Volume II

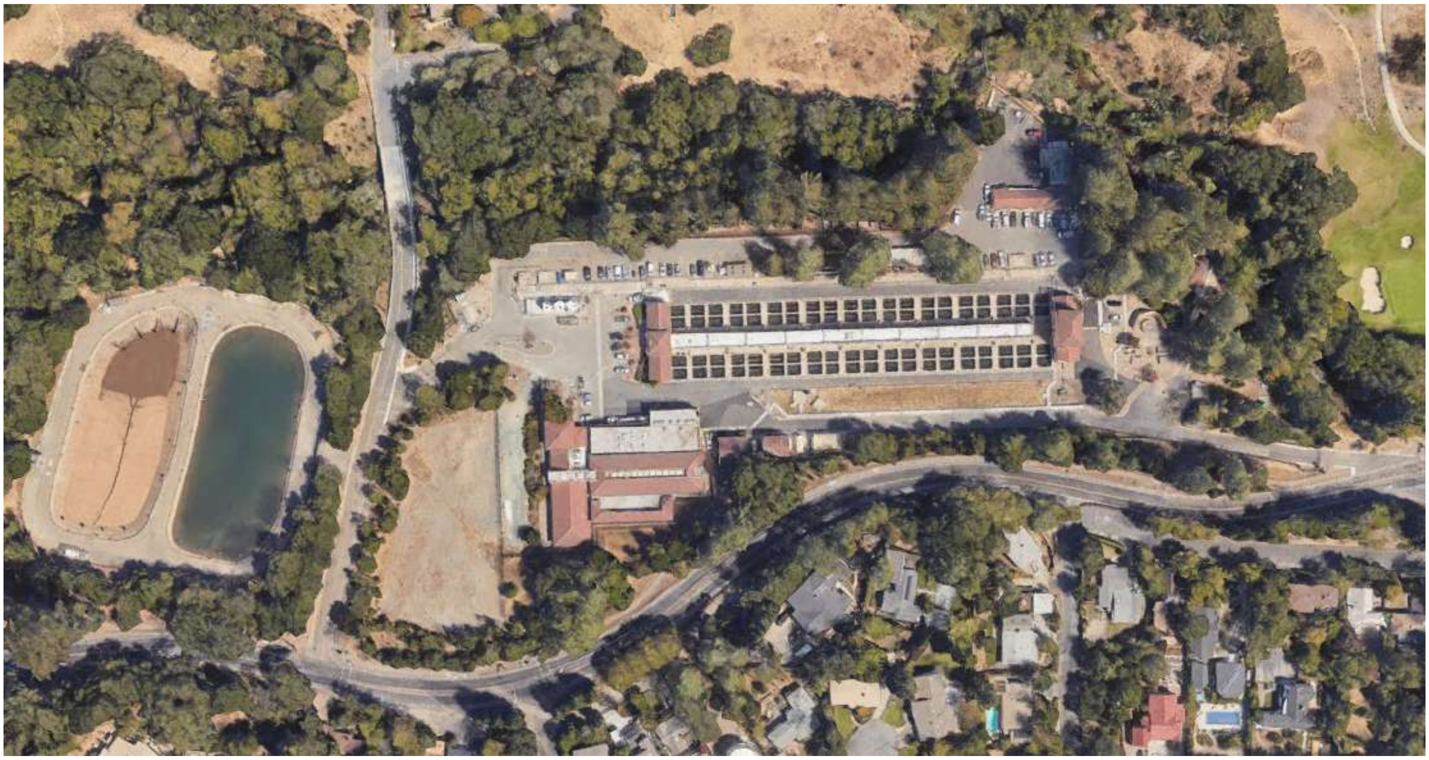
ORINDA WATER TREATMENT PLANT DISINFECTION IMPROVEMENTS PROJECT

Draft Supplemental Environmental Impact Report - Appendices

SCH #2019080297

Prepared for
East Bay Municipal Utility District

July 2020



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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
2017 BODR	Basis of Design Report prepared in October 2017
2017 CAP	2017 Clean Air Plan
AB	California Assembly Bill
ACM	asbestos-containing material
APCO	Air Pollution Control Officer
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
ATCM	Airborne Toxic Control Measures
BAAQMD	Bay Area Air Quality Management District
Basin Plan	Water Quality Control Plan for the San Francisco Bay Basin
BMPs	best management practices
BOE	State Board of Equalization
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
Cal EPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Division of Occupational Safety and Health
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCB	Chlorine Contact Basin
CCCHSD	Contra Costa County Health Services Department
CCR	California Code of Regulations

CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFPP	Construction Fire Prevention Plan
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGP	Construction General Permit
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	Carbon dioxide
CO_2e	CO_2 equivalents
Corps	U.S. Army Corps of Engineers
CPUC	California Public Utilities Commission
CRPR	California Rare Plant Rank
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CY	cubic yards
D/DBP	Disinfectants and Disinfection Byproduct
dB	decibel
dBA	A-weighted decibels
DPM	Diesel Particulate Matter
DTSC	Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
EBWMP	East Bay Watershed Management Plan
EI	Expansivity Index
EIR	Environmental Impact Report
EOP	Emergency Operations Plan

ESA	Environmental Science Associates
ESLs	Environmental Screening Levels
FACS	Forensic Analytical Consulting Services
Fed/OSHA	U.S. Department of Labor Occupational Safety and Health Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FWS	Filter Water System
G	global
GHG	greenhouse gas
GWh	gigawatt hour
GWP	global warming potential
HASP	Health and Safety Plan
HCP	Habitat Conservation Plan
HFCs	hydrofluorocarbons
HI	Hazard index
HMBP	Hazardous Materials Business Plan
HRA	health risk assessment
HVAC	heating/ventilation/air conditioning
IBC	International Building Code
IGP	Industrial Stormwater General Permit
in/sec	inches/second
IPCC	International Panel on Climate Change
LAPP1	Los Altos Pumping Plant No. 1
LAPP2	Los Altos Pumping Plant No. 2
LBP	lead-based paint
L_{dn}	day-night average sound level
L_{eq}	equivalent sound level
LID	Low Impact Development
L_{max}	maximum sound levels
LRA	Local Responsibility Area

LT2 Rule	Long Term 2 Enhanced Surface Water Treatment Rule, Interim Enhanced Surface Water Treatment
MAUVE	Maintenance and UV Electrical
MEIR	Maximum Exposed Individual Receptor
MG	million gallon
MGD	million gallons per day
M_L	local magnitude
MMRP	Mitigation Monitoring and Reporting Program
MOFD	Moraga-Orinda Fire District
MRP	Municipal Regional Stormwater NPDES Permit
MS4	Municipal Separate Storm Sewer System
MT	metric tons
M_W	moment magnitude
MWh	megawatt-hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NFPA	National Fire Protection Association
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOC	Notice of Completion
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OEHHA	California Office of Environmental Health Hazard Assessment
OES	State Office of Emergency Services
OPR	Governor’s Office of Planning and Research
PCBs	polychlorinated biphenyls
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
PM_{10}	particulate matter less than 10 microns
$PM_{2.5}$	particulate matter less than 2.5 microns
ppm	parts per million
PPV	peak particle velocity

PRC	Public Resources Code
QSD	qualified SWPPP developer
RCRA	Resource Conservation and Recovery Act of 1976
REC	recognized environmental condition
RPS	Renewables Portfolio Standard
RSLs	Regional Screening Levels
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SB X1-2	Senate Bill 2 of the First Extraordinary Session
SCAQMD	South Coast Air Quality Management District
SDS	Safety Data Sheet
SEIR	Supplemental EIR
SEMS	California Standardized Emergency Management System
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SHMA	Seismic Hazards Mapping Act
SIP	State Implementation Plan
SP	Special Publication
SRA	State Responsibility Area
STLC	Soluble Threshold Limit Concentration
SVP	Society of Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	toxic air contaminants
TCLPs	Toxic Characteristic Leaching Procedures
TCR	The Climate Registry
the Board	Board of Forestry and Fire Protection
TMDL	total maximum daily load
TSCA	Toxic Substances Control Act
TTLCs	Threshold Limit Concentrations
TWS	Treated Water System

U.S. EPA	United States Environmental Protection Agency
U.S.C.	United States Code
UBC	Uniform Building Code
UCMP	University of California Museum of Paleontology
USC	United States Code
USDOT	U.S. Department of Transportation
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USPS	U.S. Postal Service
UST	underground storage tank
UV	ultraviolet
VdB	vibration decibel
VMT	vehicle miles traveled
VOCs	volatile organic compounds
WBWG	Western Bat Working Group
WCDP	Water Control and Disposal Plan
WDRs	Waste Discharge Requirements
WGCEP	Working Group on California Earthquake Probabilities
WOTUS	waters of the United States
WTP	Water Treatment Plant
WTTIP	Water Treatment and Transmission Improvements Program

APPENDIX A

Adopted Mitigation Measures from the EBMUD Water Treatment and Transmission Improvements Program Incorporated into Orinda Water Treatment Plant Disinfection Improvements Project

This appendix lists mitigation measures associated with the projects proposed at the Orinda Water Treatment Plant (WTP) that were identified and evaluated as part of East Bay Municipal Utility District's (EBMUD's) Water Treatment and Transmission Improvements Program (WTTIP). The EBMUD Board of Directors adopted these measures on December 12, 2006 to reduce impacts to a less than significant level. These mitigation measures are incorporated into the Orinda WTP Disinfection Improvements Project.

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TABLE A-1
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures
Land Use, Planning, and Recreation
No mitigation(s) required.
Visual Quality
Measure 3.3-1: For stationary (non-pipeline) projects expected to be constructed over a period of one year or more, the District will require the contractor to ensure that construction-related activity is as clean and inconspicuous as practical by storing building materials and equipment within the proposed construction staging areas or in areas that are generally away from public view and by removing construction debris promptly at regular intervals and placing black fabric fence screening on fences where feasible.
Measure 3.3-2a: The District will implement landscaping plans prepared for the following WTTIP projects: Lafayette WTP (Alternative 1), Orinda WTP (Alternative 1 or 2), Walnut Creek WTP (Alternative 1 or 2), Sobrante WTP (Alternative 1or 2), Ardith Reservoir and Donald Pumping Plant, Happy Valley Pumping Plant, Highland Reservoir, Sunnyside Pumping Plant, Tice Pumping Plant, and Withers Pumping Plant. ■ For each project (with the exception of the Fay Hill Pumping Plant), the District will plant native vegetation and/or construct earth berms around all proposed above-ground facilities to provide screening, consistent with the requirements set forth in Measure 3.6-1. Landscaping will include revegetation of disturbed areas to minimize textural contrasts with the surrounding vegetation. ■ The District will replace any landscaping at the WTTIP project sites that is removed or destroyed during construction consistent with landscape plans. New plants would include grasses, shrubs, and trees typical of the surrounding area. The District will consult with the appropriate jurisdiction when developing final landscaping plans. For disturbance of natural, non-landscaped areas, se Measure 3.6-3c in Section 3.6, Biological Resources. ■ The District will also install additional landscaping: (1) north of Manzanita Drive at the Orinda WTP to provide additional screening of existing ponds or new above-ground facilities, and (2) along Mt. Diablo Boulevard at the southeastern edge of the Lafayette WTP under Alternative 2 near the exit drive. ■ Implement Measure 3.6-1b in Section 3.6 regarding pruning. ■ For each project listed in the first bullet (with the exception of Highland Reservoir), the District will coordinate with and involve neighborhood representatives during the development of final landscaping plans. ■ The contractor will be required to warrant landscape plantings for one year after project completion. ■ The District will landscape areas that will not be disturbed by construction *before construction begins* in order to assist in preservation of views at the Walnut Creek WTP and proposed Ardith Reservoir site.
Measure 3.3-2b: For each project (with the exception of the Fay Hill Pumping Plant and pipelines in roadways), the District will ensure that its contractors restore disturbed, graded areas to a natural-appearing landform.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures
Visual Quality (cont.)
Measure 3.3-2c: The District will use design elements to enhance the aesthetic appearance of proposed facilities and to integrate them with the existing visual environment. Proposed facilities will be painted or include appropriate concrete admixtures to achieve low-glare, earth-tone colors that blend with the surrounding terrain and visual setting. For each project, colors will be selected based on site-specific conditions with the goal of (1) reducing the visual contrast between new facilities and the surrounding natural landscape setting and/or (2) integrating the facility appearance with the neighboring built environment. Concrete structures need not be painted; however, integral coloring should be employed, as noted above, where structures are seen from sensitive community viewpoints. ▪ At the Lafayette WTP, landscaped berms may be incorporated into the final site and landscape plans at proposed clearwell sites in order to screen views from the Walter Costa Trail. ▪ At the Orinda WTP backwash water facility use textures, colors and materials that will blend with existing filter plant buildings. ▪ For the Tice, Withers, Happy Valley, and Sunnyside Pumping Plants, new pump structures and buildings will include architectural treatment and design elements (such as pitched roofs, roof overhangs, or ornamental window or trim detail) to enhance the appearance of new facilities. ▪ For the Lafayette WTP, Orinda WTP, Happy Valley and Tice Pumping Plants, the design of new walls, gates, and fencing will include aesthetic architectural treatment where facilities are located near public trails, residences, or scenic roadways. ▪ For the Walnut Creek WTP, EBMUD will meet with the City to discuss integration of the design of the new Leland Pumping Plant to be consistent with the surrounding neighborhood environment and the existing WTP.
Measure 3.3-3: Implement Measures 3.3-2a through 3.3-2c, as detailed above.
Measure 3.3-5b (Applies to all facilities where permanent exterior lighting will be installed): The District will ensure that new lighting utilizes cutoff shields and nonglare fixture design.
Measure 3.3-5c (Applies to all facilities where permanent exterior lighting will be installed): To the extent possible, the District will ensure that all permanent exterior lighting is directed onsite and downward. In addition, new lighting will be oriented to ensure that no light source is directly visible from neighboring residential areas and will be installed with motion-sensor activation. In addition, highly reflective building materials and/or finishes will not be used in the designs for proposed structures, including fencing and light poles. In accordance with Measure 3.2-1b, above, landscaping will be provided around proposed facilities. This vegetation will be selected, placed, and maintained to minimize offsite light and glare in surrounding areas.
Geology, Soils, and Seismicity
Measure 3.4-2: During the design phase for all WTTIP project components that require ground-breaking activities (excluding pipelines), the District will perform site-specific, design-level geotechnical evaluations to identify potential secondary ground failure hazards (i.e., seismically-induced settlement) associated with the expected level of seismic ground shaking. The geotechnical analysis would provide recommendations to mitigate those hazards in the final design and, if necessary during construction. The site-specific design-level geotechnical evaluations, based on the site conditions and location and professional opinion of the geotechnical engineer, could include subsurface drilling, soil testing, and analysis of site seismic response. The geotechnical engineer would review the seismic design criteria of facilities to ensure that facilities are designed to withstand the highest expected peak acceleration, set forth by the CBC for each site. Recommendations resulting from findings of the geotechnical study will be incorporated into the design and construction of proposed facilities. Design and construction for buildings will be performed in accordance with the District's seismic design standards, which meet and/or exceed design standards for Seismic Zone 4 of the Uniform Building Code.

TABLE A-1 (CONTINUED) WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Geology, Soils, and Seismicity (cont.)

Measure 3.4-3a: During the design phase for all WTTIP project components that require ground-breaking activities (excluding pipelines), the District will perform site-specific design-level geotechnical evaluations to identify geologic hazards and provide recommendations to mitigate those hazards in the final design and during construction The geotechnical evaluations, conducted by a California registered professional engineer, will include site-specific investigations, which may include, if necessary, soil sampling and testing to determine the presence and characteristics of potentially compressible soils, the engineering properties of the proposed foundation material, the depth and thickness of soil layers, and the depth to groundwater. Based on the findings of the investigations, the registered professional shall formulate adequate measures to reduce the expansivity index of the site soil to a low expansion potential (Expansivity Index (EI) less than 50) as defined in the 1997 Uniform Building Code. For compressible soils, the registered professional would develop and implement a strategy to improve the soil to achieve settlements below what the proposed structure can tolerate, as determined through laboratory soils testing and professional judgment. Feasible mitigation measures, as listed below, are standard engineering practice and are common engineering design strategies used to overcome problematic soil conditions.

- Removal and replacement of problematic topsoil
- Soil pre-compression, using vertical drains, surcharge fills or dynamic compaction
- Installation of deep foundations (i.e., piles, drilled piers)
- Deep mixing of compressible or expansive soils with stabilizing agents

Mitigation measures included in the geotechnical evaluations will be incorporated into the project design specifications and would become part of the project.

Measure 3.4-3b: The District will include in the contract specifications that any fill will be selected, placed, compacted, and inspected in accordance with plans and specifications prepared by a licensed professional engineer in accordance with standard and accepted engineering protocols (inspection, compaction-density testing, in-situ field testing) necessary to prevent engineered fill soils from becoming expansive or compressible after placement.

Measure 3.4-4: During the design phase for all WTTIP project components that require ground-breaking activities (excluding pipelines), the District will perform site-specific design-level geotechnical evaluations to identify geologic hazards and provide recommendations to mitigate those hazards in the final design and during construction. The design-level geotechnical evaluations will include the collection of subsurface data for determining liquefaction potential. The evaluation and mitigation of liquefaction hazards shall be in conformance with the California Geological Survey's Special Publication 117, *Guidelines for Evaluating and Mitigating Seismic Hazards in California,* which provides methods to identify, evaluate, and reduce the hazards and earthquake-induced landslide hazards as required under the Seismic Hazards Mapping Act (SHMA) of 1990. The evaluation and mitigation shall be conducted by a California registered professional engineer or California certified engineering geologist. When site-specific testing identifies a potential for significant liquefaction-induced ground failures and damage to project facilities, appropriate feasible measures, as recommended in SP-117, shall be developed and incorporated into the project design. Because the project sites are not located in an area zoned under the SHMA, review of the investigation report by the CGS is not required. For all pipelines located in liquefaction hazard areas, appropriate piping material with the ability to deform without rupture (e.g. ductile steel) will be used. For large diameter pipes (greater than 12 inches diameter) located in high liquefaction hazard areas, a geotechnical evaluation will be conducted. Measures to minimize significant liquefaction hazards could include the following:

- Densification or dewatering of surface or subsurface soils
- Construction of pile or pier foundations to support pipelines and/or buildings,
- Removal of material that could undergo liquefaction in the event of an earthquake, and replacement with stable material,
- Modification of site geometry to reduce the risk of translational site instability.

Hydrology and Water Quality

Measure 3.5-1a: EBMUD will incorporate into contract specifications the requirement for the grading of construction staging areas to contain surface runoff so that contaminants such as oil, grease, and fuel products do not drain towards receiving waters. If heavy-duty construction equipment is stored overnight at the construction staging areas, drip pans will be placed beneath the machinery engine block and hydraulic systems to prevent any leakage from entering runoff or receiving waters.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Biological Resources

Measure 3.6-1a: For each project site (except for the Walnut Creek WTP and the Lafayette WTP under Alternative 2), EBMUD will prepare a map indicating the trees to be removed and retained (preserved). Prior to the start of any clearing, stockpiling, excavation, grading, compaction, paving, change in ground elevation, or construction, retained trees that are adjacent to or within project construction areas will be identified and clearly delineated by protective fencing (e.g., short post and plank walls), which will be installed at the dripline of each tree to hold back fill. The delineation markers will remain in place for the duration of all construction work. Where proposed development or other site work must encroach upon the dripline of a preserved tree, special construction techniques will be required to allow the roots of remaining trees within the project site to breathe and obtain water (examples include, but are not limited to, using hand equipment for trenching and/or allowing only one pass through a tree's dripline). Tree wells or other techniques may be used where advisable by a certified arborist.

Excavation adjacent to any trees will be performed in a manner that causes only minimal root damage. The following will not occur within the dripline of any retained tree: parking; storage of vehicles, equipment, machinery, stockpiles of excavated soils, or construction materials; or dumping of oils or chemicals.

Measure 3.6-1b: For each project site (except for the Walnut Creek WTP and the Lafayette WTP under Alternative 2), all pruning of preserved trees will be performed by a certified arborist. For each project site (except for the Walnut Creek WTP and the Lafayette WTP under Alternative 2), all pruning of preserved trees will be performed by a certified arborist. No more than 25 percent of a tree's canopy will be removed. Tree replacement will adhere to the following guidelines:

- If any protected tree native to the local area, such as valley oak and coast live oak, is removed, the District will replace it on a 3:1 basis with native trees of the same species as those removed.
- All non-native protected trees which are removed will be replaced at a 1:1 ratio with a non-invasive tree species.
- Non-native trees removed from a natural environment will be replaced with a native species that occurs in the area.
- Replacement trees will be planted on site where feasible. Where this is not feasible, trees will be planted at ecologically appropriate sites on EBMUD watershed lands.
- In natural areas, when the trees removed are locally native and when the replacement planting will occur on site, a species replacement ratio reflecting the tree species composition of the site will be used.
- In lieu of tree replacement the District would consider the establishment of permanent conservation easements on EDMUD watershed lands that support high quality oak woodlands. Oak woodland acreage lost through individual tree removal will be quantified prior to initiation of project construction activities and concurrent with the mapping activities to occur under Measure 3.6-1a.

Measure 3.6-1c: For each project site (except for the Walnut Creek WTP and the Lafayette WTP under Alternative 2), the contractor will be required to warrant tree health for one year after project completion and the District will guarantee the health of all trees to be preserved within and adjacent to the construction corridor of project-related pipeline and facility sites for two additional years, for a total of three years. The guarantee period for a tree will be five years if the District constructs or installs improvements or performs approved mechanical excavation within the dripline of any tree. The District will replace any tree that is to be retained but that dies as a result of project construction activities during the guarantee period with a tree of the same species. The replaced trees would be subject to the same monitoring protocols as those protected trees removed due to construction.

Measure 3.6-1d: For each project site (except for the Walnut Creek WTP and the Lafayette WTP under Alternative 2), the District will develop and implement a five-year tree monitoring program. Performance standards may include, but are not limited to: a 75 percent survival rate of tree plantings and the ability to be self-sustaining at the end of five years.

Measure 3.6-2b: In coordination with a qualified biologist, the District will, to the extent feasible, establish a minimum 25-foot construction exclusion zone (from the edge of wetland, riparian habitat, or the creek banks, whichever is greater), using protective fencing, where features will be avoided by direct impacts.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Biological Resources (cont.)

Measure 3.6-2c: If impacts to potentially jurisdictional features and associated riparian vegetation cannot be avoided or minimized, then the District will obtain a qualified biologist to complete a wetland delineation in accordance with Corps guidelines and will obtain the appropriate permits/agreements, including a Section 401 water quality certification from the RWQCB, a Section 404 wetland permit from the Corps, and/or a Section 1602 Streambed Alteration Agreement from the CDFG. The District will implement all conditions contained in these permits. The District will recontour and revegetate temporarily disturbed portions of the creek at a ratio of 1:1 (or at a ratio agreed on by the wetland permitting agencies). The District will compensate for permanent wetland and stream impacts onsite at a ratio of 2:1 (or at a ratio agreed on by the wetland permitting agencies) with the same type of feature as the feature affected. If the District determines that onsite restoration is not feasible, the District will compensate for permanent impacts at a 3:1 ratio (or at a ratio agreed on by the permitting agencies). The District will develop and implement a five-year wetland mitigation and monitoring program. Appropriate performance standards may include, but are not limited to: a 75 percent survival rate or plant cover of restoration plantings; absence of non-native, invasive plant species; and a functioning, self-sustaining creek or wetland system at the end of five years.

As warranted following construction, the District will recontour and revegetate temporarily disturbed portions of creeks. Creek banks will be recontoured to a more stable condition if necessary. Revegetation will include a palette of species native to the watershed area. Following removal, woody trees would be replanted at a 1:1 ratio at minimum, or as determined and agreed on by the appropriate wetland permitting agencies. Interim measures to protect the unvegetated creek from erosion may be required. Interim measures may include replanting banks using native or sterile non-native seeds or seedlings following construction within the creek, removing non-native vegetation from stream banks, and employing biotechnical bank stabilization methods, such as willow wattles and biodegradable erosion control mats, where appropriate.

Measure 3.6-2d: Where applicable, for overflow discharges into a creek or reservoir, the District will install energy diffusers, such as riprap, to minimize erosion and water quality effects. Such diffusers shall be placed, whenever possible, to avoid fill of jurisdictional waters and impacts to aquatic or riparian habitat. When such secondary impacts cannot be avoided, compensation for loss of habitat shall be provided as described under Measure 3.6-2c.

Measure 3.6-2e: Where construction activities occur adjacent to or within the dripline of riparian habitat, the District will implement special construction techniques to allow the roots of riparian trees to breathe and obtain water (examples include, but are not limited to, using hand equipment for tunnels and trenching, and allowing only one pass through a riparian tree's dripline). Excavation adjacent to or within the dripline of any riparian tree will occur in a manner that causes only minimal root damage.

Measure 3.6-2f: The District will implement the following measures:

- Ensure that work activities at creeks are completed during the low-flow period (between April 1 and October 15), unless otherwise approved by appropriate regulatory agencies (e.g., RWQCB, Corps, CDFG).
- Store equipment and materials away from waterways to the extent feasible as determined by the District. No debris will be deposited within 60 feet of creeks for most WTTIP projects.
- Provide proper and timely maintenance for vehicles and equipment used during construction to reduce the potential for mechanical breakdowns leading to a spill of materials into or around creeks. Maintenance and fueling will be conducted away from the creek.
- To control erosion, install silt fencing material at the edge of established buffer zones for riparian habitat, or at the edge of the creek where no riparian habitat is present (see Measure 3.6-2b).
- Minimize the removal of riparian and wetland vegetation

Measure 3.6-3c: At all WTTIP project sites, the District will revegetate all natural areas temporarily disturbed due to project activities. Areas supporting sensitive plant communities will be restored using locally collected plant materials specific to that community. For all sites, revegetation criteria will include general restoration concepts and methods, including use of locally native plant material, protection and restoration of soil conditions, irrigation, and control of aggressive non-native species. The planting effort will commence in the fall following construction at the project site. Sites disturbed prior to the planting effort will be treated immediately with a (1) seed mixture and mulch using broadcast methods, or (2) hydroseed. The plant palette will include native plants found locally, such as coffeeberry, sticky monkeyflower, miniature lupine, California poppy, purple needlegrass, California brome, and blue wild rye. All revegetated sites will be monitored for five years. Success criteria to be met at the end of five years may include: at least 80 percent survival of plantings, 75 percent vegetative cover by desirable species, and a viable, self-sustaining plant community.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Biological Resources (cont.)

Measure 3.6-4a: At all WTTIP project sites, EBMUD will avoid disturbing active nests of raptors and other special-status nesting birds by performing preconstruction surveys and creating no-disturbance buffers.

If construction activities (i.e., ground clearing and grading, including removal of trees or shrubs) are scheduled to occur during the nonbreeding season (September 1 through January 31), no mitigation is required.

If construction activities are scheduled to occur during the breeding season (February 1 through August 31), EBMUD will implement the following measures to avoid potential adverse effects on nesting raptors and other special-status birds:

- EBMUD will retain a qualified wildlife biologist to conduct preconstruction surveys of all potential nesting habitat within 500 feet of construction activities where access is available.
- If active nests are found during preconstruction surveys, EBMUD will create a no-disturbance buffer (acceptable in size to the CDFG) around active raptor nests and nests of other special-status birds during the breeding season, or until it is determined that all young have fledged. Typical buffers include 500 feet for raptors and 250 feet for other nesting birds. The size of these buffer zones and types of construction activities restricted in these areas may be further modified during construction with the CDFG and will be based on existing noise and human disturbance levels at each WTTIP project site. Nests initiated during construction are presumed to be unaffected, and no buffer would be necessary. However, the "take" of any individuals will be prohibited.
- If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by special-status birds or that are located outside the no-disturbance buffer for active nests may be removed.

Measure 3.6-5: EBMUD will avoid disturbance of the roosts of special-status bats by performing preconstruction surveys and creating no-disturbance buffers.

Prior to construction activities (i.e., ground clearing and grading, including removal of trees or shrubs) within 200 feet of trees that potential support special-status bats, EBMUD will retain a qualified bat biologist to survey for special-status bats. If no evidence of bats (i.e., direct observation, guano, staining, strong odors) is present, no further mitigation is required.

If evidence of bats is observed, EBMUD will carry out the following measures to avoid potential adverse effects special-status bats:

- EBMUD will create a no-disturbance buffer (acceptable in size to the CDFG) around active bat roosts during the breeding season (April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected, and no buffer would be necessary. However, the take of individuals will be prohibited.
- Removal of trees showing evidence of bat activity will occur during the period least likely to affect bats, as determined by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If exclusion is necessary to prevent indirect impacts to bats due to construction noise and human activity adjacent to trees showing evidence of bat activity, these activities will also be conducted during these periods.

Measure 3.6-6: EBMUD will avoid disturbance to San Francisco dusky-footed woodrat by performing preconstruction surveys and by avoiding or relocating nests at the following project sites: Lafayette WTP (Alternative 1), Orinda WTP (Alternative 2), Orinda-Lafayette Aqueduct, Glen Pipeline Improvements, Happy Valley Pipeline, Highland Reservoir and Pipelines, Lafayette Reclaimed Water Pipeline, and Moraga Road Pipeline.

Not more than two weeks prior to construction, a qualified wildlife biologist will conduct a preconstruction survey to identify woodrat nests within 10 feet of proposed ground disturbance. A qualified wildlife biologist will conduct additional surveys periodically throughout the duration of construction activities to identify newly constructed woodrat nests. If woodrat nests can be avoided by project activities, the qualified biologist would demarcate suitable buffer areas for avoidance. If woodrat nests are located within areas proposed for construction, nest relocation would be implemented.

Active woodrat nests found within 10 feet of proposed disturbance areas that cannot be avoided will be relocated offsite to adjacent suitable woodland habitat under the supervision of a qualified wildlife biologist. Understory vegetation would first be cleared from around the nest. Next, the wildlife biologist would disturb the nest and allow all woodrats to leave the nest. Finally, the biologist would remove the nest sticks offsite to the base of an adjacent suitable oak, bay, or other tree. Sticks would be placed at a suitable distance determined by the qualified wildlife biologist.

TABLE A-1 (CONTINUED) WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Biological Resources (cont.)

Measure 3.6-7a: EBMUD will avoid disturbing central California coast steelhead, other aquatic species, and associated habitats.

