99	100	63-129	1.24	20
m,p-Xylene	1	0.206	0.212	0.20	ND	101	103	80-120	2.74	20
o-Xylene	1	0.0966	0.0974	0.10	ND	94	95	80-120	0.765	20

Surrogate Recovery

2-Fluorotoluene	1	0.0936	0.0952	0.10		94	95	62-126	1.73	20
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(Cont.)



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/26/2020
Date Analyzed: 02/27/2020
Instrument: GC3
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194701
Extraction Method: SW5035
Analytical Method: SW8021B/8015Bm
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-194701

QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.700	1.00	-	-	-
MTBE	ND	0.00400	0.0500	-	-	-
Benzene	ND	0.00300	0.00500	-	-	-
Toluene	ND	0.00200	0.00500	-	-	-
Ethylbenzene	ND	0.00220	0.00500	-	-	-
m,p-Xylene	ND	0.00300	0.0100	-	-	-
o-Xylene	ND	0.00100	0.00500	-	-	-

Surrogate Recovery

2-Fluorotoluene	0.0927			0.1	93	75-134
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Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.576	0.569	0.60	96	95	82-118	1.16	20
MTBE	0.0861	0.0922	0.10	86	92	61-119	6.85	20
Benzene	0.0957	0.0965	0.10	96	97	77-128	0.867	20
Toluene	0.0995	0.100	0.10	100	100	74-132	0.809	20
Ethylbenzene	0.0986	0.100	0.10	99	100	84-127	1.62	20
m,p-Xylene	0.200	0.202	0.20	100	101	80-120	1.00	20
o-Xylene	0.0960	0.0971	0.10	96	97	80-120	1.16	20

Surrogate Recovery

2-Fluorotoluene	0.0948	0.0958	0.10	95	96	75-134	0.998	20
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Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 02/24/2020
Date Analyzed: 02/24/2020 - 03/02/2020
Instrument: GC31A, GC31B
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 194496
Extraction Method: SW3550B
Analytical Method: SW8015B
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-194496
2002874-001AMS/MSD

QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	0.830	1.00	-	-	-
TPH-Motor Oil (C18-C36)	ND	3.80	5.00	-	-	-

Surrogate Recovery

C9	23.3			25	93	70-130
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Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	45.3	45.2	40	113	113	70-130	0.180	20

Surrogate Recovery

C9	23.1	22.9	25	92	92	70-130	0.919	20
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Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1	44.8	44.1	40	17.23	69,F1	67,F1	70-130	1.58	20

Surrogate Recovery

C9	1	24.2	24.3	25		97	97	70-130	0.510	20
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CHAIN-OF-CUSTODY RECORD

Page 1 of 1

WorkOrder: 2002874

ClientCode: GESIS

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☐ Detection Summary ☒ Dry-Weight

Report to:

Nicolas Haddad
Geo-Engineering Solutions, Inc.
2570 San Ramon Valley Blvd A102
San Ramon, CA 94583
(925) 215-7789 FAX:

Email: nhaddad@geo-eng.net
cc/3rd Party:
PO: 1225
Project: 78-1225; San Pablo

Bill to:

Colin Frost
Geo-Engineering Solutions, Inc.
2570 San Ramon Valley Blvd A102
San Ramon, CA 94583
cfrost@geo-eng.net; aghosheh@geo-en

Requested TAT: 5 days;

Date Received: 02/24/2020

Date Logged: 02/24/2020

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2002874-001	S-1	Soil	2/24/2020 00:00	<input type="checkbox"/>	A	A	A	A	A	A	A	A				
2002874-002	S-2	Soil	2/24/2020 00:00	<input type="checkbox"/>	A	A	A	A	A	A	A	A				
2002874-003	S-3	Soil	2/24/2020 00:00	<input type="checkbox"/>	A	A	A	A	A	A	A	A				

Test Legend:

1	8081PCB_S
5	CARB435_400
9	

2	8260B_S
6	G-MBTEx_S
10	

3	8270_SCSM_S
7	PRDisposal Fee
11	

4	CAM17MS_TTLC_S
8	TPH(DMO)_S
12	

Project Manager: Angela Rydelius

Prepared by: Tina Perez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.



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WORK ORDER SUMMARY

Client Name: GEO-ENGINEERING SOLUTIONS, INC.

Project: 78-1225; San Pablo

Work Order: 2002874

Client Contact: Nicolas Haddad

QC Level: LEVEL 2

Contact's Email: nhaddad@geo-eng.net

Comments:

Date Logged: 2/24/2020

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Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De- chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
2002874-001A	S-1	Soil	SW8015B (Diesel & Motor Oil)	1	8OZ GJ, Unpres	<input type="checkbox"/>	2/24/2020	5 days		<input type="checkbox"/>	
			SW8021B/8015Bm (G/MBTEX)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW6020 (CAM 17)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8270C (SVOCs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8260B (VOCs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8081A/8082 (OC Pesticides+PCBs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
2002874-002A	S-2	Soil	SW8015B (Diesel & Motor Oil)	1	8OZ GJ, Unpres	<input type="checkbox"/>	2/24/2020	5 days		<input type="checkbox"/>	
			SW8021B/8015Bm (G/MBTEX)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW6020 (CAM 17)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8270C (SVOCs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8260B (VOCs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8081A/8082 (OC Pesticides+PCBs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
2002874-003A	S-3	Soil	SW8015B (Diesel & Motor Oil)	1	8OZ GJ, Unpres	<input type="checkbox"/>	2/24/2020	5 days		<input type="checkbox"/>	
			SW8021B/8015Bm (G/MBTEX)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.



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WORK ORDER SUMMARY

Client Name: GEO-ENGINEERING SOLUTIONS, INC.