Implementation of Measures 3.5-1a and b, 3.5-3, and 3.5-6 (see Section 3.5, Hydrology and Water Quality), as well as best management practices (BMPs) for construction activities, would reduce potential impacts to steelhead and other aquatic species and habitat resulting from sedimentation, turbidity, and hazardous materials. Specific measures aimed at protecting steelhead and other aquatic species include:

- Construction activities within and adjacent to aquatic and riparian habitats will be monitored by a qualified biologist. The biologist will survey the work area for sensitive resources prior to the start of construction each day and monitor identified biological resources during construction activities, such as initial clearing and grading, installation of silt fencing, pipeline trench excavation, and backfilling and compaction.
- Water from around the section of the worksite that is within the actively flowing channel of Lafayette Creek will be diverted past the construction site. This diversion will reduce the potential for sediment or other pollutants to enter the waterways and affect downstream resources. The diversion will be installed so as to capture water from the existing outlet structure and release the diverted water downstream of the construction site.
- Sediment curtains will be placed downstream of the construction or maintenance zone to prevent sediment disturbed during trenching activities from being transported and deposited outside of the construction zone.
- If groundwater is encountered, or if water remains within the worksite after flows are diverted, it will be pumped out of the construction area and into a retention basin constructed of hay bales lined with filter fabric. The pump(s) will be screened to avoid entrapment of aquatic species.
- Silt fencing will be installed in all areas where construction occurs within 100 feet of actively flowing water.
- A spill prevention plan for potentially hazardous materials will be prepared and implemented. The plan will include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms will be constructed to prevent spilled materials from reaching the creek channels.
- Equipment and materials will be stored at least 50 feet from waterways. No debris (such as trash and spoils) will be deposited within 100 feet of wetlands. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents will be located outside of the stream channel and banks and be limited to the smallest size feasible as determined by EBMUD. Stationary equipment such as motors, pumps, generators, compressors, and welders located within or adjacent to the stream will be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream will be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life. Vehicles will be moved away from the stream prior to refueling and lubrication.
- Proper and timely maintenance of vehicles and equipment will be performed to reduce the potential for mechanical breakdowns that could lead to a spill of materials into or around creeks. Maintenance and fueling will be conducted at least 75 feet from riparian or aquatic habitats.
- WTTIP project sites will be revegetated with an appropriate assemblage of native upland vegetation and, if necessary, riparian and wetland vegetation suitable for the area. A plan describing pre-project conditions, invasive species control measures, and restoration and monitoring success criteria will be prepared prior to construction.

Cultural Resources

Measure 3.7-1a: EBMUD will include the following in WTTIP contract specifications for ground-disturbing activities, including excavation and grading. In the event of accidental discovery of cultural resources, such as structural features, bone, shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, horseshoes, etc.), work will be suspended and EBMUD staff will be contacted. A qualified cultural resource specialist will be retained and will perform any necessary investigations to determine the significance of the find. EBMUD will then implement any mitigation deemed necessary for the recordation and/or protection of the cultural resources. In addition, pursuant to Sections 5097.97 and 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, in the event of the discovery of human remains, all work will be halted and the county coroner will be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission will be adhered to in the treatment and disposition of the remains.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures
Cultural Resources (cont.)
Measure 3.7-1b: EBMUD will retain the services of a qualified archaeological consultant that has expertise in California prehistory to monitor ground-disturbing or vegetation removal activity within 500 feet of a known archaeological site. If an intact archaeological deposit is encountered, all soil-disturbing activities in the vicinity of the deposit will cease. The archaeological monitor will be empowered to temporarily redirect crews and heavy equipment until the deposit is evaluated. The monitor will immediately notify EBMUD of the encountered archaeological deposit. The monitor will, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, present the findings of this assessment to EBMUD. If the archaeological monitor determines that the area being excavated does not contain archaeological materials, the monitor will modify the level of monitoring as needed. If EBMUD, in consultation with the archaeological monitor, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project, EBMUD will: If the District in consultation with the archaeological monitor, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project, EBMUD will: ▪ Redesign the project to avoid any adverse effects on the significant archaeological resource; or ▪ Implement an archaeological data recovery program (ADRP) (unless the archaeologist determines that the resource is of greater interpretive than research significance, and that interpretive use of the resource is feasible). If the circumstances warrant, an ADRP will be conducted. The project archaeologist and EBMUD will meet and consult to determine the scope of the ADRP. The archaeologist will prepare a draft ADRP that will be submitted to EBMUD for review and approval. The ADRP will identify how the proposed data recovery program would preserve the significant information the archaeological resource is expected to contain (i.e., the ADRP will identify the scientific/historical research questions that are applicable to the expected resource, the data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions). Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project. Destructive data recovery methods will not be applied to portions of the archaeological resources if nondestructive methods are practical.
Measure 3.7-2: EBMUD or an appointed representative will notify a qualified paleontologist of any discoveries, document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in Section 15064.5 of the CEQA Guidelines. In the event a fossil is discovered during construction, excavations within 50 feet of the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist, in accordance with Society of Vertebrate Paleontology standards (SVP, 1995). The paleontologist will notify EBMUD to determine procedures to be followed before construction is allowed to resume at the location of the find. If EBMUD determines that avoidance is not feasible, the paleontologist will prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and the plan will be implemented. The plan will be submitted to EBMUD for review and approval.
Measure 3.7-3: To reduce potential indirect effects to the historic setting of the Orinda WTP, EBMUD will provide additional landscaping around the proposed emergency generator building, solids pumping plant, sludge storage tank, and (if implemented) high-rate sedimentation unit to screen these industrial elements from view and soften their visual appearance. This measure is in addition to the landscape treatments already proposed for the immediate area as part of the project and will be included in an amended landscape plan for the Orinda WTP project.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures
Traffic and Circulation
Measure 3.8-1: The District will incorporate into contract specifications for the project the following requirements: ■ The contractor(s) will obtain any necessary road encroachment permits prior to construction and will comply with conditions of approval attached to project implementation. As part of the road encroachment permit process, the contractor(s) will prepare a traffic safety / traffic management plan (for work in the public right-of-way), in accordance with professional traffic engineering standards, for review and approval by EBMUD. The plan will be submitted to the agencies having jurisdiction over the affected roads. Elements of the plan will likely include, but are not necessarily limited to, the following: – Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. Use flaggers and/or signage to guide vehicles through and/or around the construction zone. – Control and monitor construction vehicle movements through the enforcement of standard construction specifications by periodic onsite inspections. – To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours. – Limit lane closures during peak hours to the extent possible (and unless otherwise approved by the local agency). Restore roads and streets to normal operation by covering trenches with steel plates outside of allowed working hours or when work is not in progress. – As approved by the local agency, limit, where possible, the pipeline construction work zone to a width that, at a minimum, maintains alternate one-way traffic flow past the construction zone. Parking may be prohibited if necessary to facilitate construction activities or traffic movement. If the work zone width will not allow a 10-foot-wide paved travel lane, then the road will be closed to through-traffic (except emergency vehicles) and detour signing on alternative access streets will be used. – As approved by the local agency, include signage to direct pedestrians and bicyclists around construction work zones that displace sidewalks or bike lanes. – As approved by the local agency, store all equipment and materials in designated contractor staging areas on or adjacent to the worksite, in such a manner to minimize obstruction to traffic. – As approved by the local agency, identify locations for parking by construction workers within the construction zone or, if needed, at a nearby location with transport to and from the worksite provided. – Comply with roadside safety protocols. Provide "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone. – Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities and the locations of detours and lane closures. – Coordinate construction activities, to extent possible, to minimize traffic disturbances adjacent to schools (e.g., do work during summer months when there is less activity at schools). For construction activities that occur during the school year, then at the start and end of the school day at schools adjacent to a pipeline project (e.g., Bentley School on El Nido Ranch Road, and Campolindo High School on Moraga Road), the contractor(s) will provide flaggers in the school areas to ensure traffic and pedestrian safety. During periods when school children at the Wagner Ranch Elementary School are walking to and from school in the morning and in the afternoon on the asphalt trail along the north side of Camino Pablo, when construction truck traffic is present near the trail, the contractor(s) will provide flaggers and crossing guards (the latter as needed to supplement the school-provided crossing guards) to ensure pedestrian and traffic safety. School arrival and departure schedules will be monitored for changes such as vacation periods, and the school traffic and pedestrian safety plan will be modified as needed. – Coordinate with the County Connection so the transit provider can temporarily relocate bus routes or bus stops in work zones as it deems necessary.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Traffic and Circulation (cont.)

Measure 3.8-1 (cont.)

- To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule construction of project elements to avoid overlapping maximum trip-generation construction phases.
- The District will hold coordination meetings with the City of Orinda, the Orinda Unified School District, and the Moraga-Orinda Fire District to minimize the impact of road closures on Miner Road.
- As part of the coordination with school administrators, the District will coordinate with providers of school bus service regarding road closures, delays and detours during times that school buses run.
- The contractor(s) will post all construction sites with signs that state the permitted hours of construction. Those signs will identify the construction project as initiated by EBMUD, and will provide contact information for inquiries or comments.
- Provide advance notification to property owners along Glen Road, Nordstrom Lane, Hilltop Drive and Hastings Court regarding road closures associated with the Glen Pipeline Improvements project. Signs will be posted at the location of the road closure at least two weeks in advance, and notices will be mailed to property owners at least three weeks in advance.

Implementation of Measure 3.8-1 would ensure that effects on traffic flow conditions in the project vicinity would be less than significant.

Measure 3.8-2: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce traffic flow impacts to a less-than-significant level.

Access impacts on roads for which no detour routing is available would be significant and unavoidable.

Measure 3.8-3: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce parking impacts to a less-than-significant level.

Measure 3.8-4: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce potential traffic safety impacts to a less-than-significant level.

Measure 3.8-5: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce access impacts to a less-than-significant level.

Access impacts on roads for which no detour routing is available would be significant and unavoidable.

Measure 3.8-6: Implement Measure 3.8-1, which stipulates actions required of contractor(s) to reduce impacts to transit service to a less-than-significant level.

Transit impacts on roads for which adequate replacement routing for bus lines is not available would be significant and unavoidable.

Air Quality

Measure 3.9-1a: The District will incorporate into the contract specifications the following requirements:

BAAQMD Basic Control Measures

- Maintain dust control within the site and provide adequate measures to prevent a dust problem for neighbors. Use water sprinkling, temporary enclosures, and other suitable methods to limit the rising of dust and dirt. Dust control will be adequate to ensure that no visible dust clouds extend beyond the project boundaries or extend more than 50 feet from the source of any onsite project construction activities.
- Load trucks in a manner that will prevent materials or debris from dropping on streets. Trim loads and remove all material from shelf areas of vehicles to prevent spillage. Take precautions when necessary to avoid cresting dust and littering by watering the load after trimming and by promptly sweeping the pavement to remove dirt and dust.
- Cover all trucks hauling soil, sand, and other loose materials.
- Pave, apply water, or apply nontoxic soil stabilizers or rock on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Air Quality (cont.)

Measure 3.9-1b: The District will incorporate into the contract specifications the following requirements:

BAAQMD Enhanced Control Measures

- Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).
- Enclose, cover, water, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.)
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Measure 3.9-1c: To limit exhaust emissions, the District will incorporate into the contract specifications the following requirements:

BAAQMD Exhaust Controls

- Use line power instead of diesel generators at all construction sites where line power is available. Line power will be used at the tunnel entry and exit shafts for the Orinda-Lafayette Aqueduct project.
- As specified in EBMUD Policy 7.05, limit the idling of all mobile and stationary construction equipment to five minutes; as specified in Sections 2480 and 2485, Title 13, California Code of Regulations, limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or five minutes at any location. In addition, limit the use of diesel auxiliary power systems and main engines to five minutes when within 100 feet of homes or schools while driver is resting.
- For operation of any stationary, diesel-fueled, compression-ignition engines as part of construction of WTTIP facilities, comply with Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements as well as emission standards.
- If stationary equipment (such as generators for ventilation fans) must be operated continuously, locate such equipment at least 100 feet from homes or schools where possible.
- Require low-emissions tuneups and perform such tuneups regularly for all equipment, particularly for haul and delivery trucks. Submit a log of required tuneups to EBMUD on a quarterly basis for review.

Noise and Vibration

Measure 3.10-1a: The District will incorporate into contract specifications a requirement that construction activities at the construction site not cause daytime noise levels to exceed the 70-dBA speech interference criterion at the closest affected sensitive receptors, as well as that noise levels are consistent with local ordinances (see Table 3.10-1). Measures that would be implemented to reduce noise levels (as demonstrated in Table 3.10-5) to meet this criterion include the following:

- Truck operations (haul trucks and concrete delivery trucks) will be limited to the daytime hours, as described in Measure 3.10-1b.
- Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will be used for all equipment and trucks as necessary.
- If impact equipment (e.g., jackhammers, pavement breakers, and rock drills) is used during project construction, hydraulically or electric-powered equipment will be used wherever possible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust will be used (a muffler can lower noise levels from the exhaust by up to about 10 dB). External jackets on the tools themselves will be used, where feasible, which could achieve a reduction of 5 dB. Quieter procedures, such as drilling rather than impact equipment, will be used whenever feasible.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Noise and Vibration (cont.)

Measure 3.10-1a (cont.)

- Wherever pile driving is required (possibly at tunnel shafts, jack-and-bore pit shafts, Moraga Reservoir, and Tice Pumping Plant), pile holes will be predrilled to minimize the duration of pile driving.
- Stationary noise sources will be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) will be used to ensure local noise ordinance limits are met. Enclosure opening or venting will face away from sensitive receptors. Enclosures will be designed by a registered engineer regularly involved in noise control analysis and design. Operation of any stationary equipment beyond the time limits specified will meet applicable noise ordinance noise limits (see Measure 3.10-1b).
- Material stockpiles as well as maintenance/equipment staging and parking areas will be located as far as practicable from residential and school receptors.
- If any pipeline construction zones are located within 50 feet of school classrooms or childcare facilities, pipeline construction activities (or at least the noisier phases of construction) will be scheduled on weekend or school vacation days to the extent feasible, avoiding weekday hours when schools are in session. If construction must occur when school is in session, construction noise will comply with applicable noise ordinance noise limits (e.g., 83 dBA at 50 feet in Lafayette, etc.).
- An EBMUD contact person will be designated to respond to construction-related issues, including noise. The name and phone number of the liaison will be conspicuously posted at construction areas, on all advanced notifications, and on the EBMUD project website. This person will take steps to resolve complaints, including periodic noise monitoring and the option of hotel accommodations, if necessary.

Measure 3.10-1b: Construction at the WTTIP project sites producing substantial noise will be restricted to the hours of operation specified by each jurisdiction’s noise ordinance (as listed in Table 3.10-1, including restrictions provided in footnotes and any other ordinance exceptions and provisions in effect at the time of EIR publication), except during critical water service outages or other emergencies and special situations. Any equipment operating beyond these hours will be subject to the day and night noise limits of each jurisdiction (as listed in Table 3.10-1) for various activities in single-family residential zones. EBMUD will coordinate with local agencies regarding noise controls for any construction work that needs to occur after 6:00 p.m. and before 7:00 a.m. To ensure that these standards could be met at the closest sensitive receptors, EBMUD will conduct a noise monitoring program prior to implementation of any project where construction would extend beyond ordinance time limits to accurately determine baseline ambient noise levels at the closest residential receptors and to measure noise levels at these receptors during a test run of equipment proposed to be operated on the site during the more noise-sensitive nighttime hours. Project noise limits will be adjusted appropriately depending on the existing ambient noise levels to ensure noise disturbance is maintained at a less-than-significant level at the closest residential receptors. Measures that could be implemented to reduce noise levels (as demonstrated in Table 3.10-6) to meet local nighttime standards include engine controls listed in Measure 3.10-1a, tunnel-related measures listed in Measure 3.10-1c, and temporary sound barriers listed in Measure 3.10-1e.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures

Noise and Vibration (cont.)

Measure 3.10-1d: The District will incorporate into the contract specifications the following requirements to reduce construction-related noise levels associated with the Orinda-Lafayette Aqueduct and any other WTTIP projects that involve construction of tunnel shafts (including any jack-and-bore pits where equipment would operate 24 hours per day):

- The construction contractor will be required to retain an acoustical engineer to design sound abatement measures that will meet the local ordinance limits. Among other things, the acoustical engineer will provide design specifications for the sound barrier design and the specific ventilation fan to be used (based on type, size, orientation, location, exhaust, etc.) at tunnel portals.
- Quiet tunnel ventilation fans will be used and will be directed away from sensitive receptors. Since they would operate 24 hours per day, the fans must meet the noise ordinance limits listed in Table 3.10-1. Additional measures that could be employed to reduce fan noise, if necessary, include enclosing fans, treating the interior surface of the enclosure for acoustical absorption, or using silencers or acoustically lined inlet plena to control the inlet noise.
- Prior to construction, baseline noise measurements will be taken at the entry and exit shafts. If baseline ambient noise levels already exceed applicable noise ordinance limits at the closest residential receptors, the standards will be increased appropriately so that construction noise levels do not result in a noticeable increase in ambient noise levels at these receptors.
- Loader operations at the surface (the area outside the tunnel shaft) in the tunnel portal vicinities will cease at 6 p.m. on weekdays and not operate on weekends in accordance with the Orinda Noise Ordinance, except during critical water service outages or other emergencies and special situations.
- Other measures will be implemented wherever possible to reduce impact noise. For example, bins used to transport spoils, including rocks and debris, will be constructed of nonmetallic material or have a nonmetallic liner (such as cardboard), if feasible, to reduce impact noise. Much box tipping/dumping at the surface will be performed in a manner that minimizes clanging, banging, or booming noises (metal to metal contact) during the evening and nighttime hours (6 p.m. to 8:00 a.m. on weekdays).
- Underground controlled detonation in the tunnel shaft areas will be restricted to the hours of 8:00 a.m. to 6:00 p.m. (in accordance with the Orinda Noise Ordinance). In addition, the amount of explosive and the delay times of any explosive charges used will be limited so as to produce a maximum noise level at the closest adjacent receptor of 60 dBA (Ldn).
- Backup alarms on any equipment will not be operated during nighttime hours (10:00 p.m. to 7:00 a.m.).
- Sound barriers will be erected around the tunnel entry and exit shafts to minimize noise impacts on adjacent receptors, as specified in Measure 3.10-1e.
- Proposed jack-and-bore pits will be located as far from sensitive receptors as technically feasible.

Measure 3.10-1e: Wherever a sensitive receptor is located within 150 feet of a construction site at a treatment plant, reservoir, or pumping plant, and at both tunnel shafts, temporary sound barriers will be provided between the construction site and the closest receptors to reduce noise levels to below the speech interference criterion at the closest receptor. The applicable ordinance nighttime noise standard will also be applied at tunnel portals where nighttime activities are proposed. As a rule, the elevation of the barrier should be sufficient to interrupt the line-of-sight between the residential receptors and the tops of stacks (exhaust pipes) of construction equipment by about 5 to 10 feet. Sound-absorbing blankets can also be used at appropriate locations as necessary to protect nearby residents.

Any openings in sound barriers that are provided for truck/vehicle access will be located away from sensitive receptors. For example, sound barriers could be constructed around the entrance tunnel shaft, and the opening to the tunnel staging area could be located on the south side so that tunnel-related noise would be oriented to the south, toward the existing WTP rather than toward residential receptors to the west and east and school receptors to the north.

It should be noted that although mitigation measures would reduce construction noise levels to meet local ordinance criteria (as indicated in Tables 3.10-5 and 3.10-6), mitigated construction noise could still cause occasional disturbance at the closest noise-sensitive receptors.

Measure 3.10-3a: To prevent cosmetic or structural damage to adjacent or nearby structures, EBMUD will incorporate into contract specifications restrictions on construction for those facilities that will or may require sheetpile driving, pile driving, or tunnel construction, whereby surface vibration will be limited to no more than 0.5 in/sec PPV, measured at the nearest residential or other sensitive structure.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures
Noise and Vibration (cont.)
Measure 3.10-4: Equipment used in WTTIP facilities will not cause ambient noise levels to exceed the nighttime noise limits specified in Table 3.10-8). Measures that could be incorporated into the design of proposed facilities to ensure that noise levels meet this criterion (as demonstrated in Table 3.10-8) include the following: ▪ Pumping and emergency generator facilities will be fully enclosed, and vents will be located on the building facades facing away from adjacent residential receptors, particularly at the Happy Valley Pumping Plant site where pumping plant noise must be reduced by 8 dB to meet Orinda's 45-dBA noise limit for mechanical equipment. ▪ Building enclosures will provide at least 40 dB of attenuation on solid walls (i.e., a 40-dB difference between interior vs. exterior noise) and a 20-dB reduction no the louvered side of the enclosure, when measured at 6 feet from the wall, directly in front of the louvers. ▪ Masonry sound barriers will be constructed around transformers, and substations will be of sufficient height to provide at least 10 dB or more of noise attenuation.
Hazards and Hazardous Materials
Measure 3.11-1: For construction of all facilities requiring excavation of more than 50 cubic yards of soil, the District or contractor will use a qualified professional to conduct a Phase I environmental site assessment in conformance with standards adopted by ASTM International. If the Phase I environmental site assessment indicates that a release of hazardous materials could have affected soil or groundwater quality at the site, the District will retain a qualified environmental professional to conduct a Phase II environmental site assessment to evaluate the presence and extent of contamination at the site, in conformance with state and local guidelines and regulations. If the results of the subsurface investigation(s) indicate the presence of hazardous materials, alteration of facility design or site remediation may be required by the applicable state or local regulatory agencies, and the contractors will be required to comply with all regulatory requirements for facility design or site remediation. The Phase I environmental site assessment will be completed within twelve months prior to construction to accurately estimate the conditions that could be expected during construction. For pipeline projects, the District or contractor will conduct an environmental database review to identify environmental cases, permitted hazardous materials uses, and spill sites within one-quarter mile of the pipeline alignment. Regulatory agency files will be reviewed for those sites that could potentially affect soil and groundwater quality within the pipeline alignment. The environmental database review will be completed within six months prior to construction to accurately estimate the conditions that could be expected during construction.
Measure 3.11-2: The District will perform or incorporate into contract specifications for all WTTIP project components involving demolition or renovation of existing facilities the requirement that the contractor(s) have a hazardous building materials survey completed for each of the structures by a registered environmental assessor or a registered engineer prior to demolition or renovation activities. If any friable asbestos-containing materials, lead-containing materials, or hazardous components of reservoir liner materials are identified, adequate abatement practices, such as containment and/or removal, will be implemented prior to demolition or renovation.
Public Services and Utilities
Measure 3.12-1a: Prior to excavation, the District or its contractors will locate overhead and underground utility lines, such as natural gas, electricity, sewage, telephone, fuel, and water lines, that may reasonably be expected to be encountered during excavation work.
Measure 3.12-1b: The District or its contractors will find the exact location of underground utilities by safe and acceptable means, including the use of hand and modern techniques as well as customary types of equipment. Information regarding the size, color, and location of existing utilities must be confirmed before construction activities begin.

TABLE A-1 (CONTINUED)
WTTIP MITIGATION MEASURES IDENTIFIED FOR THE ORINDA WTP

Mitigation Measures
Public Services and Utilities (cont.)
Measure 3.12-1c: The District or its contractors will confirm the specific location of all high priority utilities (i.e. pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter, or with normal operating measures, greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths) and such locations will be highlighted on all constructions drawings. In the contract specifications, the District will require that the contractor provide weekly updates on planned excavation for the upcoming week and identify when construction will occur near a high priority utility. On days when this work will occur, District construction managers will attend tailgate meetings with contractor staff to review all measures—those identified in the Mitigation Monitoring and Reporting Program and in the construction specifications—regarding such excavations. The contractor's designated health and safety officer will specify a safe distance to work near high-pressure gas lines, and excavation closer to the pipeline will not be authorized until the designated health and safety officer confirms and documents in the construction records that: (1) the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device, and (2) the location was verified by hand by the construction contractor. The designated health and safety officer will provide written confirmation to the District that the line has been adequately located, and excavation will not start until this confirmation has been received by the District.
Measure 3.12-1d: While any excavation is open, the District or its contractors will protect, support, or remove underground utilities as necessary to safeguard employees.
Measure 3.12-1e: The District or its contractors will notify local fire departments any time damage to a gas utility results in a leak or suspected leak, or whenever damage to any utility results in a threat to public safety.
Measure 3.12-1f: The District or its contractors will contact utility owner if any damage occurs as a result of the project and promptly reconnect disconnected cables and lines with approval of owner.
Measure 3.12-1g: The District will observe Department of Health Services (DHS) standards, which require: (1) a 10-foot horizontal separation between parallel sewage and water mains (gravity or force mains); (2) a 1-foot vertical separation between perpendicular water and sewage line crossings; and (3) encasement of sewage mains in protective sleeves where a new water line crosses under or over an existing wastewater main.
Measure 3.12-1h: The District or its contractors will coordinate final construction plans and specifications with affected utilities, such as PG&E.
Measure 3.12-3: The District will implement Measures 3.12-1a through 3.12-1h.
Measure 3.12-4a: The District will require project facility design and construction methods that produce less waste, or that produce waste that could more readily be recycled or reused.
Measure 3.12-4b: The District will include in its construction specifications a requirement for the contractor to describe plans for recovering, reusing, and recycling 50 percent of projected solid waste through construction, demolition, and excavation activities.
Measure 3.12-5: The District will implement Measures 3.12-4a and 3.12-4b.
Growth-Inducement Potential and Secondary Effects of Growth
Measure G-1: The EBMUD Board of Directors will work with other jurisdictions in the Lamorinda/Walnut Creek area to assist in mitigating the impacts of growth by: ▪ Participating in efforts to improve regional planning in the Bay Area ▪ Encouraging local land use planning agencies to coordinate land use planning functions and the provision of utility services ▪ Encouraging cities and counties to adopt general plans and zoning ordinances that favor high-density development and urban in-filling (which tends to minimize per-capita water use and minimize the costs and environmental impacts of water delivery systems); to provide incentives for more housing near public transit; and to adopt ordinances that conserve open spaces, protect wildlife habitat, and conserve energy and water resources

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APPENDIX B

Notice of Preparation and Public Comments Received on the Notice of Preparation

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EAST BAY
MUNICIPAL UTILITY DISTRICT

NOTICE OF PREPARATION OF
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT
ORINDA WATER TREATMENT PLANT
DISINFECTION IMPROVEMENTS PROJECT
EAST BAY MUNICIPAL UTILITY DISTRICT

AUGUST 15, 2019

TO: Responsible and Trustee Agencies, Organizations, and Interested Parties

FROM: East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, CA 94607-4240

SUBJECT: Notice of Preparation of a Draft Supplemental Environmental Impact Report for the Orinda Water Treatment Plant Disinfection Improvements Project

The East Bay Municipal Utility District (EBMUD), acting as lead agency under the California Environmental Quality Act (CEQA), is preparing a Supplemental Environmental Impact Report (SEIR) for the Orinda Water Treatment Plant (WTP) Disinfection Improvements Project (Project). This Project is a modification of the disinfection improvements at the Orinda WTP analyzed in EBMUD’s Water Treatment and Transmission Improvements Program (WTTIP) EIR, which was certified in 2006.

AGENCIES: EBMUD requests your input regarding the scope and content of the environmental information that is germane to your agency’s statutory responsibilities in connection with the proposed Project.

ORGANIZATIONS AND OTHER INTERESTED PARTIES: EBMUD requests comments from organizations and interested parties regarding the environmental issues associated with construction and operation of the proposed Project.

PROJECT TITLE: Orinda Water Treatment Plant Disinfection Improvements Project

PROJECT LOCATION: The Orinda WTP is located at 190 Camino Pablo on a 25-acre site in the City of Orinda, CA. The Project site is located north of Highway 24 and is bounded by Camino Pablo on the southwest and San Pablo Creek on the northeast (see Figure 1). The Orinda WTP site is bisected by Manzanita Drive, a public street.

PROJECT PURPOSE: The Orinda WTP serves more than 800,000 EBMUD customers, including customers in the City of Orinda. The Project will upgrade and replace existing facilities and construct new facilities at the Orinda WTP as part of EBMUD’s WTTIP. WTTIP improvements are necessary to address system-wide water treatment and distribution needs to ensure a reliable water supply for current and future customers.

At the Orinda WTP, the current water treatment process will be improved by adding ultraviolet (UV) and chlorine disinfection after water treatment at the Orinda WTP filters. Adding disinfection improvements post-filtration will reduce the formation of disinfection by-products (e.g., trihalomethanes, THMs) which form when chlorine reacts with naturally-occurring organic matter in water. In addition, the Project will improve disinfection reliability, improve operational flexibility, and reduce disinfection complexity. The Project will provide reliable water treatment infrastructure that meets long-term operational needs and will continue to meet drinking water and environmental regulations to achieve EBMUD’s internal long-term water quality goals.

PROJECT DESCRIPTION: The Project includes demolition of an existing maintenance building and construction of a new disinfection facility comprised of a new above-ground two-story maintenance and ultraviolet electrical (MAUVE) building with a below-grade UV structure and a below-grade chlorine contact basin (CCB), two electrical buildings, a standby generator, pipelines and vaults, and other supporting facilities. The MAUVE building with UV structure and the CCB will be adjacent and fully integrated facilities. Maintenance activities and associated uses previously housed in the existing maintenance building that will be demolished will be incorporated into the Project disinfection facility and grounds maintenance building with associated parking at the Orinda WTP site (see Figure 2 for Project components). The Project will also remove vegetation, replace existing and install new security fencing, and restore and landscape the site following construction.

POTENTIAL ENVIRONMENTAL EFFECTS: The following areas of potentially significant environmental impacts will be analyzed in the SEIR: Aesthetics, Air Quality, Biological Resources, Cultural Resources, Energy, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Public Services, Transportation and Traffic, Tribal Cultural Resources, and Wildfire. Potential cumulative impacts and potential for growth inducement will be addressed; alternatives, including the No Project Alternative, will be evaluated.

PUBLIC REVIEW PERIOD: This Notice of Preparation (NOP) is available for public review and comment for 30 days. The comment period for the NOP begins August 15, 2019 and ends on September 16, 2019. Your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

SCOPING MEETING: EBMUD will hold a scoping meeting on August 26, 2019, starting at 6 p.m. at the Masonic Lodge located at 9 Altarinda Road in Orinda. You are welcome to attend and present environmental information that you believe should be addressed in the SEIR.

RESPONSES AND QUESTIONS: Responses to or questions regarding this NOP should be directed to:

Chien Wang, Project Manager
East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, CA 94607-4240
orwtp.improvements@ebmud.com

CEQA PROCESS: The Draft SEIR is planned for publication in spring 2020, with action by EBMUD's Board of Directors expected in fall 2020. Notice will be given of public meetings, including a meeting that will be held during the Draft SEIR comment period. At the end of the review and comment process, EBMUD's Board of Directors will determine whether to certify the SEIR and approve the Project. The NOP and all CEQA-related documents for this Project will be available for review on the EBMUD website at:
www.ebmud.com/orwtpimprovements

8-15-19

Xavier J. Irias
Director of Engineering and Construction
East Bay Municipal Utility District

Date

XJI:DJR:CW:sjp
sb19_138a_OrindaWTP Disinfection_NOP

Attachments: Figure 1 Project Location
Figure 2 Project Components

SOURCE: ESA, 2019; ESRI, 2019.

EBMUD Orinda Water Treatment Plant Disinfection Improvements Project

Figure 1
Project Location

SOURCE: ESA, 2019; ESRI, 2019.

NOTE: For pipes and other below-grade project components, refer to the Proposed Site Plan.

EBMUD Orinda Water Treatment Plant Disinfection Improvements Project

Proposed Project Components on Existing Orinda Water Treatment Plant Site

Figure 2
Project Components

Contra Costa County
Flood Control
& Water Conservation District

Brian M. Balbas,
ex officio Chief Engineer
Allison Knapp,
Deputy Chief Engineer

September 16, 2019

Chien Wang
East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, CA 94607-4240

RE: Orinda Water Treatment Plant Disinfection Improvements Project
Our File: 3053-06 263-110-004

Dear Mr. Wang:

We have reviewed the Notice of Preparation (NOP) for the Draft Supplemental Environmental Impact Report (DSEIR) for the Orinda Water Treatment Plant Disinfection Improvements Project (APN 263-110-004). We received the request on August 14, 2019, and have the following comments:

1. We recommend that the DSEIR include a map of the project area and show all parcels involved in the development.

2. We recommend that the DSEIR provide a map of the watersheds where the project is located, including watershed boundaries.

3. In the Hydrology Section, please identify and show all existing watercourses, tributaries, and man-made drainage facilities within the project site that could be impacted by this project. The discussion should include an analysis of the capacity of the existing watercourses.

4. The Hydrology Section should quantify the amount of runoff that would be generated by the project and discuss how the runoff entering and originating from the site would be distributed between the natural watercourses, the detention basins (if proposed), and the man-made drainage facilities.

5. If improvements or work within the natural watercourses is proposed, the DSEIR should discuss the scope of improvements. The DSEIR should address the potential impacts to natural watercourses due to construction of improvements adjacent to creek setbacks and improvements below grade.

"Accredited by the American Public Works Association"

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6. We recommend that the DSEIR address the design and construction of storm drain facilities to adequately collect and convey stormwater entering or originating within the development to the nearest adequate man-made drainage facility or natural watercourse, without diversion of the watershed.

7. The DSEIR should discuss the adverse impacts of the runoff from the project site to the existing drainage facilities and drainage problems in the downstream areas, including those areas outside of the City of Orinda.

8. The proposed project is located in Drainage Area 53, an unformed drainage area. Therefore, there are no drainage area fees due at this time.

   This drainage area defines the watershed (San Pablo Creek watershed) for Bear Creek, El Toyonal Creek, and other creeks, which ultimately drain to San Pablo Creek. The existing flood control facilities are designed to mitigate flooding on San Pablo Creek.

   The Contra Costa County Flood Control and Water Conservation District (FC District) facilities that could be impacted by this development include the San Pablo Creek channels and San Pablo Reservoir. The FC District has jurisdiction over natural watercourses in the unincorporated County. Potential impacts to these watercourses should be addressed in the DSEIR.

9. The DSEIR should discuss any proposed on-site and off-site drainage improvements and include maps or drawings for the improvements.

10. The DSEIR should address the impacts of this project's runoff due to the increase in duration (length of time) of flows and the effect on San Pablo Creek and other creeks and channels downstream of the project. Whereas detention basins are capable of mitigating peak flows to pre-project levels, they increase the duration (length of time) of flows in the downstream watercourses, which saturate the channel banks and increase the potential for stream and channel erosion.

    If detention basin facilities are proposed, the DSEIR should include a discussion of the basin design information, (i.e., capacity, sizes of inlet and outlet structures, routing, etc.) A discussion of how maintenance of these facilities, and other new drainage facilities, would be performed and perpetually funded should also be included, if applicable.

11. The DSEIR should discuss potential flooding along San Pablo Creek at the northern and eastern portions of the development, which have been designated by FEMA as Zone AE with base flood elevations (BFEs) ranging from 363 to 375 feet.

12. We recommend that the DSEIR discuss the appropriate environmental regulatory permits that may be required, such as the U.S. Army Corps of Engineers, the State Department of Fish and Wildlife, and the State Regional Water Quality Control Board, to explore the special conditions or mitigation measures that may be necessary for development of the area, if applicable.

13. The FC District should be included in the review of all drainage facilities that have a region-wide benefit, that impact region-wide facilities, or that impact FC District-owned facilities. The FC District is available to provide technical assistance during the development of the DSEIR, including hydrology and hydraulic information and our HYDRO6 method, under our Fee-for-Service program.

We appreciate the opportunity to comment on the NOP submittal and welcome continued coordination. We look forward to reviewing a DSEIR. If you should have any questions, please call me at (925) 313-2348.

Sincerely,

Joe Smithonic
Engineering Staff
Contra Costa County Flood Control
& Water Conservation District

JS:cw
G:\fldctl\CurDev\CITIES\Orinda\3053-06\263-110-004, EBMUD\2019-0903 - NOP Comment Letter for DSEIR for EBMUD Facilities Expansion.docx

c: Michelle Cordis, Flood Control
Teri E. Rie, Flood Control

STATE OF CALIFORNIA **GAVIN NEWSOM, Governor**

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

Governor's Office of Planning & Research

AUG 26 2019

STATE CLEARINGHOUSE

August 23, 2019

Chien Wang
East Bay Municipal Utility District
375 11th Street
Oakland, CA 94607

RE: SCH# 2019080297, Orinda Water Treatment Plant Disinfection Improvements Project, Contra Costa County

Dear Mr. Wang:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, “tribal cultural resources” (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
    - **a.** A brief description of the project.
    - **b.** The lead agency contact information.
    - **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
    - **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
    - **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
    - **a.** Alternatives to the project**.**
    - **b.** Recommended mitigation measures**.**
    - **c.** Significant effects**.** (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
    - **a.** Type of environmental review necessary.
    - **b.** Significance of the tribal cultural resources.
    - **c.** Significance of the project's impacts on tribal cultural resources.
    - **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
    - **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
    - **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
  - **a.** The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
  - **b.** A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
  - **a.** Avoidance and preservation of the resources in place, including, but not limited to**:**
    - **i.** Planning and construction to avoid the resources and protect the cultural and natural context.
    - **ii.** Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
  - **b.** Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
    - **i.** Protecting the cultural character and integrity of the resource.
    - **ii.** Protecting the traditional use of the resource.
    - **iii.** Protecting the confidentiality of the resource.
  - **c.** Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
  - **d.** Protecting the resource. (Pub. Resource Code §21084.3 (b)).
  - **e.** Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
  - **f.** Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
  - **a.** The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
  - **b.** The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
  - **c.** The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    - **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    - **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    - **a.** If part or all of the APE has been previously surveyed for cultural resources.
    - **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
    - **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
    - **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    - **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    - **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   - **a.** A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   - **b.** A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   - **a.** Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   - **b.** Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   - **c.** Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

cc: State Clearinghouse

APPENDIX C

Orinda Water Treatment Plant Disinfection Improvements Project Mitigation Monitoring and Reporting Program

The California Environmental Quality Act (CEQA) requires the adoption of feasible mitigation measures to reduce the severity and magnitude of potentially significant environmental impacts associated with project development.

Section 21081.6 of the California Public Resources Code (i.e., CEQA) requires a Lead Agency to adopt a Mitigation Monitoring and Reporting Program (MMRP) whenever it approves a project for which mitigation measures have been required to mitigate or avoid significant effects on the environment. *CEQA Guidelines* Section 15097(a) reinforces this by stating that "In order to assure the mitigation measures and project revisions identified in the EIR or negative declaration are implemented, the public agency shall adopt a program for monitoring or reporting on the revision which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects." Therefore, the purpose of the MMRP is to ensure compliance with the mitigation measures during project implementation.

East Bay Municipal Utility District (EBMUD or District) is implementing a planned system of improvements as part of its Water Treatment and Transmission Improvements Program (WTTIP). Improvements to the disinfection system at the Orinda WTP were included in the WTTIP. The environmental impacts of the WTTIP were evaluated in the WTTIP Environmental Impact Report (EIR, State Clearinghouse No. 2005092019), which was certified – and the WTTIP Mitigation Monitoring and Reporting Program adopted – in December 2006. Since certification of the WTTIP EIR, the specific details of the design for disinfection system improvements at the Orinda WTP, which were not available when the WTTIP EIR was prepared, have been developed. Thus, a project-specific Supplemental EIR has been prepared to address the current project, the Orinda WTP Disinfection Improvements Project (Project).

The Project's Supplemental EIR concluded that implementation of the Project could result in significant effects on the environment and identified mitigation measures to reduce or eliminate those significant effects. The mitigation measures provided in the adopted WTTIP MMRP that were identified for improvements at the Orinda WTP have been incorporated into the Project's description (see Supplemental EIR Chapter 2, *Project Description*). In some cases, the mitigation measures presented in adopted WTTIP MMRP have been subsequently revised, replaced, or augmented in individual resource sections to reflect current conditions and to address Project-specific and site-specific impacts.

This MMRP presents those adopted WTTIP mitigation measures, revised WTTIP mitigation measures, and new Project-specific mitigation measures in terms of how and when they will be implemented. This MMRP does not include those resource areas for which the EIR concluded that the impacts from implementation of the Project would be less than significant without any (adopted, revised, or new) mitigation measures.

The Project's MMRP follows as Table C-1 and lists all impacts identified in the Supplemental EIR as significant or potentially significant along with the proposed mitigation measures that are required to reduce impacts to less than significant levels. The impacts are briefly summarized in the table.

For each mitigation measure, the following information is provided:

- **Impact Area:** This column indicates impact areas that could be considered significant

- **Mitigation Measure:** This column contains the full text of the mitigation measures, excerpt from the relevant standard specification,

- **Responsibility for Implementation:** This column identifies the party responsible for executing the mitigation measure/mitigative action

- **Responsibility for Monitoring and/or Enforcement:** This column assigns the responsibility for the mitigation monitoring and reporting tasks

- **Timing of Implementation:** This column indicates when the mitigation measure/mitigative action would be applied or executed.

TABLE C-1
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Aesthetics				
Impact AES-1: Have a substantial adverse effect on a scenic vista.	**Adopted WTTIP Mitigation Measure 3.3-2c.** The District will use design elements to enhance the aesthetic appearance of proposed facilities and to integrate them with the existing visual environment. Proposed facilities will be painted or include appropriate concrete admixtures to achieve low-glare, earth-tone colors that blend with the surrounding terrain and visual setting. For each project, colors will be selected based on site-specific conditions with the goal of (1) reducing the visual contrast between new facilities and the surrounding natural landscape setting and/or (2) integrating the facility appearance with the neighboring built environment. Concrete structures need not be painted; however, integral coloring should be employed, as noted above, where structures are seen from sensitive community viewpoints. • Use textures, colors and materials that will blend with existing filter plant buildings. • For the Orinda WTP, the design of new walls, gates, and fencing will include aesthetic architectural treatment where facilities are located near public trails, residences, or scenic roadways.	EBMUD and EBMUD’s Contractors	EBMUD	Prior to and during construction
Impact AES-3: In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage points), or in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality.	**Adopted WTTIP Mitigation Measure 3.3-1.** For stationary (non-pipeline) projects expected to be constructed over a period of one year or more, the District will require the contractor to ensure that construction-related activity is as clean and inconspicuous as practical by storing building materials and equipment within the proposed construction staging areas or in areas that are generally away from public view and by removing construction debris promptly at regular intervals and placing black fabric fence screening on fences where feasible.	EBMUD and EBMUD’s Contractors	EBMUD	During construction
	Adopted WTTIP Mitigation Measure 3.3-2a. The District will implement landscaping plans prepared for the Orinda WTP. • The District will plant native vegetation and/or construct earth berms around all proposed above-ground facilities to provide screening, consistent with the requirements set forth in adopted WTTIP Mitigation Measures 3.6-1a, c, and d, and Mitigation Measure 3.6-1b-ORWTPDI in Section 3.4, Biological Resources (see Impact BIO-4). Landscaping will include revegetation of disturbed areas to minimize textural contrasts with the surrounding vegetation. • The District will replace any landscaping that is removed or destroyed during construction consistent with landscape plans. New plants would include grasses, shrubs, and trees typical of the surrounding area. The District will consult with the appropriate jurisdiction when developing final landscaping plans. For disturbance of natural, non-landscaped areas, see adopted WTTIP Mitigation Measure 3.6-3c in Section 3.4, Biological Resources (see Impact BIO-1). • The District will also install additional landscaping north of Manzanita Drive at the Orinda WTP to provide additional screening of existing ponds or new above-ground facilities. • Implement Mitigation Measure 3.6-1b-ORWTPDI in Section 3.4, Biological Resources, regarding pruning (see Impact BIO-4). • The District will coordinate with and involve neighborhood representatives during the development of final landscaping plans. • The contractor will be required to warrant landscape plantings for one year after project completion.	EBMUD and EBMUD’s Contractors	EBMUD	During and after construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Aesthetics (cont.)				
Impact AES-3 (cont.)	**Adopted WTTIP Mitigation Measure 3.3-2b.** The District will ensure that its contractors restore disturbed, graded areas to a natural-appearing landform.	EBMUD and EBMUD's Construction Contractors	EBMUD	During and after construction
	Adopted WTTIP Mitigation Measure 3.3-2c. (See full text with Impact AES-1 above.)			
	Adopted WTTIP Mitigation Measure 3.3-3. Implement adopted WTTIP Mitigation Measures 3.3-2a through 3.3-2c, as detailed above.	EBMUD and EBMUD's Construction Contractors	EBMUD	During and after construction
Impact AES-4: Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	**Adopted WTTIP Mitigation Measure 3.3-5b.** The District will ensure that new lighting utilizes cutoff shields and nonglare fixture design.	EBMUD and EBMUD's Construction Contractors	EBMUD	During and after construction
	Adopted WTTIP Mitigation Measure 3.3-5c. To the extent possible, the District will ensure that all permanent exterior lighting is directed onsite and downward. In addition, new lighting will be oriented to ensure that no light source is directly visible from neighboring residential areas and will be installed with motion-sensor activation. In addition, highly reflective building materials and/or finishes will not be used in the designs for proposed structures, including fencing and light poles. In accordance with adopted WTTIP Mitigation Measure 3.3-2a, above, landscaping will be provided around proposed facilities. This vegetation will be selected, placed, and maintained to minimize offsite light and glare in surrounding areas.	EBMUD and EBMUD's Construction Contractors	EBMUD	During and after construction
Air Quality				
Impact AIR-1: Conflict with or obstruct implementation of the applicable air quality plan.	**Adopted WTTIP Mitigation Measure 3.9-1b.** The District will incorporate into the contract specifications the following requirements: *BAAQMD Enhanced Control Measures* • Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more). • Enclose, cover, water, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.) • Limit traffic speeds on unpaved roads to 15 miles per hour. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible.	EBMUD's Construction Contractors	EBMUD	During construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Air Quality (cont.)				
Impact AIR-1 (cont.)	**Adopted WTTIP Mitigation Measure 3.9-1c.** To limit exhaust emissions, the District will incorporate into the contract specifications the following requirements: *BAAQMD Exhaust Controls* • Use line power instead of diesel generators at all construction sites where line power is available. • As specified in EBMUD Policy 7.05, limit the idling of all mobile and stationary construction equipment to five minutes; as specified in Sections 2480 and 2485, Title 13, California Code of Regulations, limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or five minutes at any location. In addition, limit the use of diesel auxiliary power systems and main engines to five minutes when within 100 feet of homes or schools while driver is resting. • For operation of any stationary, diesel-fueled, compression-ignition engines, comply with Section 93115, Title 17, California Code of Regulations, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements as well as emission standards. • If stationary equipment (such as generators for ventilation fans) must be operated continuously, locate such equipment at least 100 feet from homes or schools where possible. • Require low-emissions tuneups and perform such tuneups regularly for all equipment, particularly for haul and delivery trucks. Submit a log of required tuneups to EBMUD on a quarterly basis for review.	EBMUD's Construction Contractors	EBMUD	During construction
	Mitigation Measure 3.9-1a-ORWTPDI: BAAQMD Basic Construction Mitigation Measures with Water Application and Lead Agency Contact. EBMUD will incorporate into the contract specifications the following requirements: *BAAQMD Basic Control Measures* • Maintain dust control within the site and provide adequate measures to prevent a dust problem for neighbors. Use water sprinkling, temporary enclosures, and other suitable methods to limit the rising of dust and dirt. Dust control will be adequate to ensure that no visible dust clouds extend beyond the project boundaries or extend more than 50 feet from the source of any onsite project construction activities. • Load trucks in a manner that will prevent materials or debris from dropping on streets. Trim loads and remove all material from shelf areas of vehicles to prevent spillage. Take precautions when necessary to avoid cresting dust and littering by watering the load after trimming and by promptly sweeping the pavement to remove dirt and dust. • Cover all trucks hauling soil, sand, and other loose materials. • Pave, apply water, or apply nontoxic soil stabilizers or rock on all unpaved access roads, parking areas, and staging areas at construction sites. • Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites.	EBMUD's Construction Contractors	EBMUD	During construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Air Quality (cont.)				
Impact AIR-1 (cont.)	• Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets. • All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.			
Impact AIR-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard.	**Adopted WTTIP Mitigation Measure 3.9-1b.** (See full text with Impact AIR-1 above.)			
	Adopted WTTIP Mitigation Measure 3.9-1c. (See full text with Impact AIR-1 above.)			
	Mitigation Measure 3.9-1a-ORWTPDI: BAAQMD Basic Construction Mitigation Measures with Water Application and Lead Agency Contact. (See full text with Impact AIR-1 above.)			
Impact AIR-3: Expose sensitive receptors to substantial pollutant concentrations.	**Mitigation Measure AIR-1: Use of Tier 4 Construction Equipment.** EBMUD shall require construction contractors to use all off-road diesel-powered construction equipment compliant with Tier 4 off-road emissions standards. In the event that equipment with a Tier 4 engine is not available for any off-road engine, that engine shall be operated with tailpipe retrofit controls that provide an equivalent reduction of exhaust particulate emissions. Diesel retrofit technologies considered shall include, but not be limited to, the California Air Resources Board's (CARB) currently verified diesel emission control strategies. If emission levels equivalent to Tier 4 standards cannot be reached, the emissions shall be reduced to the maximum extent possible based on the selected retrofit technology.	EBMUD's Construction Contractors	EBMUD	During construction
Biological Resources				
Impact BIO-1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations or by the CDFW or USFWS.	**Adopted WTTIP Mitigation Measure 3.6-3c.** The District will revegetate all natural areas temporarily disturbed due to project activities. Areas supporting sensitive plant communities will be restored using locally collected plant materials specific to that community. For all sites, revegetation criteria will include general restoration concepts and methods, including use of locally native plant material, protection and restoration of soil conditions, irrigation, and control of aggressive non-native species. The planting effort will commence in the fall following construction at the project site. Sites disturbed prior to the planting effort will be treated immediately with a (1) seed mixture and mulch using broadcast methods, or (2) hydroseed. The plant palette will include native plants found locally, such as coffeeberry, sticky monkeyflower, miniature lupine, California poppy, purple needlegrass, California brome, and blue wild rye. All revegetated sites will be monitored for five years. Success criteria to be met at the end of five years may include: at least 80 percent survival of plantings, 75 percent vegetative cover by desirable species, and a viable, self-sustaining plant community.	EBMUD and EBMUD's Construction Contractors	EBMUD	During and after construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources (cont.)				
Impact BIO-1 (cont.)	**Adopted WTTIP Mitigation Measure 3.6-4a.** EBMUD will avoid disturbing active nests of raptors and other special-status nesting birds by performing preconstruction surveys and creating no-disturbance buffers. If construction activities (i.e., ground clearing and grading, including removal of trees or shrubs) are scheduled to occur during the nonbreeding season (September 1 through January 31), no mitigation is required. If construction activities are scheduled to occur during the breeding season (February 1 through August 31), EBMUD will implement the following measures to avoid potential adverse effects on nesting raptors and other special-status birds: • EBMUD will retain a qualified wildlife biologist to conduct preconstruction surveys of all potential nesting habitat within 500 feet of construction activities where access is available. If active nests are found during preconstruction surveys, EBMUD will create a no-disturbance buffer (acceptable in size to the CDFW) around active raptor nests and nests of other special-status birds during the breeding season, or until it is determined that all young have fledged. Typical buffers include 500 feet for raptors and 250 feet for other nesting birds. The size of these buffer zones and types of construction activities restricted in these areas may be further modified during construction with the CDFW and will be based on existing noise and human disturbance levels at each project site. Nests initiated during construction are presumed to be unaffected, and no buffer would be necessary. However, the "take" of any individuals will be prohibited. • If preconstruction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation is required. Trees and shrubs within the construction footprint that have been determined to be unoccupied by special-status birds or that are located outside the no-disturbance buffer for active nests may be removed.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction
	Adopted WTTIP Mitigation Measure 3.6-5. EBMUD will avoid disturbance of the roosts of special-status bats by performing preconstruction surveys and creating no-disturbance buffers. Prior to construction activities (i.e., ground clearing and grading, including removal of trees or shrubs) within 200 feet of trees that potential support special-status bats, EBMUD will retain a qualified bat biologist to survey for special-status bats. If no evidence of bats (i.e., direct observation, guano, staining, strong odors) is present, no further mitigation is required. If evidence of bats is observed, EBMUD will carry out the following measures to avoid potential adverse effects special-status bats: • EBMUD will create a no-disturbance buffer (acceptable in size to the CDFW) around active bat roosts during the breeding season (April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected, and no buffer would be necessary. However, the take of individuals will be prohibited. • Removal of trees showing evidence of bat activity will occur during the period least likely to affect bats, as determined by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If exclusion is necessary to prevent indirect impacts to bats due to construction noise and human activity adjacent to trees showing evidence of bat activity, these activities will also be conducted during these periods.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources (cont.)				
Impact BIO-1 (cont.)	**Adopted WTTIP Mitigation Measure 3.6-6.** EBMUD will avoid disturbance to San Francisco dusky-footed woodrat by performing preconstruction surveys and by avoiding or relocating nests. Not more than two weeks prior to construction, a qualified wildlife biologist will conduct a preconstruction survey to identify woodrat nests within 10 feet of proposed ground disturbance. A qualified wildlife biologist will conduct additional surveys periodically throughout the duration of construction activities to identify newly constructed woodrat nests. If woodrat nests can be avoided by project activities, the qualified biologist would demarcate suitable buffer areas for avoidance. If woodrat nests are located within areas proposed for construction, nest relocation would be implemented. Active woodrat nests found within 10 feet of proposed disturbance areas that cannot be avoided will be relocated offsite to adjacent suitable woodland habitat under the supervision of a qualified wildlife biologist. Understory vegetation would first be cleared from around the nest. Next, the wildlife biologist would disturb the nest and allow all woodrats to leave the nest. Finally, the biologist would remove the nest sticks offsite to the base of an adjacent suitable oak, bay, or other tree. Sticks would be placed at a suitable distance determined by the qualified wildlife biologist.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction
	Mitigation Measure BIO-1: Preconstruction surveys of special-status plant species. EBMUD shall require that a presence/absence survey for special-status plant species be conducted by a qualified botanist during the spring prior to construction within areas that are both within the zone of construction and/or staging areas plus a 25-foot buffer, and within 100 feet of San Pablo Creek. Surveys shall be conducted using CDFW or USFWS survey guidelines. All surveys shall be conducted during the period when the species are identifiable and shall be repeated seasonally, as needed, to provide a complete species list. Any observed sensitive plant species shall be mapped and flagged for avoidance where feasible. The results of the surveys shall be filed as part of the Project administrative record; if the presence of any of these species is confirmed, a copy of the survey results shall be forwarded to the CDFW and/or USFWS. In the event that special-status species are proven absent, then no additional mitigation is necessary. In addition, the sensitive plant communities that are located within the Project site footprint shall be mapped and quantified prior to construction to aid in later avoidance, revegetation, and replacement efforts.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction
	Mitigation Measure BIO-2: Buffer zone and restoration mitigation plan for impacted special-status plant species. In the event that special-status plant species or sensitive plant communities are present or assumed present within or immediately adjacent to the limits of construction, EBMUD shall avoid these species or sensitive plant communities and establish a visible buffer zone (25 feet at minimum, if feasible) prior to construction, in coordination with a qualified biologist, or shall redesign or relocate the proposed structure and/or staging area. If EBMUD determines that it is not feasible to avoid disturbance or mortality, then special-status plant habitat and/or sensitive plant communities shall be mitigated. Mitigation approach may include, but not be limited to: restoring the impacted area, permanently preserving any unaffected on-site populations, or providing off-site compensation. Off-site compensation may include permanent protection of known populations through use of a conservation easement or purchase of mitigation bank credits. If feasible, special-status plants shall be salvaged and transplanted to nearby similar habitat. The appropriate agencies shall be consulted by EBMUD to determine the appropriate species-specific mitigation measures, including mitigation ratios. A 5-year restoration mitigation and monitoring program shall be developed and implemented. Appropriate performance standards may include, but not be limited to: a 75 percent survival rate of restoration plantings or plant cover; absence of invasive plant species; and a functioning, self-sustainable plant community at the end of 5 years.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to, during, and after construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources (cont.)				
Impact BIO-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS, or have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	**Adopted WTTIP Mitigation Measure 3.6-2e.** Where construction activities occur adjacent to or within the dripline of riparian habitat, the District will implement special construction techniques to allow the roots of riparian trees to breathe and obtain water (examples include, but are not limited to, using hand equipment for tunnels and trenching, and allowing only one pass through a riparian tree's dripline). Excavation adjacent to or within the dripline of any riparian tree will occur in a manner that causes only minimal root damage.	EBMUD and EBMUD's Construction Contractors	EBMUD	During construction
	Adopted WTTIP Mitigation Measure 3.6-2f. The District will implement the following measures: • Store equipment and materials away from waterways to the extent feasible as determined by the District. No debris will be deposited within 60 feet of creeks. • Provide proper and timely maintenance for vehicles and equipment used during construction to reduce the potential for mechanical breakdowns leading to a spill of materials into or around creeks. Maintenance and fueling will be conducted away from the creek. • To control erosion, install silt fencing material at the edge of established buffer zones for riparian habitat, or at the edge of the creek where no riparian habitat is present (see Mitigation Measure 3.6-2b -ORWTPDI). • Minimize the removal of riparian and wetland vegetation.	EBMUD and EBMUD's Construction Contractors	EBMUD	During construction
	Adopted WTTIP Mitigation Measure 3.6-7a. EBMUD will avoid disturbing central California coast steelhead, other aquatic species, and associated habitats. Implementation of adopted WTTIP Mitigation Measure 3.5-1a in Section 3.5, Hydrology and Water Quality (see Impact HYD-1), as well as best management practices (BMPs) for construction activities, would reduce potential impacts to steelhead and other aquatic species and habitat resulting from sedimentation, turbidity, and hazardous materials. Specific measures aimed at protecting steelhead and other aquatic species include: • Construction activities within and adjacent to aquatic and riparian habitats will be monitored by a qualified biologist. The biologist will survey the work area for sensitive resources prior to the start of construction each day and monitor identified biological resources during construction activities, such as initial clearing and grading, installation of silt fencing, pipeline trench excavation, and backfilling and compaction. • Sediment curtains will be placed downstream of the construction or maintenance zone to prevent sediment disturbed during trenching activities from being transported and deposited outside of the construction zone. • If groundwater is encountered, or if water remains within the worksite after flows are diverted, it will be pumped out of the construction area and into a retention basin constructed of hay bales lined with filter fabric. The pump(s) will be screened to avoid entrapment of aquatic species.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources (cont.)				
Impact BIO-2 (cont.)	• Silt fencing will be installed in all areas where construction occurs within 100 feet of actively flowing water. • A spill prevention plan for potentially hazardous materials will be prepared and implemented. The plan will include the proper handling and storage of all potentially hazardous materials, as well as the proper procedures for cleaning up and reporting any spills. If necessary, containment berms will be constructed to prevent spilled materials from reaching the creek channels. • Equipment and materials will be stored at least 50 feet from waterways. No debris (such as trash and spoils) will be deposited within 100 feet of wetlands. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents will be located outside of the stream channel and banks and be limited to the smallest size feasible as determined by EBMUD. Stationary equipment such as motors, pumps, generators, compressors, and welders located within or adjacent to the stream will be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream will be checked and maintained daily to prevent leaks of materials that, if introduced to water, could be deleterious to aquatic life. Vehicles will be moved away from the stream prior to refueling and lubrication. • Proper and timely maintenance of vehicles and equipment will be performed to reduce the potential for mechanical breakdowns that could lead to a spill of materials into or around creeks. Maintenance and fueling will be conducted at least 75 feet from riparian or aquatic habitats. • Project sites will be revegetated with an appropriate assemblage of native upland vegetation and, if necessary, riparian and wetland vegetation suitable for the area. A plan describing pre-project conditions, invasive species control measures, and restoration and monitoring success criteria will be prepared prior to construction.			
	Mitigation Measure 3.6-2b-ORWTPDI: Construction Exclusion Zone. In coordination with a qualified biologist, EBMUD shall, to the extent feasible, establish a minimum 10-foot construction exclusion zone, where direct impacts will be avoided from the creek top-of-banks, using protective fencing. Existing riparian vegetation that is not to be disturbed shall be delineated with orange construction fencing.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction
	Mitigation Measure 3.6-2c-ORWTPDI: Jurisdictional Features and Riparian Vegetation. If impacts to potentially jurisdictional features and associated riparian vegetation cannot be avoided or minimized, then EBMUD shall obtain a qualified biologist to complete a wetland delineation in accordance with Corps guidelines and shall obtain the appropriate permits/agreements, including a Section 401 water quality certification from the RWQCB, a Section 404 wetland permit from the Corps, and/or a Section 1602 Streambed Alteration Agreement from the CDFW. EBMUD shall implement all conditions contained in these permits. EBMUD shall revegetate temporarily disturbed portions of the creek and herbaceous vegetation at a ratio of 1:1 (or at a ratio agreed on by the wetland permitting agencies). EBMUD shall compensate for permanent wetland and stream impacts onsite at a ratio of 2:1 (or at a ratio agreed on by the wetland permitting agencies) with the same type of feature as the feature affected. If EBMUD determines that onsite restoration is not feasible, EBMUD shall compensate for permanent impacts at a 3:1 ratio (or at a ratio agreed on by the permitting agencies). EBMUD shall develop and implement a five-year riparian vegetation mitigation and monitoring program by a certified arborist to reduce potential impacts to the riparian corridor attributable to the Project and include:	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction, and annually for 5 years after construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources (cont.)				
Impact BIO-2 (cont.)	• Riparian tree assessment/inventory to be conducted for native, riparian trees for the extent of the tiebacks on the west bank of San Pablo Creek (approximately from the upper spillway downstream to the Lafayette 1 Drain outfall): – Immediately after installation of the tiebacks is completed – Immediately after construction of the MAUVE/UV/CCB Structure is completed – Annually (in the late spring) for five years after construction Appropriate performance standards may include, but are not limited to: existing riparian tree health changes since the Project, absence of non-native, invasive plant species; and a functioning, self-sustaining riparian system at the end of five years. After each inspection, a technical memorandum shall be prepared by the certified arborist and submitted to EBMUD reporting the findings of each inspection, including but not limited to findings regarding changes in existing conditions vegetation in the riparian corridor, and whether specified performance standards are being met. As determined necessary by the certified arborist per the findings of the technical memoranda, EBMUD shall revegetate temporarily disturbed portions of creeks and the riparian corridor to meet the performance standards specified above. Revegetation will include a palette of species native to the watershed area. Following removal, woody trees would be replanted at a 3:1 ratio at minimum, or as determined and agreed on by the appropriate permitting agencies. Interim measures to protect the unvegetated creek from erosion may be required. Interim measures may include replanting banks using native or sterile non-native seeds or seedlings following construction within the riparian corridor, and removing non-native vegetation from stream banks, where appropriate. EBMUD shall engage the regulatory agencies with jurisdiction over San Pablo Creek and its riparian corridor to review and confirm the adequacy of proposed revegetation and/or interim measures to meet the specified performance standards and any applicable regulatory requirements.			
	Mitigation Measure BIO-3: Staging Area Silt Fence Installation. EBMUD shall require installation of silt fence along the perimeter of staging areas adjacent to riparian corridors and waterways to prevent sediment from entering riparian or aquatic areas. EBMUD shall also require a qualified biologist to review and approve silt fence plans and to monitor silt fence installation to minimize riparian impacts during installation.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction
	Mitigation Measure HYD-2: Tieback Installation Monitoring and Remedial Actions. (See full text with Impact HYD-1 below.)			
	Mitigation Measure HYD-3: San Pablo Creek Bank Monitoring and Remediation Program. (See full text with Impact HYD-3d below.)			