Project: 78-1225; San Pablo

Work Order: 2002874

Client Contact: Nicolas Haddad

QC Level: LEVEL 2

Contact's Email: nhaddad@geo-eng.net

Comments:

Date Logged: 2/24/2020

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☒ EQUIS ☐ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De- chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
2002874-003A	S-3	Soil	Asbestos, CARB 435, 400 Point	1	8OZ GJ, Unpres	<input type="checkbox"/>	2/24/2020	5 days		<input type="checkbox"/>	
			SW6020 (CAM 17)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8270C (SVOCs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8260B (VOCs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	
			SW8081A/8082 (OC Pesticides+PCBs)			<input type="checkbox"/>		5 days		<input type="checkbox"/>	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

Page 60 of 61



Sample Receipt Checklist

Client Name: **Geo-Engineering Solutions, Inc.**
Project: **78-1225; San Pablo**

Date and Time Received: **2/24/2020 13:04**

Date Logged: **2/24/2020**

Received by: **Tina Perez**

Logged by: **Tina Perez**

WorkOrder No: **2002874** Matrix: Soil
Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample IDs noted by Client on COC?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Date and Time of collection noted by Client on COC?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sampler's name noted on COC?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
COC agrees with Quote?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>
Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper containers/bottles?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NA <input type="checkbox"/>
Samples Received on Ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

(Ice Type: WET ICE)

Sample/Temp Blank temperature	Temp: 5.6°C	NA <input type="checkbox"/>
Water - VOA vials have zero headspace / no bubbles?	Yes <input type="checkbox"/> No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>
Sample labels checked for correct preservation?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes <input type="checkbox"/> No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>

UCMR Samples:

pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes <input type="checkbox"/> No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes <input type="checkbox"/> No <input type="checkbox"/>	NA <input checked="" type="checkbox"/>

Comments:



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Analytical Report

WorkOrder: 2002874 A

Report Created for: Geo-Engineering Solutions, Inc.

2570 San Ramon Valley Blvd A102
San Ramon, CA 94583

Project Contact: Nicolas Haddad

Project P.O.: 1225

Project: 78-1225; San Pablo

Project Received: 02/24/2020

Analytical Report reviewed & approved for release on 03/09/2020 by:

Susan Thompson
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.





Glossary of Terms & Qualifier Definitions

Client: Geo-Engineering Solutions, Inc.
Project: 78-1225; San Pablo
WorkOrder: 2002874 A

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)



Analytical Report

Client: Geo-Engineering Solutions, Inc.

Date Received: 02/24/2020 13:04

Date Prepared: 03/03/2020

Project: 78-1225; San Pablo

WorkOrder: 2002874

Extraction Method: CA Title 22

Analytical Method: SW6020

Unit: mg/L

Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
S-2	2002874-002A	Soil	02/24/2020	ICP-MS4 784SMPL.d	195048

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	03/05/2020 23:34

Analyst(s): DB



Quality Control Report

Client: Geo-Engineering Solutions, Inc.
Date Prepared: 03/03/2020
Date Analyzed: 03/05/2020
Instrument: ICP-MS4
Matrix: Soil
Project: 78-1225; San Pablo

WorkOrder: 2002874
BatchID: 195048
Extraction Method: CA Title 22
Analytical Method: SW6020
Unit: mg/L
Sample ID: MB/LCS/LCSD-195048

QC Summary Report for Metals (STLC)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.100	0.100	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	9.39	9.39	10	94	94	75-125	0.0341	20



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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2002874 A

ClientCode: GESIS

☐ Excel ☒ EQulS ☐ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☒ Dry-Weight

Report to:

Nicolas Haddad
Geo-Engineering Solutions, Inc.
2570 San Ramon Valley Blvd A102
San Ramon, CA 94583
(925) 215-7789 FAX:

Email: nhaddad@geo-eng.net
cc/3rd Party:
PO: 1225
Project: 78-1225; San Pablo

Bill to:

Colin Frost
Geo-Engineering Solutions, Inc.
2570 San Ramon Valley Blvd A102
San Ramon, CA 94583
cfrost@geo-eng.net; aghosheh@geo-en

Requested TAT: 5 days;

Date Received: 02/24/2020

Date Logged: 02/24/2020

Date Add-On: 03/02/2020

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2002874-002	S-2	Soil	2/24/2020 00:00	<input type="checkbox"/>	A											

Test Legend:

1	CRMS_STLC_S	2		3		4	
5		6		7		8	
9		10		11		12	

Project Manager: Angela Rydelius

Prepared by: Tina Perez

Add-On Prepared By: Kena Ponce

Comments: STLC Cr added 3/2/20 STAT

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.



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WORK ORDER SUMMARY

Client Name: GEO-ENGINEERING SOLUTIONS, INC.

Project: 78-1225; San Pablo

Work Order: 2002874

Client Contact: Nicolas Haddad

QC Level: LEVEL 2

Contact's Email nhaddad@geo-eng.net

Comments: STLC Cr added 3/2/20 STAT

Date Logged: 2/24/2020

Date Add-On: 3/2/2020

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
2002874-002A	S-2	Soil	SW6020 (Chromium) (STLC)	1	8OZ GJ, Unpres	2/24/2020	5 days*		<input type="checkbox"/>	


NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

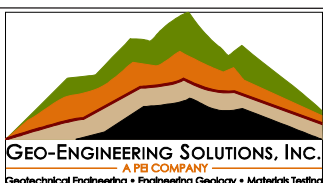
- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H₂SO₄ 4=HNO₃ 5=NaOH 6=ZnOAc/NaOH 7=None

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 Approximate Soil Sample Location



Residential Development
2364 Rd 20
San Pablo, CA

73-1225

March 2020

Site Map and CPT
Locations

Figure 1