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources (cont.)				
Impact BIO-4: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	**Adopted WTTIP Mitigation Measure 3.6-1a.** EBMUD will prepare a map indicating the trees to be removed and retained (preserved). Prior to the start of any clearing, stockpiling, excavation, grading, compaction, paving, change in ground elevation, or construction, retained trees that are adjacent to or within project construction areas will be identified and clearly delineated by protective fencing (e.g., short post and plank walls), which will be installed at the dripline of each tree to hold back fill. The delineation markers will remain in place for the duration of all construction work. Where proposed development or other site work must encroach upon the dripline of a preserved tree, special construction techniques will be required to allow the roots of remaining trees within the project site to breathe and obtain water (examples include, but are not limited to, using hand equipment for trenching and/or allowing only one pass through a tree's dripline). Tree wells or other techniques may be used where advisable by a certified arborist. Excavation adjacent to any trees will be performed in a manner that causes only minimal root damage. The following will not occur within the dripline of any retained tree: parking; storage of vehicles, equipment, machinery, stockpiles of excavated soils, or construction materials; or dumping of oils or chemicals.	EBMUD and EBMUD's Construction Contractors	EBMUD	Prior to and during construction
	Adopted WTTIP Mitigation Measure 3.6-1c. The contractor will be required to warrant tree health for one year after project completion and the District will guarantee the health of all trees to be preserved within and adjacent to the construction corridor of project-related pipeline and facility sites for two additional years, for a total of three years. The guarantee period for a tree will be five years if the District constructs or installs improvements or performs approved mechanical excavation within the dripline of any tree. The District will replace any tree that is to be retained but that dies as a result of project construction activities during the guarantee period with a tree of the same species. The replaced trees would be subject to the same monitoring protocols as those protected trees removed due to construction.	EBMUD and EBMUD's Construction Contractors	EBMUD	After construction
	Adopted WTTIP Mitigation Measure 3.6-1d. The District will develop and implement a five-year tree monitoring program. Performance standards may include, but are not limited to: a 75 percent survival rate of tree plantings and the ability to be self-sustaining at the end of five years.	EBMUD	EBMUD	After construction
	Mitigation Measure 3.6-1b-ORWTPDI: Tree Replacement. For each project site, all pruning of preserved trees shall be performed by a certified arborist. No more than 25 percent of a tree's canopy shall be removed. Tree replacement shall adhere to the following guidelines: • If any protected tree native to the local area, such as valley oak and coast live oak, is removed, the District shall replace it on a 3:1 basis with native trees of the same species as those removed. • In natural areas, defined as outside the Orinda WTP existing fenceline, all unprotected native and non-native trees that are removed shall be replaced at a 1:1 ratio. Unprotected native trees shall be replaced with native trees. Unprotected non-native trees shall be replaced with a non-invasive tree species (native or non-native) at a distribution that reflects the local tree species' composition.	EBMUD and EBMUD's Construction Contractors	EBMUD	During and after construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Biological Resources (cont.)				
Impact BIO-4 (cont.)	• Replacement trees shall be planted on site where feasible. Where this is not feasible, trees shall be planted at ecologically appropriate sites on EBMUD watershed lands. • In lieu of tree replacement, the District may consider the establishment of permanent conservation easements on EBMUD watershed lands that support high quality oak woodlands. Oak woodland acreage lost through individual tree removal shall be quantified prior to initiation of project construction activities and concurrent with the mapping activities to occur under adopted WTTIP Mitigation Measure 3.6-1a.			
Cultural Resources				
Impact CUL-1: Cause a substantial adverse change in the significance of a historical resource, as defined in CEQA Guidelines Section 15064.5.	**Mitigation Measure CUL-1a: Prepare documentation of all historic-age buildings, structures, objects, and sites that make up the Orinda WTP.** Before ground disturbance, EBMUD shall hire an architectural historian who meets the Secretary of the Interior's Professional Qualifications Standards for architectural history to prepare California Department of Parks and Recreation (DPR) 523 forms that document all historic-age buildings, structures, objects, and sites that make up the Orinda WTP. The completed DPR 523 forms shall be submitted to the Northwest Information Center at Sonoma State University, the City of Orinda, and the Orinda Historical Society.	EBMUD and EBMUD's Architectural Historian	EBMUD	Prior to construction
	Mitigation Measure CUL-1b: Document Existing Grounds/Maintenance Building and LAPP1 before removal. Before the start of any construction and demolition work at the existing Grounds/Maintenance Building and LAPP1, EBMUD shall fully document the building. Documentation by an architectural historian (or historical architect, as appropriate) shall consist of a written history of the two buildings and drawings and photographs, as described below. • ***Written history.*** An architectural historian (or historical architect, as appropriate) shall prepare a written history of the two buildings, conducting archival research as required. The completed DPR 523 forms for the Orinda WTP described in Mitigation Measure CUL-1a shall be used to the greatest extent possible. The report shall be produced on archival bond paper. • ***Drawings and photographs.*** An architectural historian (or historical architect, as appropriate) shall conduct research into the availability of architectural drawings and photographs of the existing Grounds/Maintenance Building and LAPP1 as they existed historically and as they currently exist. – *Drawings*: Select existing drawings, where available, may be photographed with large-format negatives or photographically reproduced on Mylar in accordance with the U.S. Copyright Act, as amended. – *Photographs*: Photographs with large-format negatives of exterior and interior views and historic views where available and produced in accordance with the U.S. Copyright Act, as amended, shall be included in the documentation. The documentation shall be prepared by an architectural historian or historical architect, as appropriate, who meets the Secretary of the Interior's Professional Qualifications Standards. The documentation shall be submitted to the Orinda Historical Society and kept on file at EBMUD.	EBMUD and EBMUD's Architectural Historian	EBMUD	Prior to construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Cultural Resources (cont.)				
Impact CUL-2: Cause a substantial adverse change in the significance of an archaeological resource, pursuant to CEQA Guidelines Section 15064.5.	**Adopted WTTIP Mitigation Measure 3.7-1a.** EBMUD will include the following in contract specifications for ground-disturbing activities, including excavation and grading. In the event of accidental discovery of cultural resources, such as structural features, bone, shell, artifacts, human remains, architectural remains (such as bricks or other foundation elements), or historic archaeological artifacts (such as antique glass bottles, ceramics, horseshoes, etc.), work will be suspended and EBMUD staff will be contacted. A qualified cultural resource specialist will be retained and will perform any necessary investigations to determine the significance of the find. EBMUD will then implement any mitigation deemed necessary for the recordation and/or protection of the cultural resources. In addition, pursuant to Sections 5097.97 and 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, in the event of the discovery of human remains, all work will be halted and the county coroner will be immediately notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission will be adhered to in the treatment and disposition of the remains.	EBMUD's Archaeologist	EBMUD's Archaeologist	During construction
Impact CUL-3: Disturb any human remains, including those interred outside of dedicated cemeteries.	**Adopted WTTIP Mitigation Measure 3.7-1a.** (See full text with Impact CUL-2 above.)			
Geology, Soils, Seismicity, and Paleontological Resources				
Impact GEO-1: Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: strong seismic groundshaking; seismic-related ground failure (liquefaction, lateral spreading); or landslides.	**Adopted WTTIP Mitigation Measure 3.4-2.** During the design phase for all project components that require ground-breaking activities (excluding pipelines), the District will perform site-specific, design-level geotechnical evaluations to identify potential secondary ground failure hazards (i.e., seismically-induced settlement) associated with the expected level of seismic ground shaking. The geotechnical analysis would provide recommendations to mitigate those hazards in the final design and, if necessary during construction. The site-specific design-level geotechnical evaluations, based on the site conditions and location and professional opinion of the geotechnical engineer, could include subsurface drilling, soil testing, and analysis of site seismic response. The geotechnical engineer would review the seismic design criteria of facilities to ensure that facilities are designed to withstand the highest expected peak acceleration, set forth by the CBC for each site. Recommendations resulting from findings of the geotechnical study will be incorporated into the design and construction of proposed facilities. Design and construction for buildings will be performed in accordance with the District's seismic design standards, which meet and/or exceed design standards for Seismic Zone 4 of the Uniform Building Code.	EBMUD's Engineering Geologist and Construction Contractors	EBMUD	Prior to and during construction
	Adopted WTTIP Mitigation Measure 3.4-4. During the design phase for all project components that require ground-breaking activities (excluding pipelines), the District will perform site-specific design-level geotechnical evaluations to identify geologic hazards and provide recommendations to mitigate those hazards in the final design and during construction. The design-level geotechnical evaluations will include the collection of subsurface data for determining liquefaction potential. The evaluation and mitigation of liquefaction hazards shall	EBMUD's Engineering Geologist and Construction Contractors	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Geology, Soils, Seismicity, and Paleontological Resources (cont.)				
Impact GEO-1 (cont.)	**Adopted WTTIP Mitigation Measure 3.4-4** (cont.)			
	be in conformance with the California Geological Survey's Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California, which provides methods to identify, evaluate, and reduce the hazards and earthquake-induced landslide hazards as required under the Seismic Hazards Mapping Act (SHMA) of 1990. The evaluation and mitigation shall be conducted by a California registered professional engineer or California certified engineering geologist. When site-specific testing identifies a potential for significant liquefaction-induced ground failures and damage to project facilities, appropriate feasible measures, as recommended in SP 117, shall be developed and incorporated into the project design. Because the project sites are not located in an area zoned under the SHMA, review of the investigation report by the CGS is not required. For all pipelines located in liquefaction hazard areas, appropriate piping material with the ability to deform without rupture (e.g. ductile steel) will be used. For large diameter pipes (greater than 12 inches in diameter) located in high liquefaction hazard areas, a geotechnical evaluation will be conducted. Measures to minimize significant liquefaction hazards could include the following: • Densification or dewatering of surface or subsurface soils, • Construction of pile or pier foundations to support pipelines and/or buildings, • Removal of material that could undergo liquefaction in the event of an earthquake, and replacement with stable material, • Modification of site geometry to reduce the risk of translational site instability**.**			
Impact GEO-2: Result in substantial soil erosion or the loss of topsoil.	**Adopted WTTIP Mitigation Measures 3.9-1b.** (See full text with Impact AIR-1 above.)			
Impact GEO-3: Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the Project, and potentially could result in on-site or off-site landslides, lateral spreading, subsidence (i.e., settlement), liquefaction, or collapse.	**Adopted WTTIP Mitigation Measure 3.4-2.** (See full text with Impact GEO-1 above.)			
	Adopted WTTIP Mitigation Measure 3.4-3a. During the design phase for all project components that require ground-breaking activities (excluding pipelines), the District will perform site-specific design-level geotechnical evaluations to identify geologic hazards and provide recommendations to mitigate those hazards in the final design and during construction. The geotechnical evaluations, conducted by a California registered professional engineer, will include site-specific investigations, which may include, if necessary, soil sampling and testing to determine the presence and characteristics of potentially compressible soils, the engineering properties of the proposed foundation material, the depth and thickness of soil layers, and the depth to groundwater. Based on the findings of the investigations, the registered professional shall formulate adequate measures to reduce the expansivity index of the site soil to a low expansion potential (Expansivity Index (EI) less than 50) as defined in the 1997 Uniform Building Code. For compressible soils, the registered professional would develop and implement a strategy to improve the soil to achieve settlements below what the proposed structure can tolerate, as determined through laboratory soils testing and professional judgment. Feasible mitigation measures, as listed below, are standard engineering practice and are common engineering design strategies used to overcome problematic soil conditions.	EBMUD's Engineering Geologist and Construction Contractors	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Geology, Soils, Seismicity, and Paleontological Resources (cont.)				
Impact GEO-3 (cont.)	**Adopted WTTIP Mitigation Measure 3.4-3a** (cont.) • Removal and replacement of problematic topsoil • Soil pre-compression, using vertical drains, surcharge fills or dynamic compaction • Installation of deep foundations (i.e., piles, drilled piers) • Deep mixing of compressible or expansive soils with stabilizing agents • Mitigation measures included in the geotechnical evaluations will be incorporated into the project design specifications and would become part of the project.			
	Adopted WTTIP Mitigation Measure 3.4-4. (See full text with Impact GEO-1 above.)			
	Mitigation Measure HYD-3: San Pablo Creek Bank Monitoring and Remediation Program. (See full text with Impact HYD-3d below.)			
Impact GEO-4: Be located on expansive soil, as defined in Table 18-1-B of the Uniform Buildings Code (1994), creating substantial direct or indirect risks to life or property.	**Adopted WTTIP Mitigation Measure 3.4-3a.** (See full text with Impact GEO-3 above.)			
	Adopted WTTIP Mitigation Measure 3.4-3b. The District will include in the contract specifications that any fill will be selected, placed, compacted, and inspected in accordance with plans and specifications prepared by a licensed professional engineer in accordance with standard and accepted engineering protocols (inspection, compaction-density testing, in-situ field testing) necessary to prevent engineered fill soils from becoming expansive or compressible after placement.	EBMUD's Construction Contractors	EBMUD	Prior to and during construction
Impact GEO-5: Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.	**Adopted WTTIP Mitigation Measure 3.7-2.** EBMUD or an appointed representative will notify a qualified paleontologist of any discoveries, document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in Section 15064.5 of the *CEQA Guidelines*. In the event a fossil is discovered during construction, excavations within 50 feet of the find will be temporarily halted or diverted until the discovery is examined by a qualified paleontologist, in accordance with Society of Vertebrate Paleontology standards (SVP, 1995). The paleontologist will notify EBMUD to determine procedures to be followed before construction is allowed to resume at the location of the find. If EBMUD determines that avoidance is not feasible, the paleontologist will prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and the plan will be implemented. The plan will be submitted to EBMUD for review and approval.	EBMUD and EBMUD's Paleontologist	EBMUD and EBMUD's Paleontologist	During construction
Greenhouse Gas Emissions				
Impact GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	**Adopted WTTIP Mitigation Measure 3.9-1c.** (See full text with Impact AIR-1 above.)			

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Greenhouse Gas Emissions (cont.)				
Impact GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	**Adopted WTTIP Mitigation Measure 3.9-1c.** (See full text with Impact AIR-1 above.)			
	Adopted WTTIP Mitigation Measure 3.12-4a. The District will require project facility design and construction methods that produce less waste, or that produce waste that could more readily be recycled or reused.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and during construction
	Adopted WTTIP Mitigation Measure 3.12-4b. The District will include in its construction specifications a requirement for the contractor to describe plans for recovering, reusing, and recycling 50 percent of projected solid waste through construction, demolition, and excavation activities.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to construction
	Adopted WTTIP Mitigation Measure 3.12-5. The District will implement adopted WTTIP Mitigation Measures 3.12-4a and 3.12-4b.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and during construction
Hazards and Hazardous Materials				
Impact HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	**Adopted WTTIP Mitigation Measure 3.11-2.** The District will perform or incorporate into contract specifications for all project components involving demolition or renovation of existing facilities the requirement that the contractor(s) have a hazardous building materials survey completed for each of the structures by a registered environmental assessor or a registered engineer prior to demolition or renovation activities. If any friable asbestos-containing materials, lead-containing materials, or hazardous components of reservoir liner materials are identified, adequate abatement practices, such as containment and/or removal, will be implemented prior to demolition or renovation.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to construction
	Mitigation Measure HAZ-1a: Project Safety and Health Plan. Before the start of construction, the construction contractor(s) shall prepare a Project Safety and Health Plan in accordance with 29 CFR 1910.120 and approved by EBMUD that addresses anticipated hazards related to hazardous substances, fall protection, confined spaces, and trenches or excavations. The plan must designate a Project Safety and Health Representative and a qualified person to take air samples and measurements of known or suspected hazardous materials. All personnel who will likely be exposed to hazardous substances must have appropriate training. The plan shall include an Emergency Action Plan in the event of an accident or serious unplanned event that requires notifying any responsive agencies (e.g., fire department, utilities, rescue teams).	EBMUD's Construction Contractor	EBMUD	Prior to construction
	Mitigation Measure HAZ-1b: Construction Demolition Waste and Disposal Plan. Prior to construction, the construction contractor(s) shall prepare and implement a site-specific Construction Demolition Waste and Disposal Plan and submit a copy of the plan prior to disposing of any material (except for water wastes, which shall be addressed in the Water Control and Disposal Plan). The plan shall identify how the construction contractor(s) will remove, handle, transport, and dispose of all materials required to be removed under this contract (including, but not limited to asbestos-containing and lead-containing materials) in a safe, appropriate,	EBMUD's Construction Contractor	EBMUD	Prior to construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Hazards and Hazardous Materials (cont.)				
Impact HAZ-1 (cont.)	and lawful manner in compliance with all applicable regulations of local, state, and federal agencies having jurisdiction over the disposal of removed materials. The construction contractor(s) shall procure the necessary permits required by the local, state, and federal agencies having jurisdiction over the handling, transportation, and disposal of construction and demolition waste and include a list of reuse, recycling, and processing facilities that will be receiving recovered materials. The plan must identify materials that are not recyclable or not recovered that will be disposed of in a landfill (or other means acceptable by the state of California and local ordinance and regulations) and list the permitted landfill, or other permitted disposal facilities, that will be accepting the disposed waste materials. The plan must also identify each type of waste material to be reused, recycled, or disposed of estimate the amount by weight, and include the sampling and analytical program for characterization of any waste material, as needed, prior to reuse, recycle, or disposal. Materials or wastes shall only be disposed of at facilities approved by EBMUD. Prior to disposition of wastes, the contractor must submit permission to reuse, recycle, reclaim, or dispose of material from the reuse, recycling, reclamation, or disposal site owner, along with any other information needed by the EBMUD to evaluate the acceptability of the proposed reuse, recycling, or disposal site. The contractor shall disclose all information pertinent to the characterization of the material or waste to EBMUD.			
	Mitigation Measure HAZ-1c: Water Control and Disposal Plan. The construction contractor(s) shall prepare and implement a site-specific Water Control and Disposal Plan (WCDP) prior to any work at the worksite. The WCDP shall comply with all EBMUD requirements and applicable discharge permit requirements. The construction contractor(s) shall maintain proper control of the discharge at the discharge point to prevent erosion, scouring of bank, nuisance, contamination, and excess sedimentation in the receiving waters.	EBMUD's Construction Contractor	EBMUD	Prior to construction
	Mitigation Measure HAZ-1d: Spill Prevention and Response Plan. The construction contractor(s) shall prepare and implement a site-specific Spill Prevention and Response Plan prior to any work at the worksite. The plan shall detail the means and methods for preventing and controlling the spilling of known hazardous substances used on the worksite or staging areas. The plan shall include a list of the hazardous substances proposed for use or generated by the construction contractor(s) on site, including petroleum products, and measures that will be taken to prevent spills, monitor hazardous substances, and provide immediate response to spills. Spill response measures shall address notification of the engineer and appropriate agencies including phone numbers; spill-related worker, public health, and safety issues; and spill control and cleanup. A Safety Data Sheet (SDS) shall be submitted for each hazardous substance proposed to be used prior to delivery of the material to the worksite.	EBMUD's Construction Contractor	EBMUD	Prior to construction
Impact HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.	**Adopted WTTIP Mitigation Measure 3.12-1c.** The District or its contractors will confirm the specific location of all high priority utilities (i.e. pipelines carrying petroleum products, oxygen, chlorine, toxic or flammable gases; natural gas in pipelines greater than 6 inches in diameter, or with normal operating measures, greater than 60 pounds per square inch gauge; and underground electric supply lines, conductors, or cables that have a potential to ground more than 300 volts that do not have effectively grounded sheaths) and such locations will be highlighted on all constructions drawings. In the contract specifications, the District will require that the contractor provide weekly updates on planned excavation for the upcoming week and identify when construction will occur near a high priority utility. On days when this work will occur, District construction managers will attend tailgate meetings with contractor staff to review all measures—those identified in the Mitigation Monitoring and Reporting Program and in the construction specifications—regarding such excavations. The contractor's designated health and safety officer will specify a safe distance to work near high-pressure gas lines, and excavation closer to the pipeline will not be	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Hazards and Hazardous Materials (cont.)				
Impact HAZ-2 (cont.)	authorized until the designated health and safety officer confirms and documents in the construction records that: (1) the line was appropriately located in the field by the utility owner using as-built drawings and a pipeline-locating device, and (2) the location was verified by hand by the construction contractor. The designated health and safety officer will provide written confirmation to the District that the line has been adequately located, and excavation will not start until this confirmation has been received by the District.			
	Mitigation Measure HAZ-1a: Project Safety and Health Plan. (See full text with Impact HAZ-1 above.)			
	Mitigation Measure HAZ-1b: Construction Demolition Waste and Disposal Plan. (See full text with Impact HAZ-1 above.)			
	Mitigation Measure HAZ-1c: Water Control and Disposal Plan. (See full text with Impact HAZ-1 above.)			
	Mitigation Measure HAZ-1d: Spill Prevention and Response Plan. (See full text with Impact HAZ-1 above.)			
Impact HAZ-3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	**Mitigation Measure HAZ-1a: Project Safety and Health Plan.** (See full text with Impact HAZ-1 above.)			
	Mitigation Measure HAZ-1b: Construction Demolition Waste and Disposal Plan. (See full text with Impact HAZ-1 above.)			
	Mitigation Measure HAZ-1c: Water Control and Disposal Plan. (See full text with Impact HAZ-1 above.)			
	Mitigation Measure HAZ-1d: Spill Prevention and Response Plan. (See full text with Impact HAZ-1 above.)			
Impact HAZ-4: Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.	**Adopted WTTIP Mitigation Measure 3.11-1.** For construction of all facilities requiring excavation of more than 50 cubic yards of soil, the District or contractor will use a qualified professional to conduct a Phase I environmental site assessment in conformance with standards adopted by ASTM International. If the Phase I environmental site assessment indicates that a release of hazardous materials could have affected soil or groundwater quality at the site, the District will retain a qualified environmental professional to conduct a Phase II environmental site assessment to evaluate the presence and extent of contamination at the site, in conformance with state and local guidelines and regulations. If the results of the subsurface investigation(s) indicate the presence of hazardous materials, alteration of facility design or site remediation may be required by the applicable state or local regulatory agencies, and the contractors will be required to comply with all regulatory requirements for facility design or site remediation. The Phase I environmental site assessment will be completed within twelve months prior to construction to accurately estimate the conditions that could be expected during construction.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to construction
Impact HAZ-5: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	**Adopted WTTIP Mitigation Measure 3.8-1.** (See full text with Impact TRA-1 below.)			
	Adopted WTTIP Mitigation Measure 3.8-4. (See full text with Impact TRA-1 below.)			

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Hazards and Hazardous Materials (cont.)				
Impact HAZ-6: Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.	**Mitigation Measure WF-1: Construction Fire Prevention Plan.** (See full text with Impact WF-2 below.)			
Hydrology and Water Quality				
Impact HYD-1: Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	**Adopted WTTIP Mitigation Measure 3.5-1a.** EBMUD will incorporate into contract specifications the requirement for the grading of construction staging areas to contain surface runoff so that contaminants such as oil, grease, and fuel products do not drain towards receiving waters. If heavy-duty construction equipment is stored overnight at the construction staging areas, drip pans will be placed beneath the machinery engine block and hydraulic systems to prevent any leakage from entering runoff or receiving waters.	EBMUD's Construction Contractor	EBMUD	Prior to and during construction
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. EBMUD or its contractor shall obtain authorization of discharges of stormwater associated with construction activity from the California State Water Resources Control Board under the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ; "construction general permit") or more recent general permit as relevant. The construction general permit requires all dischargers to comply with all applicable water quality standards, including any more stringent standards applicable to a water body. A site-specific Stormwater Pollution Prevention Plan (SWPPP) shall be prepared. The SWPPP shall include the information needed to demonstrate compliance with all requirements of the construction general permit, and must be kept on the construction site and be available for review. A qualified SWPPP developer (QSD) shall develop the SWPPP prior to the beginning of construction. The QSD shall determine relevant BMPs for the SWPPP based on sediment transport risk and risk to receiving waters. The SWPPP must also contain a site map(s) that delineates the construction work area, existing and proposed buildings, parcel boundaries, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the Project area. A qualified SWPPP practitioner shall oversee implementation of the BMPs included in the SWPPP. All BMPs shall be inspected routinely. The SWPPP shall contain a visual monitoring program, and a chemical monitoring program for non-visible pollutants to be implemented if there is a failure of BMPs. EBMUD or its contractor shall electronically submit a notice of intent and permit registration documents in order to obtain coverage under the construction general permit. EBMUD or its contractor shall notify the SFBRWQCB of violations or incidents of non-compliance, as well as submit annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Hydrology and Water Quality (cont.)				
	Mitigation Measure HYD-2: Tieback Installation Monitoring and Remedial Actions. EBMUD or its contractor shall engage a California-licensed geotechnical engineer to monitor tieback installation (i.e., drilling, grouting). The California-licensed geotechnical engineer shall develop and maintain detailed drilling and grouting records. Grout placement volumes shall be observed to ensure grout volumes do not exceed the theoretical placed volume, which could be an indication of grout leakage. The following tieback installation remediation process shall be implemented if a frac-out or drilling fluid or grout loss is encountered. If a visible frac-out or grout leakage occurs, work shall cease at the tieback drilling location and EBMUD shall be immediately notified to determine the appropriate course of remedial action. Remedial measures shall include, but not be limited to: • Staging the grout filling of the tieback anchor to limit hydrostatic head at the bottom of the tieback borehole. • Pre-treating the tieback anchor borehole by using a thixotropic grout to reduce grout leakage into the bedrock. • Thickening the grout mix by reducing the water to cement ratio. • Using a grouting "sock" to minimize grout penetration into the bedrock. • Including additives, such as bentonite, in the grout mix to reduce grout penetration. • If a frac-out (i.e., grout) is encountered on dry ground surface outside the San Pablo Creek channel and it is determined that containment is necessary, stormwater BMPs, such as straw wattles, shall be deployed completely around the grout. The grout shall be collected, removed from the site, and disposed of in a manner according to applicable regulations. If the volume of grout is too small to warrant containment, it shall be allowed to dry and disposed of in a manner according to applicable regulations. • If a frac-out (i.e., grout) is encountered within the San Pablo Creek channel, the regulatory agencies with jurisdiction in the channel shall be notified by EBMUD to determine appropriate remedial action (i.e., U.S. Army Corps of Engineers, Regional Water Quality Control Board, California Fish and Wildlife). The frac-out remedial actions shall comply with the requirements pertaining to regulated waterways, including associated water quality requirements of the RWQCB.	EBMUD and EBMUD's Construction Contractor	EBMUD	During construction
Impact HYD-3a: Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on or off site.	**Adopted WTTIP Mitigation Measure 3.5-1a.** (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. (See full text with Impact HYD-1 above.)			

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Hydrology and Water Quality (cont.)				
Impact HYD-3b: Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface run-off in a manner which would result in flooding on- or offsite.	**Adopted WTTIP Mitigation Measure 3.5-1a.** (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. (See full text with Impact HYD-1 above.)			
Impact HYD-3c: Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute run-off water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted run-off.	**Adopted WTTIP Mitigation Measure 3.5-1a.** (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-2: Tieback Installation Monitoring and Remedial Actions. (See full text with Impact HYD-1 above.)			

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Hydrology and Water Quality (cont.)				
Impact HYD-3d: Substantially alter the existing drainage pattern of the site area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would impede or redirect flood flows.	**Adopted WTTIP Mitigation Measure 3.5-1a.** (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-3: San Pablo Creek Bank Monitoring and Remediation Program. Prior to ground excavation activities for the MAUVE/UV/CCB Structure, EBMUD shall retain a fluvial geomorphologist to develop and implement a creek bank monitoring and remediation program for the reach of San Pablo Creek adjacent to the MAUVE/UV/CCB Structure site, and EBMUD shall implement the creek bank monitoring and remediation program. The bank monitoring shall occur for the extent of the tiebacks and anchors on the west and east banks of San Pablo Creek (approximately from the upper spillway downstream to the Lafayette 1 Drain outfall) to reduce the potential for creek bank instability as a result of Project construction. This program shall include, but not be limited to: • Baseline creek cross-section surveys; • Visual creek bank stability evaluations to be conducted at specific construction milestones and for five years annually after Project completion. If warranted through visual evaluation by the fluvial geomorphologist, follow-up cross-section surveys to be conducted; • Preparation of a technical memo after each creek bank stability evaluation to include, but not limited to, documented field conditions, established photo viewpoints, and recommended remedial actions, if any; • Development of specific bank stability thresholds to determine when remedial actions are required, including, but not limited to, visual evidence of bank erosion and changes in channel cross-section; • Development of bank stabilization remedial actions, to be taken if bank stability thresholds are exceeded, including, but not limited to, biotechnical bank stabilization methods (e.g., live willow stake planting) and native riparian bank re-vegetation. Remedial actions to be determined based on the specific bank instability issue and Project-specific permit requirements or – if no Project-specific permit has been issued – applicable regulatory requirements in force at that time. If at any monitoring or reporting point, signs of potential creek bank instability become evident, EBMUD shall engage the regulatory agencies with jurisdiction over San Pablo Creek to confirm EBMUD's proposed remedial bank stabilization actions. EBMUD shall comply with all permitting or other regulatory requirements identified by the regulatory agencies to ensure that the remedial actions will not significantly adversely affect San Pablo Creek or its riparian corridor.	EBMUD and EBMUD's Fluvial Geomorphologist	EBMUD	Prior to and during construction, and for 5 years after construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Hydrology and Water Quality (cont.)				
Impact HYD-4: In a flood hazard, tsunami, or seiche zone, risk release of pollutants due to Project inundation.	**Adopted WTTIP Mitigation Measure 3.5-1a.** (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. (See full text with Impact HYD-1 above.)			
Impact HYD-5: Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	**Adopted WTTIP Mitigation Measure 3.5-1a.** (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. (See full text with Impact HYD-1 above.)			
Noise and Vibration				
Impact NOI-1: Result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	**Adopted WTTIP Mitigation Measure 3.10-1a.** The District will incorporate into contract specifications a requirement that construction activities at the construction site not cause daytime noise levels to exceed the 70-dBA speech interference criterion at the closest affected sensitive receptors, as well as that noise levels are consistent with local ordinances (see Table 3.10-1 of the WTTIP EIR). Measures that would be implemented to reduce noise levels (as demonstrated in Table 3.10-5 of the WTTIP EIR) to meet this criterion include the following: • Truck operations (haul trucks and concrete delivery trucks) will be limited to the daytime hours, as described in adopted WTTIP Mitigation Measure 3.10-1b. • Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will be used for all equipment and trucks as necessary. • If impact equipment (e.g., jackhammers, pavement breakers, and rock drills) is used during project construction, hydraulically or electric-powered equipment will be used wherever possible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust will be used (a muffler can lower noise levels from the exhaust by up to about 10 dB). External jackets on the tools themselves will be used, where feasible, which could achieve a reduction of 5 dB. Quieter procedures, such as drilling rather than impact equipment, will be used whenever feasible. • Stationary noise sources will be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) will be used to ensure local noise ordinance limits are met. Enclosure opening or venting will face away from sensitive receptors. Enclosures will be designed by a registered engineer regularly involved in noise control analysis and design. Operation of any stationary equipment beyond the time limits specified will meet applicable noise ordinance noise limits (see adopted WTTIP Mitigation Measure 3.10-1b).	EBMUD and EBMUD's Construction Contractor	EBMUD	During construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Noise and Vibration (cont.)				
Impact NOI-1 (cont.)	- Material stockpiles as well as maintenance/equipment staging and parking areas will be located as far as practicable from residential and school receptors. - An EBMUD contact person will be designated to respond to construction-related issues, including noise. The name and phone number of the liaison will be conspicuously posted at construction areas, on all advanced notifications, and on the EBMUD project website. This person will take steps to resolve complaints, including periodic noise monitoring and the option of hotel accommodations, if necessary.			
	Adopted WTTIP Mitigation Measure 3.10-1b. Construction producing substantial noise will be restricted to the hours of operation specified by each jurisdiction's noise ordinance (as listed in Table 3.10-1 of the WTTIP EIR, including restrictions provided in footnotes and any other ordinance exceptions and provisions in effect at the time of EIR publication), except during critical water service outages or other emergencies and special situations. Any equipment operating beyond these hours will be subject to the day and night noise limits of each jurisdiction (as listed in Table 3.10-1 of the WTTIP EIR) for various activities in single-family residential zones. EBMUD will coordinate with local agencies regarding noise controls for any construction work that needs to occur after 6:00 p.m. and before 7:00 a.m. To ensure that these standards could be met at the closest sensitive receptors, EBMUD will conduct a noise monitoring program prior to implementation of any project where construction would extend beyond ordinance time limits to accurately determine baseline ambient noise levels at the closest residential receptors and to measure noise levels at these receptors during a test run of equipment proposed to be operated on the site during the more noise-sensitive nighttime hours. Project noise limits will be adjusted appropriately depending on the existing ambient noise levels to ensure noise disturbance is maintained at a less-than-significant level at the closest residential receptors. Measures that could be implemented to reduce noise levels (as demonstrated in Table 3.10-6 of the WTTIP EIR) to meet local nighttime standards include engine controls listed in adopted WTTIP Mitigation Measure 3.10-1a.	EBMUD and EBMUD's Construction Contractor	EBMUD	During construction
	Adopted WTTIP Mitigation Measure 3.10-4. Equipment will not cause ambient noise levels to exceed the nighttime noise limits specified in Table 3.10-8 of the WTTIP EIR. Measures that could be incorporated into the design of proposed facilities to ensure that noise levels meet this criterion (as demonstrated in Table 3.10-8 of the WTTIP EIR) include the following: - Pumping and emergency generator facilities will be fully enclosed, and vents will be located on the building facades facing away from adjacent residential receptors. - Building enclosures will provide at least 40 dB of attenuation on solid walls (i.e., a 40-dB difference between interior vs. exterior noise) and a 20-dB reduction on the louvered side of the enclosure, when measured at 6 feet from the wall, directly in front of the louvers. - Masonry sound barriers will be constructed around transformers, and substations will be of sufficient height to provide at least 10 dB or more of noise attenuation.	EBMUD's Construction Contractor	EBMUD	During construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Transportation				
Impact TRA-1: Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	**Adopted WTTIP Mitigation Measure 3.8-1.** The District will incorporate into contract specifications for the project the following requirements: • The contractor(s) will obtain any necessary road encroachment permits prior to construction and will comply with conditions of approval attached to project implementation. As part of the road encroachment permit process, the contractor(s) will prepare a traffic safety / traffic management plan (for work in the public right of-way), in accordance with professional traffic engineering standards, for review and approval by EBMUD. The plan will be submitted to the agencies having jurisdiction over the affected roads. Elements of the plan will likely include, but are not necessarily limited to, the following: – Develop circulation and detour plans to minimize impacts to local street circulation. Use haul routes minimizing truck traffic on local roadways to the extent possible. Use flaggers and/or signage to guide vehicles through and/or around the construction zone. – Control and monitor construction vehicle movements through the enforcement of standard construction specifications by periodic onsite inspections. – To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule truck trips outside of peak morning and evening commute hours. – Limit lane closures during peak hours to the extent possible (and unless otherwise approved by the local agency). Restore roads and streets to normal operation by covering trenches with steel plates outside of allowed working hours or when work is not in progress. – As approved by the local agency, include signage to direct pedestrians and bicyclists around construction work zones that displace sidewalks or bike lanes. – As approved by the local agency, store all equipment and materials in designated contractor staging areas on or adjacent to the worksite, in such a manner to minimize obstruction to traffic. – As approved by the local agency, identify locations for parking by construction workers within the construction zone or, if needed, at a nearby location with transport to and from the worksite provided. – Comply with roadside safety protocols. Provide "Road Work Ahead" warning signs and speed control (including signs informing drivers of state-legislated double fines for speed infractions in a construction zone) to achieve required speed reductions for safe traffic flow through the work zone. – Coordinate with facility owners or administrators of sensitive land uses such as police and fire stations, transit stations, hospitals, and schools. Provide advance notification to the facility owner or operator of the timing, location, and duration of construction activities and the locations of detours and lane closures.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Transportation (cont.)				
Impact TRA-1 (cont.)	– Coordinate construction activities, to extent possible, to minimize traffic disturbances adjacent to schools (e.g., do work during summer months when there is less activity at schools). During periods when school children at the Wagner Ranch Elementary School are walking to and from school in the morning and in the afternoon on the asphalt trail along the north side of Camino Pablo, when construction truck traffic is present near the trail, the contractor(s) will provide flaggers and crossing guards (the latter as needed to supplement the school-provided crossing guards) to ensure pedestrian and traffic safety. School arrival and departure schedules will be monitored for changes such as vacation periods, and the school traffic and pedestrian safety plan will be modified as needed. – Coordinate with the County Connection so the transit provider can temporarily relocate bus routes or bus stops in work zones as it deems necessary. – To the extent feasible, and as needed to avoid adverse impacts on traffic flow, schedule construction of project elements to avoid overlapping maximum trip-generation construction phases. – As part of the coordination with school administrators, the District will coordinate with providers of school bus service regarding road closures, delays and detours during times that school buses run. – The contractor(s) will post all construction sites with signs that state the permitted hours of construction. Those signs will identify the construction project as initiated by EBMUD, and will provide contact information for inquiries or comments.			
	Adopted WTTIP Mitigation Measure 3.8-4. Implement adopted WTTIP Mitigation Measure 3.8-1, which stipulates actions required of contractor(s) to reduce potential traffic safety impacts to a less-than-significant level.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and during construction
	Mitigation Measure TRA-1: Heavy Construction Vehicle Traffic Safety Monitoring. • EBMUD's Contractor shall distribute written traffic safety requirements to all Contractor heavy construction vehicle drivers. All drivers shall provide signed acknowledgement of having read and understood all traffic safety requirements and consequences of non-compliance. • Written traffic safety requirements shall include: – Construction work hours specifying when construction traffic would be allowed to access the Orinda WTP and staging areas. – Construction haul routes and associated speed limits. – Designated parking and queuing locations. • Contractor shall provide Project sticker or equivalent to drivers who have provided written acknowledgement of traffic safety requirements. – Project sticker shall be made available upon request by EBMUD during the construction contract period.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Transportation (cont.)				
Impact TRA-1 (cont.)	• Contractor shall record all heavy construction traffic vehicle license plates and driver's license numbers upon entrance to the Orinda WTP and maintain a daily log of Project heavy construction traffic vehicles and drivers. • Contractor heavy construction vehicle drivers shall conform to designated construction hours, including no driving, queuing, idling or parking on local roadways outside of designated construction hours as outlined in written traffic safety requirements. • Contractor heavy construction vehicle drivers shall use only designated construction traffic haul routes. • Contractor shall provide Radar Speed Feedback Signs along construction access routes within the City of Orinda for the entire Project duration (two, one in each direction of traffic on Camino Pablo) to deter speeding by heavy construction vehicles on construction traffic routes. • EBMUD and Contractor shall coordinate weekly with the Orinda Police Department (OPD) on the Project construction schedule and OPD officer patrol car services along construction access routes within the City of Orinda during periods of high construction traffic (i.e., soil off-haul and concrete delivery activities where soil off-haul and concrete delivery trucks to and from the Orinda WTP are greater than 4 truck roundtrips per hour) to monitor and enforce local roadway traffic regulations, including ticketing any violators. • Contractor heavy construction vehicle drivers shall comply with roadway traffic safety rules as outlined in written traffic safety requirements, including, but not limited to: – Stoplight signals and stop signs. – Roadway speed limits (reduced speeds in construction zones and near schools).			
Impact TRA-3: Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	**Adopted WTTIP Mitigation Measure 3.8-1.** (See full text with Impact TRA-1 above.)			
	Adopted WTTIP Mitigation Measure 3.8-4. (See full text with Impact TRA-1 above.)			
	Mitigation Measure TRA-1: Heavy Construction Vehicle Traffic Safety Monitoring. (See full text with Impact TRA-1 above.)			
	Mitigation Measure TRA-2: Pavement Monitoring. Prior to Project construction, EBMUD shall require the contractor(s) to video document pavement conditions for the portion of Manzanita Drive, a residential roadway, that will be used by Project-related vehicles. Pavement conditions shall also be documented after Project construction is complete. Pavement damaged by construction-related traffic shall be repaired to a structural condition equal to that which existed prior to Project construction activity.	EBMUD's Construction Contractor	EBMUD	Prior to and after construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Transportation (cont.)				
Impact TRA-4: Result in inadequate emergency access.	**Adopted WTTIP Mitigation Measure 3.8-1.** (See full text with Impact TRA-1 above.)			
	Adopted WTTIP Mitigation Measure 3.8-4. (See full text with Impact TRA-1 above.)			
Tribal Cultural Resources				
Impact TCR-1: Cause a substantial adverse change in the significance of a tribal cultural resource as defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.	**Adopted WTTIP Mitigation Measure 3.7-1a.** (See full text with Impact CUL-2 above.)			
Wildfire				
Impact WF-1: Substantially impair an adopted emergency response plan or emergency evacuation plan.	**Adopted WTTIP Mitigation Measure 3.8-1.** (See full text with Impact TRA-1 above.)			
	Adopted WTTIP Mitigation Measure 3.8-4. (See full text with Impact TRA-1 above.)			

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Wildfire (cont.)				
Impact WF-2: Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	**Mitigation Measure WF-1: Construction Fire Prevention Plan.** EBMUD and/or its contractors shall prepare and implement a Final Project-specific CFPP to ensure the health and safety of construction workers and the public from fire-related hazards. The CFPP shall include the requirements listed below. Prior to construction, EBMUD shall contact and consult with the Moraga-Orinda Fire District to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate prevention measures to be taken. The Final CFPP shall list fire safety measures including fire prevention and extinguishment procedures, as well as specific emergency response and evacuation measures to follow during emergency situations; examples are listed below. The Final CFPP also shall provide fire-related rules for smoking, storage and parking areas, usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The Final CFPP shall include or require, but not be limited to, the following: • All work shall be performed in a fire-safe manner, and adequate fire-fighting equipment capable of extinguishing incipient fires shall be supplied and maintained on site. All work shall comply with applicable federal, local, and state fire prevention regulations. Where these regulations do not apply, applicable parts of the National Fire Prevention Standards for Safeguarding Building Construction Operations (National Fire Protection Association [NFPA] No. 241) shall be followed. • As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires. • A long-handled, round-point shovel or a fire extinguisher shall be kept at an accessible (unlocked) location on the construction site at all times. • Earthmoving and portable equipment with internal combustion engines shall be equipped with spark arrestors to reduce the potential for igniting a wildfire. Such equipment shall be maintained to ensure proper functioning of spark arrestors. • EBMUD shall ensure that all construction workers receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire. • EBMUD shall instruct construction personnel to park vehicles within roads, road shoulders, graveled areas, and/or cleared areas (i.e., away from dry vegetation) wherever such surfaces are present at the construction site. • For all work occurring between April 1 and December 1, or any other periods during which a high fire danger has been identified: – Equipment that could produce a spark, fire, or flame shall not be used within 10 feet of any flammable materials. – Portable tools powered by gasoline-fueled internal combustion engines shall not be used within 25 feet of any flammable materials.	EBMUD and EBMUD's Construction Contractor	EBMUD	Prior to and during construction

TABLE C-1 (CONTINUED)
MITIGATION MONITORING AND REPORTING PROGRAM

Impact Area	Mitigation Measure	Responsibility for Implementation	Responsibility for Monitoring and/or Enforcement	Timing of Implementation
Wildfire (cont.)				
Impact WF-2 (cont.)	• Regarding vegetation management for fire prevention and protection, prior to and during construction: – Create and maintain a defensible space (100 feet or to the EBMUD property boundary, whichever is shorter) around the construction site as well as construction ingress and egress sites through landscaping, mowing, disking, and/or spraying dry brush or native grasses to a height of 4-inches or less. – Remove dead trees within 100 feet of the construction site. – Limb up trees within 100 feet of the construction site so that no leafy foliage, twigs, or branches are within 5 feet of the ground. To maintain tree health, tree limbing shall not remove more than 25 percent of a tree canopy within one growing season. – Ensure and maintain 5 feet of vertical clearance between roof surfaces and portions of trees overhanging all structures within the construction site, and keep roofs free of leaves, needles, twigs, and other combustible matter. To maintain tree health, tree limbing shall not remove more than 25 percent of a tree canopy within one growing season. – Keep all overhanging trees, shrubs, and other vegetation, or portions thereof, free of dead limbs, branches, and other combustible matter. • Neatly stack all combustible materials away from structures within the construction site and have all combustible growth cleared 15 feet around the stack. • At each construction site, after construction has been completed for the day, the contractor shall perform a visual inspection of all construction equipment within the PG&E easement and within 12 vertical feet of the PG&E power line to ensure that no equipment (e.g., cranes) left onsite could interfere with (e.g., touch or fall into) the PG&E power line and result in an arc, spark, or other line failure, resulting in ignition risks, after construction has concluded for the day (PRC Section 4293).			
Impact WF-4: Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of run-off, post-fire slope instability, or drainage changes.	**Adopted WTTIP Mitigation Measure 3.5-1a.** (See full text with Impact HYD-1 above.)			
	Mitigation Measure HYD-1: Implement Stormwater Pollution Prevention Plan. (See full text with Impact HYD-1 above.)			
	Mitigation Measure WF-1: Construction Fire Prevention Plan. (See full text with Impact WF-2 above.)			

APPENDIX D

Tree Inventory/Assessment Report

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Final

EAST BAY MUNICIPAL UTILITY DISTRICT ORINDA WATER TREATMENT PLANT DISINFECTION IMPROVEMENTS PROJECT

Tree Inventory/Assessment Report

Prepared for
East Bay Municipal Utility District

August 2019

Final

EAST BAY MUNICIPAL UTILITY DISTRICT ORINDA WATER TREATMENT PLANT DISINFECTION IMPROVEMENTS PROJECT

Tree Inventory/Assessment Report

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Introduction

Environmental Science Associates (ESA) was contracted by East Bay Municipal Utility District (EBMUD) to perform a tree inventory and assessment for the Orinda Water Treatment Plant (Orinda WTP) Disinfection Improvements Project (Project) in the City of Orinda (City), California. This report documents the results of the tree inventory and assessment conducted within and immediately adjacent to the Project site (Figure 1). A full inventory and assessment of trees surveyed for the Project is presented in Appendix A.

Project Description

The Project is part of EBMUD's Water Treatment and Transmission Improvements Program (WTTIP), which addresses system-wide improvements needed to ensure a reliable water supply for current and future customers. The purpose of the Project is to improve the disinfection processes at the Orinda WTP in order to provide continued compliance with water quality regulations. The Project includes construction and operation of the combined Maintenance and Ultraviolet (UV) Electrical (MAUVE) Building with below-grade UV Structure, Chlorine Contact Basin and Effluent Weir Structure (MAUVE/UV/CCB structure) and various support facilities (e.g., Los Altos Pumping Plant Power Building, South Electrical Building, Standby Generator, pipelines). The existing Maintenance Building would be demolished and its associated uses would be moved to the new facility Grounds Maintenance Building located to the south of the Manzanita Drive entrance to the Orinda WTP site. Five staging areas are proposed to support the construction phase of the Project. Of those proposed staging areas, the Orinda WTP Staging Area is the only one in the vicinity of trees that could be directly or indirectly impacted by the Project. Figure 1 shows the locations of the Project components within the Orinda WTP site and Figure 2 shows the locations of the proposed staging areas.

ESA is providing environmental compliance support for the Project, including the preparation of the appropriate environmental documentation in accordance with California Environmental Quality Act (CEQA). The installation of a UV system and chlorine contact basin were evaluated programmatically in *EBMUD's WTTIP Environmental Impact Report (EIR)* (SCH#2005092019), certified by EBMUD Board of Directors in December 2006.

SOURCE: ESA, 2019; ESRI, 2019.

EBMUD Orinda Water Treatment Plant Disinfection Improvements Project

Figure 1
Proposed Project Components on
Existing Orinda Water Treatment Plant Site

Path: U:\GIS\GIS\Projects\17xxxx\D171040_EBMUDOrindaWTPProject\03_MXDs_Projects\Fig2-7_StagingAreas.mxd, dkaneshiro 8/1/2019

SOURCE: ESA, 2019; ESRI, 2019.

EBMUD Orinda Water Treatment Plant UV Disinfection Improvements Project

Figure 2
Construction Staging Areas

City of Orinda Tree Protection Ordinances

Under Section 53091 of the California Government Code, EBMUD, as a local agency and utility district, is not subject to building and land use zoning ordinances (such as tree ordinances) for projects involving facilities for the production, generation, storage, treatment, or transmission water. However, EBMUD's practice is to work with local jurisdictions and neighboring communities during project planning, and to consider local environmental protection policies for guidance.

City of Orinda Municipal Code

The City recognizes that the management of trees on public and private property is essential to maintenance of the City's semi-rural character, a goal set forth in the general plan. In Chapter 17.21 – *Tree Management* of the City of Orinda Municipal Code (OMC), the City further identifies trees as contributing to the image and quality of life in the City. Healthy trees reduce air and noise pollution, provide energy-saving shade and cooling, furnish habitat for wildlife, enhance aesthetics and property values, and help to maintain soil stability. Tree management can both create and protect privacy and views and reduce fire hazards.

The OMC provides the following definitions that are relevant to this report:

> **Native Tree**. A tree indigenous to the local oak woodland, chaparral, grassland or riparian habitats including, but not limited to, valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), black oak (*Quercus kelloggii*), white oak (*Quercus garryana*), canyon oak (*Quercus chrysolepis*), blue oak (*Quercus douglasii*), interior live oak (*Quercus wislizeni*), California bay (*Umbellularia californica*), bigleaf maple (*Acer macrophyllum*), buckeye (*Aesculus californica*), white alder (*Alnus rhombifolia*), madrone (*Arbutus menziesii*), flowing ash (*Fraxinus dipetala*), Oregon ash (*Fraxinus latifolia*), western sycamore (*Platanus racemosa*), arroyo willow (*Salix lasiolepis*), red willow (*Saxis laevigata*), western dogwood (*Cornus sericea*), California hazelnut (*Corylus californica*), black walnut (*Juglans hindsii*), and blue elderberry (*Sambucus mexicana*).
>
> **Protected Tree**. A live tree located on public or private property meeting one or more of the following standards:
>
> 1. A tree located on an assessor's parcel upon which there is an existing structure, which is of the following species and which has a trunk diameter equal to or greater than twelve (12) inches at 4.5 feet above its existing grade: valley oak (*Quercus lobata*), coast live oak (*Quercus agrifolia*), black oak (*Quercus kelloggii*), white oak (*Quercus garryana*), canyon oak (*Quercus chrysolepis*), blue oak (*Quercus douglasii*), and interior live oak (*Quercus wislizeni*).
>
> 2. A tree of any size designated to be protected and preserved on an approved development plan or as a condition of approval of a tentative map, a tentative

parcel map, or other development approval or land use entitlement or permit issued by the city;

3. A native riparian tree with a trunk diameter of four inches at 4.5 feet above its existing grade or a multi-trunk native riparian tree with a cross-sectional area of all trunks equal to a cross-section area of a single stem of four inches at 4.5 feet above its existing grade. “Riparian tree” is a tree within thirty (30) feet of the edge of a creek bank or a tree beyond thirty (30) feet but in such proximity to a creek bank that it requires or tolerates soil moisture levels in excess of that available in adjacent uplands;

4. A tree with a trunk diameter equal to or greater than six inches in diameter at 4.5 feet above its existing grade on a vacant or undeveloped assessor's parcel, unless it is a tree identified on the Disallowed Plant List maintained by the City Planning Department in conformance with OMC Section 8.20.070; or

5. A replacement tree planted as restitution for an act in violation of this chapter.

The OMC provides measures to preserve or replace protected trees if construction activities may remove or destroy a protected tree. If an activity may remove or destroy a protected tree, a tree permit is required. The tree permit includes conditions of approval including the following measures: 1) if a protected tree proposed for removal can be relocated, the applicant shall move the tree to a suitable location on a site shown on the approved plans; 2) the applicant shall guarantee the health and vigor of each protected tree required to be preserved during the construction process and for two years after construction is certified as complete; and 3) the applicant shall replace a protected tree that dies during the guarantee period in accordance with the City’s tree replacement provisions, and shall comply with the City’s established tree care requirements.

Protected Tree Care and Tree Replacement

Protected trees are valuable assets to the City, and as such, if project activities result in the death or damage of a protected tree without benefit of a permit, the public should be compensated. Under OMC Section 17.21.5 (F) *Protected Tree Replacement* an applicant shall replace a protected tree in accordance with the following standards:

- For each six inches or fraction thereof of the aggregate diameter of trees approved for removal, the applicant shall plant one native tree with a diameter no less than 0.75 inches. One-third of the replacement tree requirement may be fulfilled by planting native shrubs that mature at a height no less than five feet. The applicant may substitute a larger number of smaller trees or a smaller number of larger trees if approved by the City Planning Director based on a finding that tree replacement will be more beneficial to the health and vigor of all trees on the property.

- If the development site cannot accommodate the replacement trees, with the written approval of the City Planning Director and the property owner, the applicant may plant the replacement trees on public or private property located in Orinda. Alternatively, the applicant may make an in lieu payment of one hundred and twenty-five dollars ($125.00) for each replacement tree otherwise required. All in lieu payments shall be used for City landscape-related projects.

Under OMC Section 17.21.5 (G) *Care of Protected Trees*, in order to protect each protected tree on a site where grading or building is to take place, an applicant shall meet the following requirements:

- Before starting, the applicant shall securely fence off every protected tree at the protected perimeter. The fence shall remain continuously in place for the duration of work undertaken in connection with the building or grading permit. The fenced area may not be used as a storage area or altered or disturbed except as may be permitted by the City Planning Director.

- If the proposed development or work on-site encroaches upon the protected perimeter of a protected tree, the applicant shall take special measures, as approved by the City Planning Director, to allow tree roots to obtain oxygen, water and nutrients as needed.

- An authorized excavation, filling or compaction of the existing ground surface within the protected perimeter of a [protected] tree shall be minimized and subject to such reasonable conditions as may be imposed by the City Planning Director.

- No significant change in existing ground level may be made within the dripline of a protected or heritage tree.

- No burning or use of equipment with an open flame may occur near or within the protected perimeter.

- All brush, earth and debris shall be removed in a manner that prevents injury to the tree.

- No oil, gas, chemical or other substance that may be harmful to a tree may be stored or dumped within the protected perimeter of a protected tree or at any other location on the site from which such substances might enter the protected perimeter of a tree.

- Trenching for utilities shall avoid interfering with roots of protected trees wherever possible. If complete avoidance of the root zone is impractical, a tunnel shall be made below the roots. A trench shall be consolidated to serve as many units as possible. Trenching and tunneling within the protected perimeter shall be avoided to the extent possible and shall be done only under the on-site supervision of a professional arborist.

- No concrete, asphalt or other impervious paving shall be placed within the protected perimeter of a protected tree. No supplementary irrigation shall occur within the protected perimeter of a native oak.

Tree Survey Methodology

The initial tree inventory and assessment for this report was conducted on February 6, 2019, by ESA arborists Liz Hill (International Society of Arboricultural [ISA] Certified Arborist # WE-11525A) and Julie McNamara (ISA Certified Arborist # WE- 11439A). A supplemental tree survey was conducted on June 5, 2019, based on updates to the Project known at that time and to inventory trees along the San Pablo Creek bank potentially impacted by the sub-surface anchoring element's and the effects associated with construction phase shoring for the MAUVE/UV/CCB structure. Trees within and adjacent to the Project site to be directly and indirectly impacted by the Project were surveyed on foot using a mobile tablet device with a Trimble R1 external receiver.

All trees having a woody trunk with a diameter of four inches or greater at 54 inches (4.5 feet) above the ground and a height in excess of 10 feet on and adjacent to the Project site were surveyed. Information collected included the species of the tree, diameter at breast height (DBH) (measured at 54 inches above the base of the tree), the general condition of the tree and its components (root collar, trunk, limbs, and foliage), the tree's overall vigor or health as described below in Table 1, and the potential of Project construction to impact the tree.

TABLE 1
TREE HEALTH DESCRIPTION

5	A healthy, vigorous tree, reasonably free of signs and symptoms of diseases, with good structure and form typical of the species.
4	Tree with slight decline in vigor, small amount of twig dieback, and minor structural defects that could be corrected.
3	Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, and moderate structural defects that might be mitigated with regular care.
2	Tree in decline, epicormic growth, extensive dieback of medium to large branches, and significant structural defects that cannot be abated.
1	Tree in severe decline, dieback of scaffold branches and/or trunk and most of foliage from epicormics, and extensive structural defects that cannot be abated. Tree nearing the end of life.

The Project Tree Inventory/Assessment data log (Appendix A) and Figure 3 presents a combination of existing EBMUD issued unique tree IDs and new unique tree IDs created during the Project's two field inventories. Existing EBMUD tree IDs, identified by a four-digit number, are associated with trees that have been previously surveyed by EBMUD or another party; these trees were re-surveyed during the field inventory to collect tree characteristics of trees that could be either directly or indirectly affected by the Project. New tree IDs, identified by a number 1-42, are associated with trees not previously surveyed that could be either directly or indirectly impacted by the Project; the same tree characteristics collected for the existing tree IDs were also collected for the new tree IDs.

Trees adjacent to the Project site that would not be directly impacted by the Project are characterized in general terms and were not surveyed. Trees outside the Project footprint and the perimeter fence potentially overhanging proposed haul routes were also characterized in general terms and were not surveyed, as impacts to these trees are based on the size of equipment (i.e., haul trucks), unknown at the time of the surveys. However, recommendations for these trees relative to potential Project impacts are provided below.

The initial assessment of Project effects on each tree was made based on site plans provided by Carollo Engineers dated October 2018 and June 2019. Changes in the Project occurring after the June 5, 2019, onsite tree survey are not considered in this assessment (e.g., stormdrain infrastructure, equipment size). At EBMUD request, a supplemental tree survey can be conducted to capture any Project changes subsequent to the June tree survey. Unless expressed otherwise, the survey was limited to visual examination of accessible parts of the tree without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies regarding the trees discussed in this report may not arise in the future.

Tree Inventory and Assessment Results

The results of the data collected during the tree inventories are presented in Figure 3 and Appendix A. Information provided in Table 2 includes a summary of tree species surveyed at the Project site.

Implementation of the Project would directly and indirectly affect trees at the Project site. Tree removal is necessary for Project construction. Due to the nature of the Project, a portion of the Project construction requires jack and bore methods to construct underground pipelines up to 40 feet deep. Numerous utilities (e.g., chemical trenches, electrical duct banks and smaller conduits, small water piping) would also be installed or rerouted with 2 to 6 feet of ground surface within Project work areas. The majority of excavation would occur in previously disturbed locations that have either been paved or excavated.

The excavation needed to construct the MAUVE/UV/CCB structure would require a maximum depth of 70 feet. To support the MAUVE/UV/CCB structure, subsurface shoring would be constructed on all sides of the combined structure. The MAUVE/UV/CCB structure would be supported by a shoring system of full-depth secant piles secured with tieback anchors. The tiebacks supporting the pile shoring would extend out from the combined structure approximately 55 feet at its base and would be anchored to bedrock. At this distance, the shoring would extend under the west bank of San Pablo Creek. The tieback anchors would be designed such that there is at least 15 feet of overburden soil and rock above the grouted portions of the anchors to account for future geomorphic changes in the channel of San Pablo Creek.

TABLE 2
TREE SPECIES SUMMARY

Tree Species (Common Name)	Tree Species (Scientific Name)	Total Trees Surveyed	Unprotected Trees to Be Removed Within Proposed Footprint (red)*	Protected Trees to Be Removed Within Proposed Footprint (red)	Unprotected Trees Potentially Within Project Construction Footprint (yellow)*	Protected Trees Potentially Within Project Construction Footprint (yellow)
Coast redwood	*Sequoia sempervirens*	35	**22** Tree IDs: 2281, 2282, 2283, 2284, 2335, 2336, 2337, 2343, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2457, 2458, 2459, 2460, 2461, 2462, 20	-	**4** Tree IDs: 2333, 2334, 2344, 13	-
Deodar cedar	*Cedrus deodara*	16	**14** Tree IDs: 2184, 2185, 2187, 2188, 2190, 2192, 2193, 2194, 2195, 2204, 2257, 2803, 2804, 2811	-	**4** Tree IDs: 2256, 2258, 2259, 2265	-
Coast live oak	*Quercus agrifolia*	20	**5** Tree IDs: 2189, 2191, 14, 16, 22	**4** Tree IDs: 3, 37, 38, 39	**3** Tree IDs:2246, 2248, 24	**6** Tree IDs: 2245, 2247, 2261, 2727, 1, 12
Incense cedar	*Calocedrus decurrens*	9	**5** Tree IDs: 2255, 2, 15, 17, 19	-	**2** Tree IDs:5,6	-
White alder	*Alnus rhombifolia*	6	-	-	-	-
Crape myrtle	*Lagerstroemia indica*	3	-	-	**2** Tree IDs: 2243,2244	-
Bigleaf maple	*Acer macrophyllum*	3	-	-	**2** Tree IDs: 2812,2813	-
Sweetgum	*Liquidambar styraciflua*	2	-	-	-	-
Juniper	*Juniperus* sp.	2	**1** Tree ID: 18	-	**1** Tree ID: 2439	-
Valley oak	*Quercus lobata*	2	-	**1** Tree ID: 10	-	**1** Tree ID: 9
Bay laurel	*Umbellularia californica*	2	-	-	-	**1** Tree ID: 40
California buckeye	*Aesculus californica*	2	-	-	-	-
Western sycamore	*Platanus racemosa*	1	-	-	-	**1** Tree ID: 11

TABLE 2 (CONTINUED)
TREE SPECIES SUMMARY

Tree Species (Common Name)	Tree Species (Scientific Name)	Total Trees Surveyed	Unprotected Trees to Be Removed Within Proposed Footprint (red)*	Protected Trees to Be Removed Within Proposed Footprint (red)	Unprotected Trees Potentially Within Project Construction Footprint (yellow)*	Protected Trees Potentially Within Project Construction Footprint (yellow)
Lemonade berry	*Rhus integrifolia*	1	-	-	**1** Tree ID: 2273	-
Eucalyptus	*Eucalyptus* sp.	1	**1** Tree ID: 4	-	-	-
Fir	*Abies* sp.	1	-	-	**1** Tree ID: 2260	-
Stump/Dead	N/A	3	Tree ID: 2801, 2802**	-	-	**-**
	Total Trees	**109**	**48**	**5**	**20**	**9**

NOTES:

1 Trees potentially within the Project construction footprint include trees exposed to accidental mechanical damage to tree trunks and canopies resulting from inadvertent contact by construction equipment, root damage resulting from trenching and excavation activities, and root damage resulting from soil compaction.

2 Total Trees Surveyed include all trees mapped, including those represented by a green data point in Figure 2. Tree IDs associated with green data points on Figure 2 are not reflected in Table 2, even though their quantities are reflected in the Total Trees Surveyed column.

* These trees do not meet any of the Protected Tree definitions as discussed in the Regulatory Settings section above.

** Stumps are not included in tree removal count.

SOURCE: ESA, 2019; ESRI, 2019.

● Trees Outside Project Construction Footprint
● Trees Potentially Within Project Construction Footprint
● Trees Within Project Footprint

▭ Proposed Project Pipeline Footprints
▭ Proposed Project Element Footprint Above Ground
▭ Limits of Shoring and Proposed Project Element Footprint Above Ground

▭ Proposed Staging Area 1
— Existing Fences
▭ Trees Potentially within Project Footprint (to be surveyed at later date)

This figure takes into account the tieback system shown on Dwg. 510.00-S-038
of the Orinda WTP Disinfection Improvements Project plan set, June 2019

EBMUD Orinda Water Treatment Plant Disinfection Improvements Project

Figure 3
Tree Inventory

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A 12-inch stormdrain pipeline is proposed to traverse a wooded area between the Orinda WTP Manzanita Drive entry gate and the Orinda WTP Staging Area. This component was added to the Project after the June 5, 2019, tree survey was conducted. Therefore, trees in this area, except for trees 5 and 6, have not been surveyed and potential impacts to these trees should be analyzed at a later date.

According to the proposed site plan available at the time of the surveys, approximately 53 trees would require removal to accommodate the footprint of the proposed Project components as shown in Table 2 and Figure 3. These trees include the following species: coast redwood, deodar cedar, coast live oak, incense cedar, juniper, valley oak, and eucalyptus. Of those trees to be removed, four coast live oak and one valley oak are considered protected under Chapter 17.21 of the OMC based on tree species and DBH. Although approximately 11 trees in the survey were found to meet the OMC of a riparian tree, none of these trees would be removed as a result of the Project.

In addition, 29 trees adjacent to or near the footprint of the Project components could be indirectly adversely affected due to being in locations potentially exposed to trenching, backfilling, and general construction activities proposed by the Project, which could eventually lead to the tree's mortality. Of those trees, nine are considered protected under Chapter 17.21 of the OMC (see Appendix A). The extent of potential indirect or inadvertent effects to trees cannot be comprehensively determined prior to construction since varying factors influence the cause of indirect impacts. However, potential indirect or inadvertent effects of concern for all trees to be retained include accidental mechanical damage to tree trunks and canopies resulting from inadvertent contact by construction equipment, root damage resulting from trenching and excavation activities, and root damage resulting from soil compaction. For trees indirectly or inadvertently impacted, tree removal may be required on a case by case basis depending on conditions after the onset of construction activities. For example, the severity of Project construction on tree roots can only be assessed once roots are exposed during excavation.

The nature of indirect impacts to trees not within the Orinda WTP fence or within the active area of Project construction are contingent upon such factors as equipment access routes and size of equipment. An incense cedar, blue oak, and coast live oak with limbs overhanging the Orinda WTP northern boundary fence line could be potentially indirectly impacted if construction equipment clearance is greater than 15 feet. Six trees directly north of the existing influent channel could be potentially indirectly impacted if construction equipment clearance is greater than 20 feet. Similarly, five coast redwood trees, outside the Orinda WTP fence line, but having canopies overhanging the Project site east of the Filter Gallery Building along the Orinda WTP northern fence line, could be potentially indirectly impacted if adequate clearance for construction equipment is not provided. As noted in the *Tree Survey Methodology* section of this report, changes in the Project occurring after the June 5, 2019, onsite tree survey are not considered in this assessment (e.g., stormdrain infrastructure, equipment size). At EBMUD request, a supplemental tree survey can be conducted to capture any Project changes subsequent to the June tree survey.

The Project proposes to use an open ruderal area in the northwest corner of the Orinda WTP property as a potential staging area. The perimeter of this area is surrounded by trees, a portion of which have been planted as mitigation for the WTTIP EIR. No direct or indirect impacts are expected to occur to trees in this staging area because the perimeter fence line would be offset from the surrounding tree canopy dripline by a distance of approximately 10 feet or greater.

In their current condition, no trees were observed that pose a potential hazard to structures or access roads in the Project site. No trees surveyed were identified as dead.

In summary, out of the 109 trees inventoried, 53 trees are recommended for removal due their location conflicting with the Project footprint based on the Project design as of July 2019. An additional 29 inventoried trees adjacent to the Project site may require removal based on conditional constraints unknown until the time of construction. An additional 14 non-inventoried trees may require canopy trimming based on construction equipment height clearance.

Assumptions and Limiting Conditions

1. The assessment is based on the Project as defined at the time of the June 5, 2019, tree survey. Any changes or potential changes in the Project (e.g., stormdrain infrastructure, equipment size) subsequent to this survey date are not considered herein.

2. This report does not guarantee trees inventoried will be healthy or safe under all construction and operational circumstances, or for a specified period of time. This report does not disclose all conditions possibly leading to the structural failure of a tree.

3. ESA can neither guarantee nor be responsible for accuracy of information provided by others.

4. ESA shall not be required to give testimony or to attend court by reason of this appraisal unless subsequent written arrangements are made.

5. Loss or removal of any part of this report invalidates the entire appraisal/evaluation.

6. This report has been made in conformity with acceptable appraisal/evaluation/ diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

7. No tree described in this report was climbed. ESA cannot take responsibility for any defects which only could have been discovered by climbing. A full root collar inspection, consisting of excavating the soil around the tree to uncover the root collar and major buttress roots was not performed. ESA cannot take responsibility for any root defects which could only have been discovered by such an inspection.

Appendix A

Project Tree Inventory/Assessment

Appendix A. Orinda WTP Disinfection Improvements Project Tree Inventory/Assessment

Protected Tree Definitions

1 A tree located on an assessor's parcel upon which there is an existing structure, which is of the following species and which has a trunk diameter equal to or greater than twelve (12) inches at 4.5 feet above its existing grade: valley oak (*Quercus lobata*), live oak (*Quercus agrifolia*), black oak (*Quercus kelloggii*), white oak (*Quercus garryana*), canyon oak (*Quercus chrysolepis*), blue oak (*Quercus douglasii*), and interior live oak (*Quercus wislizenii*).

2 A tree of any size designated to be protected and preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development approval or land use entitlement or permit issued by the city;

3 A native riparian tree with a trunk diameter of four inches at 4.5 feet above its existing grade or a multi-trunk native riparian tree with a cross-sectional area of all trunks equal to a cross-section area of a single stem of four inches at 4.5 feet above its existing grade. “Riparian tree” is a tree within thirty (30) feet of the edge of a creek bank or a tree beyond thirty (30) feet but in such proximity to a creek bank that it requires or tolerates soil moisture levels in excess of that available in adjacent uplands.

4 A tree with a trunk diameter equal to or greater than 6 inches in diameter at 4.5 feet above its existing grade on a vacant or undeveloped assessor's parcel, unless it is a tree identified on the Disallowed Plant List maintained by the Planning Department in conformance with OMC Section 8.20.070.

* In addition to those trees potentially within the Project footprint, pursuant to Mitigation Measure 3.6-1, prior to construction, trees to be retained that are adjacent to or within project construction areas will be identified, mapped, and clearly delineated by protective fencing (e.g., short post and plank walls), installed at the tree dripline. Where dripline encroachment must occur, use special construction techniques (e.g., hand trenching) to allow the roots to breathe and obtain water. No storage of equipment, machinery, stockpiles of excavated soils, or construction materials; or dumping of oils or chemicals within retained tree driplines; and, no more than 25 percent of a tree’s canopy removed during the pruning of retained trees. As such, all mapped trees to be retained, whether they are potentially within the Project footprint or not shall be protected by the above measures.

OBJECTID	Count	TreeID	Type	DBH1	DBH2	DBH3	DBH4	Species	*Scientific*	Rating	Notes	Protected/(#) refers to protected tree definition above	Within Project Construction Footprint (Proposed for Removal [red data point])	Potentically Within Project Footprint (yellow data point)
47	1	2184	MultiConifer	15.0	5.5	10.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	codominant limb @ base into 3; canopy suppression between stems	No	Yes	N/A
48	2	2185	Conifer	17.5	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	4 Good	Sap	No	Yes	N/A
50	3	2187	Conifer	8.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	5 Excellent	Root collar slightly buried	No	Yes	N/A
51	4	2188	Conifer	1.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair		No	Yes	N/A
52	5	2189	Oak	9.5	0.0	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	2 Poor	Understory (poor structure); codominant limb removed at base, decay	No	Yes	N/A
53	6	2190	Conifer	34.5	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	4 Good	Good structure, small deadwood	No	Yes	N/A
54	7	2191	Oak	5.0	0.0	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	2 Poor	Understory, very poor structure	No	Yes	N/A
55	8	2192	Conifer	28.5	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	large deadwood, old rip outs, suppression canopy to east	No	Yes	N/A
56	9	2193	Conifer	32.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	2 Poor	Large lateral at 20 ft, codominant limb at 25 ft, hanger to east	No	Yes	N/A
57	10	2194	Conifer	25.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	Suppressed canopy to north, small deadwood	No	Yes	N/A
58	11	2195	Conifer	2.5	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair		No	Yes	N/A
59	12	2204	Conifer	20.5	36.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	2 Poor	large deadwood, large laterals,	No	Yes	N/A
60	13	2242	Ornamental	3.0	0.0	0.0	0.0	Crape myrtle	*Lagerstroemia indica*	3 Fair	codominant limb @ base into many, crossing limbs (crossing limbs)	No	No	No
61	14	2243	Ornamental	5.0	0.0	0.0	0.0	Crape myrtle	*Lagerstroemia indica*	3 Fair		No	No	Yes
62	15	2244	Ornamental	4.0	0.0	0.0	0.0	Crape myrtle	*Lagerstroemia indica*	3 Fair		No	No	Yes
63	16	2245	Oak	11.0	3.5	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	2 Poor	codominant limb at 1ft,4ft, included bark, epicormic growth, open pruning cuts	Yes (1)	No	Yes
64	17	2246	Oak	6.0	0.0	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	3 Fair	Root collar buried	No	No	Yes
65	18	2247	Oak	6.5	6.5	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	3 Fair	codominant limb at 4 ft, included bark, epicormic growth	Yes (1)	No	Yes
66	19	2248	Oak	10.0	0.0	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	3 Fair	open pruning cuts w/ callus, codominant limb at 5ft into 3, epicormic growth	No	No	Yes
67	20	2255	Conifer	27.5	0.0	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	3 Fair	Root collar buried, suppressed canopy to east	No	Yes	N/A

OBJECTID	Count	TreeID	Type	DBH1	DBH2	DBH3	DBH4	Species	*Scientific*	Rating	Notes	Protected/(#) refers to protected tree definition above	Within Project Construction Footprint (Proposed for Removal [red data point])	Potentically Within Project Footprint (yellow data point)
68	21	2256	Conifer	35.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	Large lateral, large deadwood, open pruning cuts @15ft, codominant limb @20ft, included bark	No	No	Yes
69	22	2257	Conifer	28.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	mechanical damage to south, sap ooz, large open pruning cuts, epicormic growth, canopy suppression to north and west	No	Yes	N/A
70	23	2258	Conifer	29.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	large deadwood, canopy suppression to south and west	No	No	Yes
71	24	2259	Conifer	28.5	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	open pruning cuts, sap ooz, epicormic growth, canopy suppressed to east, large deadwood	No	No	Yes
72	25	2260	Conifer	2.0	0.0	0.0	0.0	Fir	*Abies sp.*	1 Very Poor		No	No	Yes
73	26	2261	Oak	4.5	4.0	5.5	0.0	Coast Live Oak	*Quercus agrifolia*	3 Fair	Root collar buried, codominant limb @1ft,2ft	Yes (1)	No	Yes
74	27	2265	Conifer	34.5	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	3 Fair	open pruning cuts, small deadwood, Extended limbs	No	No	Yes
75	28	2273	Ornamental	5.0	0.0	0.0	0.0	Lemonade berry	*Rhus intepicormic growthrifoli*	3 Fair		No	Yes	Yes
76	29	2281	Redwood	24.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Canopy suppressed to south, small deadwood	No	Yes	N/A
77	30	2282	Redwood	12.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Canopy suppressed to north	No	Yes	N/A
78	31	2283	Redwood	20.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Small deadwood	No	Yes	N/A
79	32	2284	Redwood	25.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Small open pruning cuts	No	Yes	N/A
80	33	2330	Redwood	29.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and north, small deadwood	No	No	No
81	34	2331	Redwood	39.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south, large deadwood	No	No	No
82	35	2332	Redwood	34.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Canopy suppressed to east and south, small deadwood	No	No	No
83	36	2333	Redwood	16.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	2 Poor	Canopy suppressed to east, root collar slightly buried, sparse canopy	No	No	Yes
84	37	2334	Redwood	19.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south, small deadwood, intermediate	No	No	Yes
85	38	2335	Redwood	28.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south north, small deadwood	No	Yes	N/A
86	39	2336	Redwood	25.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south	No	Yes	N/A
87	40	2337	Redwood	36.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south, small deadwood	No	Yes	N/A
88	41	2338	Redwood	26.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east west, small deadwood	No	No	No
89	42	2339	Redwood	29.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south west, small deadwood	No	No	No
90	43	2340	Redwood	21.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	2 Poor	Large wound on south and north, almost complete callus, canopy suppressed to south and west	No	No	No
91	44	2341	Redwood	24.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to north and west, intermediate, small deadwood	No	No	No
92	45	2342	Redwood	24.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to west, small deadwood	No	No	No
93	46	2343	Redwood	14.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to west, understory	No	Yes	N/A
94	47	2344	Redwood	23.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south west, small deadwood	No	No	Yes
95	48	2345	Redwood	19.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to north and west and east, intermediate tree, small deadwood	No	Yes	N/A

OBJECTID	Count	TreeID	Type	DBH1	DBH2	DBH3	DBH4	Species	*Scientific*	Rating	Notes	Protected/(#) refers to protected tree definition above	Within Project Construction Footprint (Proposed for Removal [red data point])	Potentically Within Project Footprint (yellow data point)
96	49	2346	Redwood	31.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east and south , small deadwood	No	Yes	N/A
97	50	2347	Redwood	29.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to west and north, small deadwood	No	Yes	N/A
98	51	2348	Redwood	26.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to west, small deadwood	No	Yes	N/A
99	52	2349	Redwood	35.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Canopy suppressed to north and west	No	Yes	N/A
100	53	2350	Redwood	25.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Suppressed canopy to south and west	No	Yes	N/A
101	54	2351	Redwood	29.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Declining health, small dead wood	No	Yes	N/A
113	55	2439	Conifer	19.0	0.0	0.0	0.0	Juniper	*Juniperus sp.*	2 Poor	Trunk leans to SE, root collar buried, lgpc	No	No	Yes
114	56	2457	Redwood	20.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to north and west, intermediate (inside) tree	No	Yes	N/A
115	57	2458	Redwood	32.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	4 Good	Small deadwood, suppressed to south and west	No	Yes	N/A
116	58	2459	Redwood	19.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	2 Poor	Intermediate tree	No	Yes	N/A
117	59	2460	Redwood	51.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Canopy suppressed to east, south. epicormic growth, large mechanical damage at base to the south due to Culvert install	No	Yes	N/A
118	60	2461	Redwood	24.5	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Large mechanical damage at base, canopy suppressed to east and south	No	Yes	N/A
119	61	2462	Redwood	18.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	Root collar buried, intermediate tree	No	Yes	N/A
120	62	2727	Oak	26.0	0.0	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	2 Poor	Root collar buried, Large codominant limb removed at 4ft, heart rot decay, narrow branch angle attachments in canopy, open pruning cuts with decay	Yes (1)	No	Yes
125	63	2801	Stump	12.0	0.0	0.0	0.0	X			Recommend to remove	No	Yes	N/A
126	64	2802	Stump	10.0	0.0	0.0	0.0	X			Recommend to remove	No	Yes	N/A
127	65	2803	Conifer	11.0	0.0	0.0	0.0	Deodar cedar	*Cedrus deodara*	4 Good	Canopy suppressed to east, epicormic growth	No	Yes	N/A
128	66	2804	Conifer	12.0	14.0	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	3 Fair	Root collar slightly buried, suppressed canopy to south	No	Yes	N/A
129	67	2811	Conifer	11.5	0.0	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	4 Good	Root collar slightly buried	No	Yes	N/A
130	68	2812	Deciduous	17.5	0.0	0.0	0.0	Bigleaf maple	*Acer macrophyllum*	3 Fair	codominant limb@6,deadwood 1-3ft, unbalanced canopy to east	No	No	Yes
131	69	2813	Deciduous	20.0	0.0	0.0	0.0	Bigleaf maple	*Acer macrophyllum*	3 Fair	open pruning cuts, deadwood 1-3ft, codominant limb at 5ft into many	No	No	Yes
297	70	1		5.0	4.0	2.0	2.0	Coast Live Oak	*Quercus agrifolia*	3 Fair	Understory, codominant limb at base into 4 branches	Yes (1)	No	Yes
298	71	2		9.5	0.0	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	3 Fair	Root collar slightly buried, suppressed canopy to south	No	Yes	N/A
299	72	3		5.0	8.5	6.5	8.0	Coast Live Oak	*Quercus agrifolia*	2 Poor	Codominant limb at 3' into many, uc to west, additional stems are equal to 9.5,7.5,13,10,14,9	Yes (1)	Yes	N/A
300	73	4		13.5	16.0	13.5	0.0	Eucalyptus	*Eucalyptus sp.*	3 Fair	Root collar buried, codominant limb @ 1',2'	No	Yes	N/A
301	74	5		10.0	0.0	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	3 Fair	Trunk leans to north east, canopy corrected	No	No	Yes
302	75	6		7.5	3.5	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	3 Fair	codominant limb at 1'	No	No	Yes
303	76	7		11.0	0.0	0.0	0.0	Sweetgum	*Liquidambar styraciflua*	3 Fair	Root collar slightly buried, rocks at base, small deadwood	No	No	No
304	77	8		6.5	0.0	0.0	0.0	Sweetgum	*Liquidambar styraciflua*	3 Fair	Rootcollar buried, rocks at base	No	No	No

OBJECTID	Count	TreeID	Type	DBH1	DBH2	DBH3	DBH4	Species	*Scientific*	Rating	Notes	Protected/(#) refers to protected tree definition above	Within Project Construction Footprint (Proposed for Removal [red data point])	Potentically Within Project Footprint (yellow data point)
305	78	9		27.0	16.0	0.0	0.0	Valley Oak	*Quercus lobata*	2 Poor	Codominant stem at base, naa, in, leans over fence, epicormic growth, large deadwood	Yes (1)	No	Yes
306	79	10		26.0	21.0	0.0	0.0	Valley Oak	*Quercus lobata*	2 Poor	Severe heeding cuts, epicormic growth, good habitat, no canopy mostly just epicormic growth. Impacted by shoring excavation.	Yes (1)	Yes	N/A
307	80	11		50.0	0.0	0.0	0.0	Western sycamore	*Platanus racemosa*	1 Very Poor	Very poor structure, topped for transmission lines, on bank, large lateral leans over creek, hollow, DBH estimated	Yes (3)	No	Yes
308	81	12		29.5	0.0	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	3 Fair	Trunk leans to south over fence, good canopy health and secure on bank, Rec reduction cuts for canopy	Yes (1)	No	Yes
309	82	13		65.0	0.0	0.0	0.0	Coast redwood	*Sequoia sempervirens*	3 Fair	suppressed canopy btw stems, supp to north, small deadwood	No	No	Yes
310	83	14		6.0	2.0	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	2 Poor	Root collar buried, understory	No	Yes	N/A
311	84	15		7.0	7.0	12.5	9.0	Incense-cedar	*Calocedrus decurrens*	2 Poor	Mechanical damage, roots cut, three stems	No	Yes	N/A
312	85	16		3.0	2.5	0.0	0.0	Coast Live Oak	*Quercus agrifolia*	2 Poor	Two main stems	No	Yes	N/A
313	86	17		36.0	0.0	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	2 Poor	Root collar buried, codominant limb at 7' into many, deadwood: 1-4"	No	Yes	N/A
314	87	18		28.0	0.0	0.0	0.0	Juniper	*Juniperus sp.*	1 Very Poor	Many open pruning cuts with no callus, deadwood in canopy throughout, sparse canopy	No	Yes	N/A
315	88	19		13.0	0.0	0.0	0.0	Incense-cedar	*Calocedrus decurrens*	3 Fair	Roots cut at base, codominant limb removed at base, codominant limb at 8' into many	No	Yes	N/A
	89	20		66.0				Coast redwood	*Sequoia sempervirens*	5 Excellent	Removal recommended due to shoring excavation likely to impact tree.	No	Yes	N/A
	90	21		35.8				Coast redwood	*Sequoia sempervirens*	5 Excellent	N/A	No	No	No
	91	22		5.4				Coast Live Oak	*Quercus agrifolia*	3 Fair	Major lean to east. Directly in-line with tree #20.	No	Yes	N/A
	92	23		4.8				Coast Live Oak	*Quercus agrifolia*	4 Good	Lean to east	No	No	No. Unlikely significant root depth below 10 feet.
	93	24		4.5				Coast Live Oak	*Quercus agrifolia*	2 Poor	DBH is cumulative of several stems.	No	No	Yes. Unlikely significant root depth below 10 feet; however, shoring excavation could impact tree.
	94	25		X				X	*X*	Dead	Dead	No	No	No
	95	26		13.2				White Alder	*Alnus rhombifolia*	3 Fair	Poor canopy structure	Yes (3)	No	No. Unlikely significant root depth below 10 feet.
	96	27-29		8.0	4.0	7.5		White Alder	*Alnus rhombifolia*	3 Fair	3 independent trees. One leaning over width of channel.	Yes (3)	No	No
	97	30		10.2				White Alder	*Alnus rhombifolia*	4 Good	N/A	Yes (3)	No	No
	98	31		16.0				Coast Live Oak	*Quercus agrifolia*	5 Excellent	Co-domninant leaders start at 15' above ground.	Yes (1)	No	No
	99	32		9.0				White Alder	*Alnus rhombifolia*	4 Good	On bank	Yes (3)	No	No. Unlikely significant root depth below 10 feet.

OBJECTID	**Count**	**TreeID**	**Type**	**DBH1**	**DBH2**	**DBH3**	**DBH4**	**Species**	***Scientific***	**Rating**	**Notes**	**Protected/(#) refers to protected tree definition above**	**Within Project Construction Footprint (Proposed for Removal [red data point])**	**Potentically Within Project Footprint (yellow data point)**
	100	33		7.0	9.0	6.0		Bigleaf maple	*Acer macropyllum*	4 Good	N/A	Yes (3)	No	No
	101	34		10.0	11.0	11.0	9.5, 10	Bay laurel	*Umbellularia californica*	3 Fair	Multistem	Yes (3)	No	No
	102	35		7.0				California buckeye	*Aesculus californica*	2 Poor	N/A	Yes (3)	No	No
	103	36		6.0	5.0	5.5	5.5	California buckeye	*Aesculus californica*	3 Fair	Multistem; one branch is broken	Yes (3)	No	No
	104	37		7.0				Coast Live Oak	*Quercus agrifolia*	4 Good	Six feet away from outer fence	Yes (4)	Yes	N/A
	105	38		10.0				Coast Live Oak	*Quercus agrifolia*	4 Good	Six feet away from outer fence	Yes (4)	Yes	N/A
	106	39		7.2				Coast Live Oak	*Quercus agrifolia*	4 Good	5'-7" from outer fence	Yes (4)	Yes	N/A
	107	40		>40				Bay laurel	*Umbellularia californica*	5 Excellent	On top of bank elevation; north most base of trunk is approximately 8' from anchor	Yes (4)	No	Yes
	108	41		10.0				White Alder	*Alnus rhombifolia*	4 Good	Inaccessible; in creekbed	Yes (3)	No	No
	109	42		15.0	18.5			White Alder	*Alnus rhombifolia*	4 Good	Edge of water	Yes (3)	No	No

APPENDIX E

Air Quality and Greenhouse Gases Model Output

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ORINDA WTP CONSTRUCTION SCHEDULE

	Construction Phasing per trucks pdf sheet	Construction Phasing per const. equipment sheet	Start	End	Working Days	No. of worker round trips/day	No. of truck round trips/day	One-way truck trips/phase
1	***Site Mobilization***	Mobilization, Clear/Grub, Remove Trees, Demolition	6/1/2021	9/30/2021	88	20	5	880
2	***Demolition of Maintenance and Grounds Service Buildings and Sit***		10/27/2021	11/9/2021	10	20	16	320
3	***South Electrical Building Construction (SEBC)***	South Pre-Fab Electrical Building						
3.1	- Excavation & Retaining Wall Construction		11/5/2021	11/19/2021	11	5	7	154
3.2	- Concrete and Miscellaneous Work		11/22/2021	12/16/2021	19	5	5	190
3.3	- Pre-fabricated Building Installation		7/8/2022	8/23/2022	33	10	--	
4	***Upper(South) Spillway Bifurcation and Briones Weir Actuator Inst***	Upper (South) Spillway and Briones Weir	9/30/2021	1/10/2022	73	5	--	
5	***South Generator Construction***	South Generator	11/5/2021	11/2/2022	79	5	--	
6	***UV/CCB Facilities Construction (below ground)***							
6.1	- Install Secant Pile Wall	UVCCB Install Secant Pile Wall	10/27/2021	1/12/2022	56	20	14	1568
6.2	- Upper Excavation	UVCCB Excavation Levels 1 and 2	1/13/2022	10/27/2022	206	20	22	9064
6.3	- Large Diameter Pipeline Jacking and Installation	UVCCB Yard Piping (Large Diameter Pipe Jacking)	8/27/2021	12/30/2022	351	15	3	2106
6.4	- Lower Excavation	UVCCB Excavation Level 3	10/28/2022	1/9/2023	52	20	43	4472
6.5	- CCB Concrete Work	UVCCB Concrete - 315' to 361'	1/10/2023	6/20/2024	378	20	6	4536
6.6	- CCB Backfill	UVCCB CCB Misc	6/21/2024	8/12/2024	37	20	25	1850
6.7	- UV Concrete Work	UVCCB Concrete - 335' to 374'	7/19/2023	4/12/2024	193	20	23	8878
6.8	- UV Backfill	Backfill UVCCB	4/13/2024	3/4/2025	232	20	4	1856
6.9	- Large Diameter Pipeline Tie-ins during Winter Shutdown	Winter Plant Shutdown Tie-Ins	11/1/2024	1/17/2025	56	20	--	
6.10	- Backfill of Large Diameter Pipeline Tie-in Vaults	Backfill Eff 2, Eff 1, Claremont Tunnel	11/18/2024	2/4/2025	57	20	20	2280
7	***Maintenance and UV Electrical Building (MAUVE) Construction***							
7.1	- MAUVE Concrete Work	MAUVE concrete - 374' to 402'	1/16/2024	10/25/2024	204	25	12	4896
7.2	- MAUVE Building Construction	MAUVE misc	10/26/2024	4/24/2025	129	25	2	516
8	***Fencing and Landscaping***							
8.1	- Perimeter Fencing Installation	Perimeter Fence	1/17/2025	1/31/2025	11	5	--	
8.2	- Landscaping	Final Grading, Paving and Landscape	2/3/2025	3/6/2025	24	3	--	
9	***LAPP Power Building Construction***	LAPP Power Building						
9.1	- Excavation		2/5/2025	2/5/2025	1	5	23	46
9.2	- Concrete and Miscellaneous Work		2/5/2025	2/26/2025	16	5	12	384
9.3	- Pre-Fabricated Building Installation		2/27/2025	4/15/2025	34	10	--	
10	***Grounds Maintenance Building Construction***	Grounds Maintenance Building						
	- Excavation		4/17/2025	4/21/2025	3	5	19	114
	- Concrete and Miscellaneous Work		4/22/2025	5/20/2025	21	5	12	504
	- Pre-Fabricated Building Construction and Paving		5/14/2025	7/7/2025	39	10	--	
11	***LAPP2 - Electrical Modifications***	LAPP 2	6/16/2025	9/15/2025	66	2	--	
			6/1/2021	9/15/2025	1120			

CONSTRUCTION EQUIPMENT BY PHASE - ORINDA WTP

1.0 and 2.0 Mobilization, Clear/Grub, Remove Trees, Demolition

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Air Compressors	1	2	20	10	40	0.4
Concrete/Industrial Saws	2	8	45	2	720	4.1
Cranes	1	4	30	300	120	1.2
Crawler Tractors	1	8	5	300	40	0.4
Dumpers/Tenders	1	4	30	400	120	1.0
Excavators	1	8	30	400	240	1.5
Forklifts	1	4	30	100	120	0.7
Generator Sets	1	8	45	100	360	4.1
Graders	1	8	5	400	40	0.3
Rollers	1	6	3	400	18	0.1
Watertruck	1	3	45	275	135	0.3
Rubber Tired Loader	1	4	45	250	180	0.4
Rubber Tired Backhoe	1	4	45	150	180	1.4
Dump Truck	6	8	45	325	2160	1.3
Boomtruck	1	4	45	350	180	1.3

3.1, 3.2 and 3.3 South Pre-Fab Electrical Building

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Air Compressors	1	2	15	10	30	0.5
Cranes	1	8	3	300	24	0.21
Concrete Pumps	1	6	2	350	12	0.07
Watertruck	1	1	5	275	5	0.06
Rubber Tired Backhoe	1	4	4	150	16	0.24
Concrete Truck	1	4	2	325	8	0.03
Boomtruck	1	4	3	350	12	0.02

4.0 Upper (South) Spillway and Briones Weir

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Air Compressors	1	4	10	10	40	0.5
Concrete/Industrial Saws	1	4	5	2	20	0.3
Dumpers/Tenders	1	8	1	400	8	0.1
Concrete Pumps	1	8	1	350	8	0.1
Rubber Tired Loader	1	4	10	250	40	0.5
Concrete Truck	1	6	5	325	30	0.4
Boomtruck	1	4	40	350	160	2.2

5.0 South Generator

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Cranes	1	8	1	300	8	0.1
Concrete Pumps	1	8	1	350	8	0.1

Concrete Truck	1	4	5	325	20	0.3
Boomtruck	1	4	15	350	60	0.8

6.1 UVCCB Install Secant Pile Wall

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Aerial Lifts	1	4	40	90	160	2.9
Air Compressors	1	6	40	10	240	4.3
Bore/Drill Rigs	1	8	50	300?	400	7.1
Cranes	2	8	50	300	800	7.1
Rubber Tired Loader	1	8	50	250	400	7.1
Rubber Tired Backhoe	1	4	50	150	200	3.6
Dump Truck	2	8	50	325	800	7.1
Concrete Truck	1	6	25	325	150	2.7
Boomtruck	1	4	50	350	200	3.6

6.2 UVCCB Excavation Levels 1 and 2

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Cranes	1	8	40	300	320	1.6
Crawler Tractors	1	8	65	300	520	2.5
Excavators	2	8	80	400	1280	3.1
Pumps	2	8	80	10	1280	3.1
Watertruck	1	2	80	275	160	0.8
Rubber Tired Loader	1	8	80	250	640	3.1
Rubber Tired Backhoe	1	8	80	150	640	3.1
Dump Truck	8	8	65	325	4160	2.5
Boomtruck	1	4	40	350	160	0.8

6.3 UVCCB Yard Piping (Large Diameter Pipe Jacking)

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Air Compressors	1	4	120	10	480	1.4
Bore/Drill Rigs	1	8	15	300?	120	0.3
Cranes	1	8	120	300	960	2.7
Excavators	1	4	60	400	240	0.7
Generator Sets	1	8	120	100	960	2.7
Pumps	1	8	120	10	960	2.7
Concrete Pumps	1	6	5	350	30	0.1
Welder	1	6	60	25	360	1.0
Rubber Tired Loader	1	8	120	250	960	2.7
Dump Truck	1	4	120	325	480	1.4
Concrete Truck	3	4	10	325	120	0.1
Boomtruck	1	4	60	350	240	0.7

6.4 UVCCB Excavation Level 3

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Cranes	1	4	20	300	80	1.5

Crawler Tractors	1	8	20	300	160	3.1
Excavators	2	8	20	400	320	3.1
Pumps	1	8	20	10	160	3.1
Rubber Tired Loader	1	8	20	250	160	3.1
Rubber Tired Backhoe	1	8	20	150	160	3.1
Dump Truck	8	8	20	325	1280	3.1
Boomtruck	1	4	5	350	20	0.4

6.5 UVCCB Concrete - 315' to 361'

Equipment **NOTE: Please click on a cell and select equipment from the drop down list**	**Number of Equipment used**	**Avg Operation (hrs/day)**	**Number of Work Days in the construction phase equipment is used**	**Equipment size (hp)**	**Total Run Time (hours)**	**Adjusted hrs/day**
Aerial Lifts	1	4	40	90	160	0.4
Air Compressors	1	2	180	10	360	1.0
Concrete/Industrial Saws	1	4	20	2	80	0.2
Cranes	1.5	8	300	300	3600	6.3
Forklifts	1	2	160	100	320	0.8
Generator Sets	1	8	120	100	960	2.5
Concrete Pumps	1	8	120	350	960	2.5
Watertruck	1	2	300	275	600	1.6
Welder	1	2	40	25	80	0.2
Rubber Tired Backhoe	1	2	60	150	120	0.3
Dump Truck	1	4	60	325	240	0.6
Concrete Truck	6	8	120	325	5760	2.5
Boomtruck	1	3	200	350	600	1.6

6.6 UVCCB CCB Misc

Equipment **NOTE: Please click on a cell and select equipment from the drop down list**	**Number of Equipment used**	**Avg Operation (hrs/day)**	**Number of Work Days in the construction phase equipment is used**	**Equipment size (hp)**	**Total Run Time (hours)**	**Adjusted hrs/day**
Aerial Lifts	1	4	60	90	240	6.5
Air Compressors	1	4	40	10	160	4.3
Cranes	1	6	80	300	480	13.0
Forklifts	1	6	60	100	360	9.7
Watertruck	1	2	60	275	120	3.2
Welder	1	4	60	25	240	6.5
Rubber Tired Backhoe	1	2	20	150	40	1.1
Boomtruck	1	4	80	350	320	8.6

6.7 UVCCB Concrete - 335' to 374'

Equipment **NOTE: Please click on a cell and select equipment from the drop down list**	**Number of Equipment used**	**Avg Operation (hrs/day)**	**Number of Work Days in the construction phase equipment is used**	**Equipment size (hp)**	**Total Run Time (hours)**	**Adjusted hrs/day**
Aerial Lifts	1	4	40	90	160	0.8
Air Compressors	1	2	20	10	40	0.2
Cranes	1.5	8	80	300	960	3.3
Concrete Pumps	1	8	20	350	160	0.8
Watertruck	1	2	80	275	160	0.8
Concrete Truck	4	6	20	325	480	0.6
Boomtruck	1	4	40	350	160	0.8

6.8 Backfill UVCCB

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Plate Compactors	1	8	15	10	120	0.5
Rollers	1	8	15	400	120	0.5
Watertruck	1	2	15	275	30	0.1
Rubber Tired Loader	1	8	15	250	120	0.5
Rubber Tired Backhoe	1	8	15	150	120	0.5
Dump Truck	6	8	15	325	720	0.5

6.9 Large Diameter Pipeline Tie-ins during Winter Shutdown

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Air Compressors	1	4	45	10	180	3.2
Cranes	1	8	45	300	360	6.4
Excavators	1	4	45	400	180	3.2
Forklifts	1	4	45	100	180	3.2
Generator Sets	1	8	45	100	360	6.4
Welder	1	8	45	25	360	6.4
Boomtruck	1	8	45	350	360	6.4

6.10 Backfill Eff 2, Eff 1, Claremont Tunnel

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Cranes	1	6	15	300	90	1.6
Excavators	1	8	15	400	120	2.1
Plate Compactors	1	8	15	10	120	2.1
Rollers	1	8	15	400	120	2.1
Rubber Tired Loader	1	8	15	250	120	2.1
Dump Truck	3	8	15	325	360	2.1

7.1 MAUVE concrete - 374' to 402'

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Aerial Lifts	1	4	30	90	120	0.6
Air Compressors	1	2	30	10	60	0.3
Cranes	1	8	60	300	480	2.4
Generator Sets	1	6	10	100	60	0.3
Concrete Pumps	1	8	10	350	80	0.4
Watertruck	1	2	60	275	120	0.6
Concrete Truck	3	6	10	325	180	0.3
Boomtruck	1	4	30	350	120	0.6

7.2 MAUVE misc

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Aerial Lifts	1	4	180	90	720	5.6
Air Compressors	1	2	60	10	120	0.9

Cranes	1	4	20	300	80	0.6
Dumpers/Tenders	1	2	120	400	240	1.9
Forklifts	1	4	120	100	480	3.7
Boomtruck	1	4	120	350	480	3.7

8.1 Perimeter Fence

Equipment NOTE: Please click on a cell and select equipment from the drop down list	**Number of Equipment used**	**Avg Operation (hrs/day)**	**Number of Work Days in the construction phase equipment is used**	**Equipment size (hp)**	**Total Run Time (hours)**	**Adjusted hrs/day**
Concrete Truck	1	6	2	325	12	1.1

8.2 Final Grading, Paving and Landscape

Equipment NOTE: Please click on a cell and select equipment from the drop down list	**Number of Equipment used**	**Avg Operation (hrs/day)**	**Number of Work Days in the construction phase equipment is used**	**Equipment size (hp)**	**Total Run Time (hours)**	**Adjusted hrs/day**
Air Compressors	1	2	10	10	20	0.8
Dumpers/Tenders	1	8	20	400	160	6.7
Graders	1	8	10	400	80	3.3
Paving Equipment	1	8	4	300	32	1.3
Plate Compactors	1	8	10	10	80	3.3
Rollers	1	8	15	400	120	5.0
Watertruck	1	4	30	275	120	5.0
Rubber Tired Loader	1	8	10	250	80	3.3
Rubber Tired Backhoe	1	8	10	150	80	3.3
Dump Truck	3	8	6	325	144	2.0
Concrete Truck	2	6	10	325	120	2.5
Boomtruck	1	4	8	350	32	1.3

9.1, 9.2 and 9.3 LAPP Power Building

Equipment NOTE: Please click on a cell and select equipment from the drop down list	**Number of Equipment used**	**Avg Operation (hrs/day)**	**Number of Work Days in the construction phase equipment is used**	**Equipment size (hp)**	**Total Run Time (hours)**	**Adjusted hrs/day**
Cranes	1	8	2	300	16	0.3
Rubber Tired Backhoe	1	8	3	150	24	0.5
Concrete Truck	3	8	2	325	48	0.3
Boomtruck	1	4	5	350	20	0.4

10.1, 10.2 and 10.3 Grounds Maintenance Building

Equipment NOTE: Please click on a cell and select equipment from the drop down list	**Number of Equipment used**	**Avg Operation (hrs/day)**	**Number of Work Days in the construction phase equipment is used**	**Equipment size (hp)**	**Total Run Time (hours)**	**Adjusted hrs/day**
Aerial Lifts	1	4	20	90	80	1.3
Cranes	1	4	10	300	40	0.6
Forklifts	1	4	20	100	80	1.3
Rubber Tired Backhoe	1	8	5	150	40	0.6
Dump Truck	1	4	5	325	20	0.3
Boomtruck	1	4	80	350	320	5.1

11.0 LAPP 2

Equipment NOTE: Please click on a cell and select equipment from the drop down list	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)	Adjusted hrs/day
Forklifts	1	4	2	100	8	0.2

ORINDA WTP CONSTRUCTION EMISSIONS SUMMARY

Off-Road Construction Equipment Emissions - Criteria Air Pollutants (based on CalEEMod output)

Scenario	No. Construction workdays	Tons over Construction Period				Average Pounds per day			
		ROG	NOx	Exhaust PM-10	Exhaust PM-2.5	ROG	NOx	Exhaust PM-10	Exhaust PM-2.5
Uncontrolled Scenario									
2021	154	0.19	2.03	0.06	0.06	2.5	26.4	0.8	0.8
2022	260	0.40	4.53	0.11	0.10	3.1	34.8	0.8	0.8
2023	260	0.33	3.11	0.09	0.09	2.5	23.9	0.7	0.7
2024	262	0.33	3.28	0.08	0.08	2.6	25.0	0.6	0.6
2025	184	0.09	0.72	0.02	0.02	0.9	7.8	0.2	0.2
Project Average	1120	1.34	13.66	0.36	0.34	2.4	24.4	0.6	0.6
BAAQMD Significance Thresholds						54.0	54.0	82.0	54.0

Construction GHG Emissions (from CalEEMod output)

Year	CO_2	CH_4	N_2O	CO_2e
2021	460.9	0.09	<0.01	463.2
2022	1305.6	0.24	<0.01	1311.6
2023	990.5	0.18	<0.01	994.9
2024	1183.9	0.18	<0.01	1188.4
2025	278.3	0.05	<0.01	279.7
Total Construction equipment & vehicles				4237.7
Water use				4
TOTAL CONSTRUCTION				4241

GHG from water use for soil compaction and dust suppression during construction

Water use cycle process energy intensity[1] =	4000	kWh/MG
Water used for project construction	7	MG
Energy used for water	28000	kWh/MG

GHG emissions	CO_2	CH_4	N_2O
Emission Factor[2] (lb/MWh)	294	0.033	0.004
Energy used for water during construction (MWh)	28	28	28
Conversion from lbs to metric tons	0.000453592	0.00045359	0.0004536
GHG emissions (metric tons)	3.733969344	0.00041912	5.08E-05
GWP[3]	1	25	298
GHG emissions as CO_2e (metric tons)	3.733969344	0.01047798	0.0151391
Total CO_2e emissions (metric tons)	**3.759586406**		

NOTES:

1. Source: https://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF, Table C-6

2. Source for GHG emission factors: https://www.epa.gov/sites/production/files/2018-02/documents/egrid2016_summarytables.pdf, https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

3. Source for GWP: https://www.arb.ca.gov/cc/inventory/background/gwp.htm

DPM (PM_{10} emissions) by Source and Year during Construction

Year	Construction Equipment	% of Total Construction Emissions	Construction Vehicle Trips	% of Total Construction Emissions	Total Construction Emissions
2021	0.061	0.977	0.001	0.023	0.062
2022	0.102	0.950	0.005	0.050	0.107
2023	0.090	0.985	0.001	0.015	0.091
2024	0.080	0.974	0.002	0.026	0.082
2025	0.019	0.979	0.000	0.021	0.019
Total	0.351	97.04	0.011	2.96	0.362

Orinda WTP - Health Risk Assessment

Construction DPM (PM_{10}) Emissions per Year (tons)

Year	Unmitigated	Mitigation (tier 4)
2021	0.0609	0.0050
2022	0.1022	0.0108
2023	0.0900	0.0072
2024	0.0801	0.0098
2025	0.0188	0.0028

$PM_{2.5}$ Emissions

Total tons over construction period	Emission rate over construction period	Max. $PM_{2.5}$ Concentration
0.34	0.0023	0.008

Emission Rates - Scaling Factors (g/s)

Year	Unmitigated	Mitigation (tier 4)
2021	0.0100	0.0008
2022	0.0099	0.0010
2023	0.0087	0.0007
2024	0.0077	0.0009
2025	0.0026	0.0004

AERMOD Output [$\mu g/m^3$]/[g/s]

Annual Average	Resident	3.65	$\mu g/m^3$

MEIR: Residence at 20 Hacienda Circle

Annual Average Concentrations - ($\mu g/m^3$)

Year	Unmitigated	Tier 4	HI
2021	3.64E-02	2.97E-03	7.27E-03
2022	3.62E-02	3.82E-03	7.23E-03
2023	3.19E-02	2.55E-03	6.37E-03
2024	2.81E-02	3.43E-03	5.62E-03
2025	9.39E-03	1.40E-03	1.88E-03

	Age Group	3rd Trimester	Age 0<2	Age 2<16
Infant Receptor	2021	0.25	0.25	0.00
	2022	0.00	1.00	0.00
	2023	0.00	0.75	0.25
	2024	0.00	0.00	1
	2025	0.00	0.00	0.75
Child Receptor	Age Group	3rd Trimester	Age 0<2	Age 2<16
	2021	0.00	0.50	0.00
	2022	0.00	1.00	0.00
	2023	0.00	0.50	0.50
	2024	0.00	0.00	1
	2025	0.00	0.00	0.75
Adult Receptor	Age Group	3rd Trimester	Age 0<2	Age 2<16
	2021	0.00	0.00	0.50
	2022	0.00	0.00	1.00
	2023	0.00	0.00	1.00
	2024	0.00	0.00	1
	2025	0.00	0.00	0.75

Cancer Risk = Dose inhalation × Inhalation CPF × ASF × ED/AT × FAH **(Equation 8.2.4 A)**

Where:

Cancer Risk = residential inhalation cancer risk

Dose inhalation (mg/kg-day) = C_{AIR} × DBR × A × EF × 10^{-6} **(Equation 2)**

Inhalation CPF = inhalation cancer potency factor ([mg/kg/day]$^{-1}$)

ASF = age sensitivity factor for a specified age group (unitless)

ED = exposure duration for a specified age group (years)

AT = averaging time period over which exposure is averaged in days (years)

FAH = fraction of time at home (unitless)

Where:

C_{AIR} = concentration of compound in air in micrograms per cubic meter ($\mu g/m^3$)

DBR = daily breathing rate in liter per kilogram of body weight per day (L/kg-body weight/day)

A = inhalation absorption factor (1 for DPM, unitless)

EF = exposure frequency in days per year (unitless, days/365 days)

10^{-6} = micrograms to milligrams conversion, liters to cubic meters conversion

Dose Inhalation Inputs

			Unmitigated	Mitigation (tier 4)			
Receptor Type	**Exposure Scenario**	**Exposure Age**	**C_{AIR} (µg/m^3)**		**DBR (L/kg-day)**	**A (unitless)**	**EF (days/year)**
Off-Site Infant Resident	Construction	3rd Trimester	3.64E-02	2.97E-03	361	1	0.96
		Age 0<2	3.46E-02	3.24E-03	1090	1	0.96
		Age 2<16	2.16E-02	2.56E-03	572	1	0.96
Off-Site Child Resident	Construction	Age 0<2	3.51E-02	3.29E-03	1090	1	0.96
		Age 2<16	2.27E-02	2.56E-03	572	1	0.96
Off-Site Adult Resident	Construction	Age 16<30	2.86E-02	2.90E-03	261	1	0.96

Dose Inhalation Outputs

			Unmitigated	Mitigation (tier 4)
Receptor Type	**Exposure Scenario**	**Exposure Age**	**Dose inhalation (mg/kg-day)**	
Off-Site Infant Resident	Construction	3rd Trimester	1.26E-05	1.03E-06
		Age 0<2	3.61E-05	3.38E-06
		Age 2<16	1.18E-05	1.40E-06
Off-Site Child Resident	Construction	Age 0<2	3.67E-05	3.44E-06
		Age 2<16	1.25E-05	1.40E-06
Off-Site Adult Resident	Construction	Age 16<30	7.15E-06	7.26E-07

Risk Inputs

Receptor Type	**Exposure Scenario**	**Exposure Age**	**CPF (mg/kg-day^{-1})**	**ASF (unitless)**	**ED (years)**	**AT (years)**	**FAH (unitless)**	**REL (µg/m^3)**
Off-Site Infant Resident	Construction	3rd Trimester	1.1	10	0.25	70.00	0.85	5
		Age 0<2	1.1	10	2.00	70.00	0.85	5
		Age 2<16	1.1	3	2.00	70.00	0.72	5
Off-Site Child Resident	Construction	Age 0<2	1.1	10	2.00	70.00	0.85	5
		Age 2<16	1.1	3	2.25	70.00	0.72	5
Off-Site Adult Resident	Construction	Age 16<30	1.1	1	4.25	70.00	0.73	5

Risk Outputs

			Unmitigated	Mitigation (tier 4)	Unmitigated	Mitigation (tier 4)
Receptor Type	**Exposure Scenario**	**Receptor Group Age**	**Cancer Risk**		**Chronic Non-Cancer Risk**	
Off-Site Infant Resident	Construction	3rd Trimester	4.20E-07	3.44E-08		
		Age 0<2	9.65E-06	9.03E-07		
		Age 2<16	8.03E-07	9.52E-08		
		Total Risk	1.09E-05	1.03E-06	0.007	0.001
		Risk per Million	10.9	1.03	NA	NA
Off-Site Child Resident	Construction	Age 0<2	9.81E-06	9.18E-07		
		Age 2<16	9.51E-07	1.07E-07		
		Total Risk	1.08E-05	1.03E-06	0.007	0.001
		Risk per Million	10.8	1.03	NA	NA
Off-Site Adult Resident	Construction	Age 16<30	3.48E-07	3.54E-08		
		Total Risk	3.48E-07	3.54E-08	0.007	0.001
		Risk per Million	0.3	0.04	NA	NA

SOURCE: Office of Environmental Health Hazard Assessment, 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments* . February 2015.
BAAQMD Air Toxics NSR Program HRA Guidelines recommend using the 95th percentile rate for age groups less than 2 years old and the 80th percentile rate for age groups that are greater than or equal to 2 years old. Using the high-end point estimate (i.e., the 95th percentiles) breathing rates for the inhalation pathway. 5.7).
Inhalation cancer potency factor from Table 7.1

OPERATIONAL GHG EMISSIONS

Operational mobile emissions

Operational Vehicle Trips	No. of trips	No. of one-way trips	
Employee commute trips/day	0	0	
Maintenance truck trips/month	1	2	Negligible emissions, not quantified

From CalEEMod

Source	CO_2	CH_4	N_2O	CO_2e
Emergency Generator	38.1	0.00534	0	38.2

Operational GHG emissions from electricity generation

	CO_2	CH_4	N_2O
Emission Factor[1] (lb/MWh)	294	0.034	0.004
Annual energy demand (MWh/year)	1400	1400	1400
Conversion from lbs to metric tons	4.54E-04	4.54E-04	4.54E-04
GHG emissions (metric tons/year)	186.7	0.02	0.00
GWP[2]	1	25	298
GHG emissions as CO_2e (metric tons/year)	186.7	0.5	0.8
Total GHG emissions as CO_2e (metric tons/year)	188		

NOTES:

01/documents/egrid2018_summary_tables.pdf, https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

2. Source for GWP: https://www.arb.ca.gov/cc/inventory/background/gwp.htm

OPERATIONAL EMISSIONS - GHG as CO_2e (metric tons per year)

	CO_2e	% of Total
Electricity Use	188.0	51%
Emergency Generator	38.2	10%
Project Construction Annual Ave.	141.4	38%
TOTAL	367.6	100%

Orinda WTP2

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	1.00	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	5			**Operational Year**	2025
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - https://www.pgecurrents.com/2018/03/26/independent-registry-confirms-record-low-carbon-emissions-for-pge/

Land Use - Unit factors assumed

Construction Phase - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

Off-road Equipment - Project info

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Off-road Equipment - Project info

Trips and VMT - Project data

Grading - Construction area

Vehicle Trips - Operational emission not estimated in this run

Energy Use -

Water And Wastewater - No operational emissions

Construction Off-road Equipment Mitigation - Tier 4 Final equipment for mitigation

Fleet Mix -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Parking	150	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	15.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	26.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	117.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	13.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	18.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	100.00	33.00
tblConstructionPhase	NumDays	100.00	378.00
tblConstructionPhase	NumDays	100.00	193.00
tblConstructionPhase	NumDays	100.00	204.00
tblConstructionPhase	NumDays	100.00	129.00
tblConstructionPhase	NumDays	100.00	56.00
tblConstructionPhase	NumDays	100.00	16.00
tblConstructionPhase	NumDays	100.00	34.00
tblConstructionPhase	NumDays	100.00	21.00
tblConstructionPhase	NumDays	100.00	66.00
tblConstructionPhase	NumDays	100.00	73.00
tblConstructionPhase	NumDays	100.00	56.00

tblConstructionPhase	NumDays	100.00	79.00
tblConstructionPhase	NumDays	100.00	19.00
tblConstructionPhase	NumDays	2.00	52.00
tblConstructionPhase	NumDays	2.00	1.00
tblConstructionPhase	NumDays	2.00	3.00
tblConstructionPhase	NumDays	2.00	11.00
tblConstructionPhase	NumDays	2.00	206.00
tblConstructionPhase	NumDays	5.00	39.00
tblConstructionPhase	NumDays	1.00	88.00
tblConstructionPhase	NumDays	1.00	11.00
tblConstructionPhase	NumDays	1.00	24.00
tblConstructionPhase	NumDays	1.00	10.00
tblGrading	AcresOfGrading	1.65	1.00
tblGrading	AcresOfGrading	0.19	1.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	AcresOfGrading	4.95	1.00
tblGrading	AcresOfGrading	0.00	1.00
tblGrading	AcresOfGrading	0.00	1.00
tblLandUse	LotAcreage	0.02	1.00
tblOffRoadEquipment	HorsePower	231.00	300.00
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tblOffRoadEquipment	HorsePower	89.00	0.00
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tblOffRoadEquipment	HorsePower	84.00	100.00
tblOffRoadEquipment	HorsePower	84.00	0.00
tblOffRoadEquipment	HorsePower	187.00	400.00
tblOffRoadEquipment	HorsePower	187.00	400.00
tblOffRoadEquipment	HorsePower	187.00	400.00
tblOffRoadEquipment	HorsePower	97.00	150.00
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tblOffRoadEquipment	HorsePower	402.00	350.00
tblOffRoadEquipment	HorsePower	402.00	275.00

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tblOffRoadEquipment	HorsePower	46.00	25.00
tblOffRoadEquipment	LoadFactor	0.44	0.38
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tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.20
tblOffRoadEquipment	UsageHours	6.00	6.30
tblOffRoadEquipment	UsageHours	6.00	3.30
tblOffRoadEquipment	UsageHours	6.00	2.40
tblOffRoadEquipment	UsageHours	6.00	0.60
tblOffRoadEquipment	UsageHours	6.00	6.40
tblOffRoadEquipment	UsageHours	6.00	0.30
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tblOffRoadEquipment	UsageHours	6.00	0.60
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	7.10
tblOffRoadEquipment	UsageHours	6.00	0.10
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tblOffRoadEquipment	UsageHours	6.00	0.00
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tblOffRoadEquipment	UsageHours	6.00	0.00
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tblOffRoadEquipment	UsageHours	6.00	0.20
tblOffRoadEquipment	UsageHours	6.00	0.00

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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	6.40
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tblOffRoadEquipment	UsageHours	6.00	0.00

tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
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tblOffRoadEquipment	UsageHours	6.00	0.50
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tblOffRoadEquipment	UsageHours	6.00	0.60
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tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	3.60
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.20
tblOffRoadEquipment	UsageHours	7.00	3.10
tblOffRoadEquipment	UsageHours	7.00	0.50

tblOffRoadEquipment	UsageHours	7.00	0.60
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.20
tblOffRoadEquipment	UsageHours	7.00	3.10
tblOffRoadEquipment	UsageHours	8.00	0.60
tblOffRoadEquipment	UsageHours	8.00	1.40
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tblOffRoadEquipment	UsageHours	8.00	3.30
tblOffRoadEquipment	UsageHours	8.00	1.40
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.20
tblOffRoadEquipment	UsageHours	8.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	6.40
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
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tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	2,000.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00

tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	880.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,472.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,536.00
tblTripsAndVMT	HaulingTripNumber	0.00	8,878.00
tblTripsAndVMT	HaulingTripNumber	0.00	4,896.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,856.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,850.00
tblTripsAndVMT	HaulingTripNumber	0.00	516.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,280.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,106.00
tblTripsAndVMT	HaulingTripNumber	0.00	46.00
tblTripsAndVMT	HaulingTripNumber	0.00	384.00
tblTripsAndVMT	HaulingTripNumber	0.00	114.00
tblTripsAndVMT	HaulingTripNumber	0.00	504.00
tblTripsAndVMT	HaulingTripNumber	0.00	320.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,568.00
tblTripsAndVMT	HaulingTripNumber	0.00	154.00
tblTripsAndVMT	HaulingTripNumber	0.00	190.00
tblTripsAndVMT	HaulingTripNumber	0.00	9,064.00
tblTripsAndVMT	WorkerTripNumber	53.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	28.00	40.00
tblTripsAndVMT	WorkerTripNumber	20.00	40.00

tblTripsAndVMT	WorkerTripNumber	0.00	50.00
tblTripsAndVMT	WorkerTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	20.00	40.00
tblTripsAndVMT	WorkerTripNumber	35.00	30.00
tblTripsAndVMT	WorkerTripNumber	3.00	10.00
tblTripsAndVMT	WorkerTripNumber	38.00	6.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	15.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	53.00	40.00
tblTripsAndVMT	WorkerTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	45.00	40.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.1909	2.0300	1.3597	5.1200e-003	0.0815	0.0625	0.1439	0.0214	0.0583	0.0797	0.0000	460.8618	460.8618	0.0941	0.0000	463.2137
2022	0.4048	4.5289	2.8941	0.0143	0.2183	0.1075	0.3258	0.0587	0.1001	0.1588	0.0000	1,305.6150	1,305.6150	0.2380	0.0000	1,311.5647
2023	0.3255	3.1057	2.4670	0.0108	0.1931	0.0917	0.2848	0.0508	0.0855	0.1363	0.0000	990.4912	990.4912	0.1756	0.0000	994.8803
2024	0.3349	3.2775	2.6456	0.0128	0.3174	0.0827	0.4001	0.0842	0.0771	0.1613	0.0000	1,183.9486	1,183.9486	0.1776	0.0000	1,188.3893
2025	0.0853	0.7165	0.7019	3.0600e-003	0.0830	0.0193	0.1024	0.0216	0.0179	0.0395	0.0000	278.3340	278.3340	0.0529	0.0000	279.6559
Maximum	**0.4048**	**4.5289**	**2.8941**	**0.0143**	**0.3174**	**0.1075**	**0.4001**	**0.0842**	**0.1001**	**0.1613**	**0.0000**	**1,305.6150**	**1,305.6150**	**0.2380**	**0.0000**	**1,311.5647**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0696	0.6500	1.8194	5.1200e-003	0.0815	7.1500e-003	0.0886	0.0214	7.0600e-003	0.0285	0.0000	460.8615	460.8615	0.0941	0.0000	463.2134
2022	0.1773	2.2563	4.2457	0.0143	0.2183	0.0185	0.2368	0.0587	0.0183	0.0769	0.0000	1,305.6142	1,305.6142	0.2380	0.0000	1,311.5639
2023	0.1266	1.1052	3.5344	0.0108	0.1931	0.0129	0.2060	0.0508	0.0128	0.0636	0.0000	990.4904	990.4904	0.1756	0.0000	994.8796
2024	0.1544	1.5361	3.6280	0.0128	0.3174	0.0132	0.3306	0.0842	0.0131	0.0973	0.0000	1,183.9479	1,183.9479	0.1776	0.0000	1,188.3887
2025	0.0397	0.3139	0.9953	3.0600e-003	0.0830	3.4700e-003	0.0865	0.0216	3.4400e-003	0.0250	0.0000	278.3338	278.3338	0.0529	0.0000	279.6557
Maximum	**0.1773**	**2.2563**	**4.2457**	**0.0143**	**0.3174**	**0.0185**	**0.3306**	**0.0842**	**0.0183**	**0.0973**	**0.0000**	**1,305.6142**	**1,305.6142**	**0.2380**	**0.0000**	**1,311.5639**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**57.69**	**57.09**	**-41.26**	**0.00**	**0.00**	**84.81**	**24.54**	**0.00**	**83.89**	**49.39**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**
1	**6-1-2021**	**8-31-2021**	0.4613	0.1468
2	**9-1-2021**	**11-30-2021**	1.1354	0.3773
3	**12-1-2021**	**2-28-2022**	1.3900	0.5340
4	**3-1-2022**	**5-31-2022**	1.1609	0.5488
5	**6-1-2022**	**8-31-2022**	1.1648	0.5479
6	**9-1-2022**	**11-30-2022**	1.2975	0.6791

7	**12-1-2022**	**2-28-2023**	0.9771	0.4582
8	**3-1-2023**	**5-31-2023**	0.6551	0.1709
9	**6-1-2023**	**8-31-2023**	0.8680	0.3063
10	**9-1-2023**	**11-30-2023**	1.0927	0.4536
11	**12-1-2023**	**2-29-2024**	1.1656	0.5241
12	**3-1-2024**	**5-31-2024**	1.0947	0.4814
13	**6-1-2024**	**8-31-2024**	0.8882	0.4494
14	**9-1-2024**	**11-30-2024**	0.4706	0.2296
15	**12-1-2024**	**2-28-2025**	0.8864	0.3905
16	**3-1-2025**	**5-31-2025**	0.2168	0.1016
17	**6-1-2025**	**8-31-2025**	0.0368	0.0096
18	**9-1-2025**	**9-30-2025**	0.0002	0.0001
		Highest	1.3900	0.6791

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.3000e-004	1.2100e-003	1.0200e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	2.3289	2.3289	1.2000e-004	4.0000e-005	2.3454
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0821	0.3669	0.2092	3.9000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.0797	38.0797	5.3400e-003	0.0000	38.2132
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0866**	**0.3682**	**0.2103**	**4.0000e-004**	**0.0000**	**0.0122**	**0.0122**	**0.0000**	**0.0122**	**0.0122**	**0.2517**	**40.4087**	**40.6604**	**0.0203**	**4.0000e-005**	**41.1822**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	1.3000e-004	1.2100e-003	1.0200e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	2.3289	2.3289	1.2000e-004	4.0000e-005	2.3454
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Stationary	0.0821	0.3669	0.2092	3.9000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.0797	38.0797	5.3400e-003	0.0000	38.2132
Waste						0.0000	0.0000		0.0000	0.0000	0.2517	0.0000	0.2517	0.0149	0.0000	0.6236
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0866**	**0.3682**	**0.2103**	**4.0000e-004**	**0.0000**	**0.0122**	**0.0122**	**0.0000**	**0.0122**	**0.0122**	**0.2517**	**40.4087**	**40.6604**	**0.0203**	**4.0000e-005**	**41.1822**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	1.0 Mobilization	Site Preparation	6/1/2021	9/30/2021	5	88	

2	6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Trenching	8/27/2021	12/30/2022	5	351	
3	4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Building Construction	9/30/2021	1/10/2022	5	73	
4	2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Site Preparation	10/27/2021	11/9/2021	5	10	
5	6.1 UV/CCB - Install Secant Pile Wall	Building Construction	10/27/2021	1/12/2022	5	56	
6	3.1 SEBC - Excavation and Retaining Wall Construction	Grading	11/5/2021	11/19/2021	5	11	
7	5.0 South Generator Construction	Building Construction	11/5/2021	2/23/2022	5	79	
8	3.2 SEBC - Concrete and Miscellaneous work	Building Construction	11/22/2021	12/16/2021	5	19	
9	6.2 UV/CCB - Upper Excavation	Grading	1/13/2022	10/27/2022	5	206	
10	3.3 SEBC - Pre-Fab Building Installation	Building Construction	7/8/2022	8/23/2022	5	33	
11	6.4 UV/CCB - Lower Excavation	Grading	10/28/2022	1/9/2023	5	52	
12	6.5 UV/CCB - CCB Concrete Work	Building Construction	1/10/2023	6/20/2024	5	378	
13	6.7 UV/CCB - UV Concrete Work	Building Construction	7/19/2023	4/12/2024	5	193	
14	7.1 MAUVE Concrete Work	Building Construction	1/16/2024	10/25/2024	5	204	
15	6.8 UV/CCB - UV Backfill	Trenching	4/13/2024	3/4/2025	5	232	
16	6.6 UV/CCB - CCB Backfill	Trenching	6/21/2024	8/12/2024	5	37	
17	7.2 MAUVE Building Construction	Building Construction	10/26/2024	4/24/2025	5	129	
18	6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Building Construction	11/1/2024	1/17/2025	5	56	
19	6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults	Trenching	11/18/2024	2/4/2025	5	57	
20	8.1 Perimeter Fencicng Installation	Site Preparation	1/17/2025	1/31/2025	5	11	
21	8.2 Landscaping	Site Preparation	2/3/2025	3/6/2025	5	24	
22	9.1 LAPP - Excavation	Grading	2/5/2025	2/5/2025	5	1	
23	9.2 LAPP - Concrete and Miscellaneous Work	Building Construction	2/5/2025	2/26/2025	5	16	
24	9.3 LAPP - Pre-fab Building Installation	Building Construction	2/27/2025	4/15/2025	5	34	

25	10.1 Grounds Maintenence Building - Excavation	Grading	4/17/2025	4/21/2025	5	3	
26	10.2 Grounds Maintenence Building - Concrete & Misc. Work	Building Construction	4/22/2025	5/20/2025	5	21	
27	10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Paving	5/14/2025	7/7/2025	5	39	
28	11.0 LAPP2	Building Construction	6/16/2025	9/15/2025	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
1.0 Mobilization	Air Compressors	1	0.40	10	0.48
1.0 Mobilization	Concrete/Industrial Saws	2	4.10	2	0.73
1.0 Mobilization	Cranes	1	1.20	300	0.29
1.0 Mobilization	Dumpers/Tenders	1	1.00	400	0.38
1.0 Mobilization	Excavators	1	1.50	400	0.38
1.0 Mobilization	Forklifts	1	0.70	100	0.20
1.0 Mobilization	Generator Sets	1	4.10	100	0.74
1.0 Mobilization	Graders	1	0.30	400	0.41
1.0 Mobilization	Off-Highway Tractors	1	0.40	300	0.44
1.0 Mobilization	Off-Highway Trucks	1	0.30	275	0.38
1.0 Mobilization	Off-Highway Trucks	6	1.30	325	0.38
1.0 Mobilization	Off-Highway Trucks	1	1.30	350	0.38
1.0 Mobilization	Rollers	1	0.10	400	0.38

1.0 Mobilization	Rubber Tired Dozers	0	0.00	247	0.40
1.0 Mobilization	Rubber Tired Loaders	1	0.40	250	0.36
1.0 Mobilization	Tractors/Loaders/Backhoes	1	1.40	150	0.37
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Air Compressors	1	1.40	10	0.48
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Bore/Drill Rigs	1	0.30	300	0.50
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Cranes	1	2.70	300	0.29
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Excavators	1	0.70	400	0.38
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Generator Sets	1	2.70	100	0.74
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Off-Highway Trucks	1	1.40	325	0.38
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Off-Highway Trucks	3	0.10	325	0.38
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Off-Highway Trucks	1	0.70	350	0.38
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Pumps	1	2.70	10	0.74
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Pumps	1	0.10	350	0.74
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Rubber Tired Loaders	1	2.70	250	0.36
6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation	Welders	1	1.00	25	0.45
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Air Compressors	1	0.50	10	0.48
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Concrete/Industrial Saws	1	0.30	2	0.73
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Cranes	0	0.00	231	0.29
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Dumpers/Tenders	1	0.10	400	0.38
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Forklifts	0	0.00	89	0.20
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Generator Sets	0	0.00	84	0.74
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Off-Highway Trucks	1	0.40	325	0.38
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Off-Highway Trucks	1	2.20	350	0.38

4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Pumps	1	0.10	350	0.74
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Rubber Tired Loaders	1	0.50	250	0.36
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation	Welders	0	0.00	46	0.45
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Air Compressors	1	0.40	10	0.48
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Concrete/Industrial Saws	2	4.10	2	0.73
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Cranes	1	1.20	300	0.29
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Dumpers/Tenders	1	1.00	400	0.38
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Excavators	1	1.50	400	0.38
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Forklifts	1	0.70	100	0.20
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Generator Sets	1	4.10	100	0.74
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Graders	1	0.30	400	0.41
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Off-Highway Tractors	1	0.40	300	0.38
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Off-Highway Trucks	1	0.30	275	0.38
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Off-Highway Trucks	6	1.30	325	0.38
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Off-Highway Trucks	1	1.30	350	0.38
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Rollers	1	0.10	400	0.38

2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Rubber Tired Dozers	0	0.00	247	0.40
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Rubber Tired Loaders	1	0.40	250	0.36
2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing	Tractors/Loaders/Backhoes	1	1.40	150	0.37
6.1 UV/CCB - Install Secant Pile Wall	Aerial Lifts	1	2.90	90	0.31
6.1 UV/CCB - Install Secant Pile Wall	Air Compressors	1	4.30	10	0.48
6.1 UV/CCB - Install Secant Pile Wall	Bore/Drill Rigs	1	7.10	300	0.50
6.1 UV/CCB - Install Secant Pile Wall	Cranes	2	7.10	300	0.29
6.1 UV/CCB - Install Secant Pile Wall	Forklifts	0	0.00	89	0.20
6.1 UV/CCB - Install Secant Pile Wall	Generator Sets	0	0.00	84	0.74
6.1 UV/CCB - Install Secant Pile Wall	Off-Highway Trucks	2	7.10	325	0.38
6.1 UV/CCB - Install Secant Pile Wall	Off-Highway Trucks	1	2.70	325	0.38
6.1 UV/CCB - Install Secant Pile Wall	Off-Highway Trucks	1	3.60	350	0.38
6.1 UV/CCB - Install Secant Pile Wall	Rubber Tired Loaders	1	7.10	250	0.36
6.1 UV/CCB - Install Secant Pile Wall	Tractors/Loaders/Backhoes	1	3.60	150	0.37
6.1 UV/CCB - Install Secant Pile Wall	Welders	0	0.00	46	0.45
3.1 SEBC - Excavation and Retaining Wall Construction	Air Compressors	1	0.50	10	0.48
3.1 SEBC - Excavation and Retaining Wall Construction	Cranes	1	0.20	300	0.29
3.1 SEBC - Excavation and Retaining Wall Construction	Graders	0	0.00	187	0.41
3.1 SEBC - Excavation and Retaining Wall Construction	Off-Highway Trucks	1	0.10	275	0.38
3.1 SEBC - Excavation and Retaining Wall Construction	Off-Highway Trucks	1	0.00	325	0.38
3.1 SEBC - Excavation and Retaining Wall Construction	Off-Highway Trucks	1	0.00	350	0.38
3.1 SEBC - Excavation and Retaining Wall Construction	Pumps	1	0.10	350	0.74
3.1 SEBC - Excavation and Retaining Wall Construction	Rubber Tired Dozers	0	0.00	247	0.40

3.1 SEBC - Excavation and Retaining Wall Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
3.1 SEBC - Excavation and Retaining Wall Construction	Tractors/Loaders/Backhoes	1	0.20	150	0.37
5.0 South Generator Construction	Cranes	1	0.10	300	0.29
5.0 South Generator Construction	Forklifts	0	0.00	89	0.20
5.0 South Generator Construction	Generator Sets	0	0.00	84	0.74
5.0 South Generator Construction	Off-Highway Trucks	1	0.30	325	0.38
5.0 South Generator Construction	Off-Highway Trucks	1	0.80	350	0.38
5.0 South Generator Construction	Pumps	1	0.10	350	0.74
5.0 South Generator Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
5.0 South Generator Construction	Welders	0	0.00	46	0.45
3.2 SEBC - Concrete and Miscellaneous work	Air Compressors	1	0.50	10	0.48
3.2 SEBC - Concrete and Miscellaneous work	Cranes	1	0.20	300	0.29
3.2 SEBC - Concrete and Miscellaneous work	Forklifts	0	0.00	0	0.20
3.2 SEBC - Concrete and Miscellaneous work	Generator Sets	0	0.00	0	0.74
3.2 SEBC - Concrete and Miscellaneous work	Off-Highway Trucks	1	0.10	275	0.38
3.2 SEBC - Concrete and Miscellaneous work	Off-Highway Trucks	1	0.00	325	0.38
3.2 SEBC - Concrete and Miscellaneous work	Off-Highway Trucks	1	0.00	350	0.38
3.2 SEBC - Concrete and Miscellaneous work	Pumps	1	0.10	350	0.74
3.2 SEBC - Concrete and Miscellaneous work	Tractors/Loaders/Backhoes	1	0.20	150	0.37
3.2 SEBC - Concrete and Miscellaneous work	Welders	0	0.00	0	0.45
6.2 UV/CCB - Upper Excavation	Cranes	1	1.60	300	0.29
6.2 UV/CCB - Upper Excavation	Excavators	2	3.10	400	0.38
6.2 UV/CCB - Upper Excavation	Graders	0	0.00	187	0.41
6.2 UV/CCB - Upper Excavation	Off-Highway Tractors	1	2.50	300	0.44

6.2 UV/CCB - Upper Excavation	Off-Highway Trucks	1	0.80	275	0.38
6.2 UV/CCB - Upper Excavation	Off-Highway Trucks	8	2.50	325	0.38
6.2 UV/CCB - Upper Excavation	Off-Highway Trucks	1	0.80	350	0.38
6.2 UV/CCB - Upper Excavation	Pumps	2	3.10	10	0.74
6.2 UV/CCB - Upper Excavation	Rubber Tired Dozers	0	0.00	247	0.40
6.2 UV/CCB - Upper Excavation	Rubber Tired Loaders	1	3.10	250	0.36
6.2 UV/CCB - Upper Excavation	Tractors/Loaders/Backhoes	1	3.10	150	0.37
3.3 SEBC - Pre-Fab Building Installation	Air Compressors	1	0.50	10	0.48
3.3 SEBC - Pre-Fab Building Installation	Cranes	1	0.20	300	0.29
3.3 SEBC - Pre-Fab Building Installation	Forklifts	0	0.00	89	0.20
3.3 SEBC - Pre-Fab Building Installation	Generator Sets	0	0.00	84	0.74
3.3 SEBC - Pre-Fab Building Installation	Off-Highway Trucks	1	0.10	275	0.38
3.3 SEBC - Pre-Fab Building Installation	Off-Highway Trucks	1	0.00	325	0.38
3.3 SEBC - Pre-Fab Building Installation	Off-Highway Trucks	1	0.00	350	0.38
3.3 SEBC - Pre-Fab Building Installation	Pumps	1	0.10	350	0.74
3.3 SEBC - Pre-Fab Building Installation	Tractors/Loaders/Backhoes	1	0.20	150	0.37
3.3 SEBC - Pre-Fab Building Installation	Welders	0	0.00	46	0.45
6.4 UV/CCB - Lower Excavation	Cranes	1	1.50	300	0.29
6.4 UV/CCB - Lower Excavation	Excavators	2	3.10	400	0.38
6.4 UV/CCB - Lower Excavation	Graders	0	0.00	187	0.41
6.4 UV/CCB - Lower Excavation	Off-Highway Tractors	1	3.10	300	0.44
6.4 UV/CCB - Lower Excavation	Off-Highway Trucks	8	3.10	325	0.38
6.4 UV/CCB - Lower Excavation	Off-Highway Trucks	1	0.40	350	0.38
6.4 UV/CCB - Lower Excavation	Pumps	1	3.10	10	0.74
6.4 UV/CCB - Lower Excavation	Rubber Tired Dozers	0	0.00	247	0.40

6.4 UV/CCB - Lower Excavation	Rubber Tired Loaders	1	3.10	250	0.36
6.4 UV/CCB - Lower Excavation	Tractors/Loaders/Backhoes	1	3.10	150	0.37
6.5 UV/CCB - CCB Concrete Work	Aerial Lifts	1	0.40	90	0.31
6.5 UV/CCB - CCB Concrete Work	Air Compressors	1	1.00	10	0.48
6.5 UV/CCB - CCB Concrete Work	Concrete/Industrial Saws	1	0.20	2	0.73
6.5 UV/CCB - CCB Concrete Work	Cranes	2	6.30	300	0.29
6.5 UV/CCB - CCB Concrete Work	Forklifts	1	0.80	100	0.20
6.5 UV/CCB - CCB Concrete Work	Generator Sets	1	2.50	100	0.74
6.5 UV/CCB - CCB Concrete Work	Off-Highway Trucks	1	1.60	275	0.38
6.5 UV/CCB - CCB Concrete Work	Off-Highway Trucks	1	0.60	325	0.38
6.5 UV/CCB - CCB Concrete Work	Off-Highway Trucks	6	2.50	325	0.38
6.5 UV/CCB - CCB Concrete Work	Off-Highway Trucks	1	1.60	350	0.38
6.5 UV/CCB - CCB Concrete Work	Pumps	1	2.50	350	0.74
6.5 UV/CCB - CCB Concrete Work	Tractors/Loaders/Backhoes	1	0.30	150	0.37
6.5 UV/CCB - CCB Concrete Work	Welders	1	0.20	25	0.45
6.7 UV/CCB - UV Concrete Work	Aerial Lifts	1	0.80	90	0.31
6.7 UV/CCB - UV Concrete Work	Air Compressors	1	0.20	10	0.48
6.7 UV/CCB - UV Concrete Work	Cranes	2	3.30	300	0.29
6.7 UV/CCB - UV Concrete Work	Forklifts	0	0.00	89	0.20
6.7 UV/CCB - UV Concrete Work	Generator Sets	0	0.00	84	0.74
6.7 UV/CCB - UV Concrete Work	Off-Highway Trucks	1	0.80	275	0.38
6.7 UV/CCB - UV Concrete Work	Off-Highway Trucks	4	0.60	325	0.38
6.7 UV/CCB - UV Concrete Work	Off-Highway Trucks	1	0.80	350	0.38
6.7 UV/CCB - UV Concrete Work	Pumps	1	0.80	350	0.74
6.7 UV/CCB - UV Concrete Work	Tractors/Loaders/Backhoes	0	0.00	97	0.37
6.7 UV/CCB - UV Concrete Work	Welders	0	0.00	46	0.45
7.1 MAUVE Concrete Work	Aerial Lifts	1	0.60	90	0.31

7.1 MAUVE Concrete Work	Air Compressors	1	0.30	10	0.48
7.1 MAUVE Concrete Work	Cranes	1	2.40	300	0.29
7.1 MAUVE Concrete Work	Forklifts	0	0.00	89	0.20
7.1 MAUVE Concrete Work	Generator Sets	1	0.30	100	0.74
7.1 MAUVE Concrete Work	Off-Highway Trucks	1	0.60	275	0.38
7.1 MAUVE Concrete Work	Off-Highway Trucks	3	0.30	325	0.38
7.1 MAUVE Concrete Work	Off-Highway Trucks	1	0.60	350	0.38
7.1 MAUVE Concrete Work	Pumps	1	0.40	350	0.74
7.1 MAUVE Concrete Work	Tractors/Loaders/Backhoes	0	0.00	97	0.37
7.1 MAUVE Concrete Work	Welders	0	0.00	46	0.45
6.8 UV/CCB - UV Backfill	Off-Highway Trucks	1	0.10	275	0.38
6.8 UV/CCB - UV Backfill	Off-Highway Trucks	6	0.50	325	0.38
6.8 UV/CCB - UV Backfill	Plate Compactors	1	0.50	10	0.43
6.8 UV/CCB - UV Backfill	Rollers	1	0.50	400	0.38
6.8 UV/CCB - UV Backfill	Rubber Tired Loaders	1	0.50	250	0.36
6.8 UV/CCB - UV Backfill	Tractors/Loaders/Backhoes	1	0.50	150	0.37
6.6 UV/CCB - CCB Backfill	Aerial Lifts	1	6.50	90	0.31
6.6 UV/CCB - CCB Backfill	Air Compressors	1	4.30	10	0.48
6.6 UV/CCB - CCB Backfill	Cranes	1	13.00	300	0.29
6.6 UV/CCB - CCB Backfill	Forklifts	1	9.70	100	0.20
6.6 UV/CCB - CCB Backfill	Off-Highway Trucks	1	3.20	275	0.38
6.6 UV/CCB - CCB Backfill	Off-Highway Trucks	1	8.60	350	0.38
6.6 UV/CCB - CCB Backfill	Tractors/Loaders/Backhoes	1	1.10	150	0.37
6.6 UV/CCB - CCB Backfill	Welders	1	6.50	25	0.45
7.2 MAUVE Building Construction	Aerial Lifts	1	5.60	90	0.31
7.2 MAUVE Building Construction	Air Compressors	1	0.90	10	0.48
7.2 MAUVE Building Construction	Cranes	1	0.60	300	0.29

7.2 MAUVE Building Construction	Dumpers/Tenders	1	1.90	400	0.38
7.2 MAUVE Building Construction	Forklifts	1	3.70	100	0.20
7.2 MAUVE Building Construction	Generator Sets	0	0.00	84	0.74
7.2 MAUVE Building Construction	Off-Highway Trucks	1	3.70	350	0.38
7.2 MAUVE Building Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
7.2 MAUVE Building Construction	Welders	0	0.00	46	0.45
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Air Compressors	1	3.20	10	0.48
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Cranes	1	6.40	300	0.29
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Excavators	1	3.20	400	0.38
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Forklifts	1	3.20	100	0.20
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Generator Sets	1	6.40	100	0.74
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Off-Highway Trucks	1	6.40	350	0.38
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Tractors/Loaders/Backhoes	0	0.00	97	0.37
6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown	Welders	1	6.40	25	0.45
6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults	Cranes	1	1.60	300	0.29
6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults	Excavators	1	2.10	400	0.38
6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults	Off-Highway Trucks	3	2.10	325	0.38
6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults	Plate Compactors	1	2.10	10	0.43
6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults	Rollers	1	2.10	400	0.38
6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults	Rubber Tired Loaders	1	2.10	250	0.36
8.1 Perimeter Fencicng Installation	Graders	0	0.00	187	0.41
8.1 Perimeter Fencicng Installation	Off-Highway Trucks	1	1.10	325	0.38
8.1 Perimeter Fencicng Installation	Rubber Tired Dozers	0	0.00	247	0.40
8.1 Perimeter Fencicng Installation	Tractors/Loaders/Backhoes	0	0.00	97	0.37

8.2 Landscaping	Air Compressors	1	0.80	10	0.48
8.2 Landscaping	Dumpers/Tenders	1	6.70	400	0.38
8.2 Landscaping	Graders	1	3.30	400	0.41
8.2 Landscaping	Off-Highway Trucks	1	5.00	275	0.38
8.2 Landscaping	Off-Highway Trucks	3	2.00	325	0.38
8.2 Landscaping	Off-Highway Trucks	2	2.50	325	0.38
8.2 Landscaping	Off-Highway Trucks	1	1.30	350	0.38
8.2 Landscaping	Paving Equipment	1	1.30	300	0.36
8.2 Landscaping	Plate Compactors	1	3.30	10	0.43
8.2 Landscaping	Rollers	1	5.00	400	0.38
8.2 Landscaping	Rubber Tired Dozers	0	0.00	247	0.40
8.2 Landscaping	Rubber Tired Loaders	1	3.30	250	0.36
8.2 Landscaping	Tractors/Loaders/Backhoes	1	3.30	150	0.37
9.1 LAPP - Excavation	Cranes	1	0.30	300	0.29
9.1 LAPP - Excavation	Graders	0	0.00	187	0.41
9.1 LAPP - Excavation	Off-Highway Trucks	3	0.30	325	0.38
9.1 LAPP - Excavation	Off-Highway Trucks	1	0.40	350	0.38
9.1 LAPP - Excavation	Rubber Tired Dozers	0	0.00	247	0.40
9.1 LAPP - Excavation	Tractors/Loaders/Backhoes	1	0.50	150	0.37
9.2 LAPP - Concrete and Miscellaneous Work	Cranes	1	0.30	300	0.29
9.2 LAPP - Concrete and Miscellaneous Work	Forklifts	0	0.00	89	0.20
9.2 LAPP - Concrete and Miscellaneous Work	Generator Sets	0	0.00	84	0.74
9.2 LAPP - Concrete and Miscellaneous Work	Off-Highway Trucks	3	0.30	325	0.38
9.2 LAPP - Concrete and Miscellaneous Work	Off-Highway Trucks	1	0.40	350	0.38
9.2 LAPP - Concrete and Miscellaneous Work	Tractors/Loaders/Backhoes	1	0.50	150	0.37

9.2 LAPP - Concrete and Miscellaneous Work	Welders	0	0.00	46	0.45
9.3 LAPP - Pre-fab Building Installation	Cranes	1	0.30	300	0.29
9.3 LAPP - Pre-fab Building Installation	Forklifts	0	0.00	89	0.20
9.3 LAPP - Pre-fab Building Installation	Generator Sets	0	0.00	84	0.74
9.3 LAPP - Pre-fab Building Installation	Off-Highway Trucks	3	0.30	325	0.38
9.3 LAPP - Pre-fab Building Installation	Off-Highway Trucks	1	0.40	350	0.38
9.3 LAPP - Pre-fab Building Installation	Tractors/Loaders/Backhoes	1	0.50	150	0.37
9.3 LAPP - Pre-fab Building Installation	Welders	0	0.00	46	0.45
10.1 Grounds Maintenence Building - Excavation	Aerial Lifts	1	1.30	90	0.31
10.1 Grounds Maintenence Building - Excavation	Cranes	1	0.60	300	0.29
10.1 Grounds Maintenence Building - Excavation	Forklifts	1	1.30	100	0.20
10.1 Grounds Maintenence Building - Excavation	Graders	0	0.00	187	0.41
10.1 Grounds Maintenence Building - Excavation	Off-Highway Trucks	1	0.30	325	0.38
10.1 Grounds Maintenence Building - Excavation	Off-Highway Trucks	1	5.10	350	0.38
10.1 Grounds Maintenence Building - Excavation	Rubber Tired Dozers	0	0.00	247	0.40
10.1 Grounds Maintenence Building - Excavation	Tractors/Loaders/Backhoes	1	0.60	150	0.37
10.2 Grounds Maintenence Building - Concrete & Misc. Work	Aerial Lifts	1	1.30	90	0.31
10.2 Grounds Maintenence Building - Concrete & Misc. Work	Cranes	1	0.60	300	0.29
10.2 Grounds Maintenence Building - Concrete & Misc. Work	Forklifts	1	1.30	100	0.20
10.2 Grounds Maintenence Building - Concrete & Misc. Work	Generator Sets	0	0.00	84	0.74
10.2 Grounds Maintenence Building - Concrete & Misc. Work	Off-Highway Trucks	1	0.30	325	0.38
10.2 Grounds Maintenence Building - Concrete & Misc. Work	Off-Highway Trucks	1	5.10	350	0.38
10.2 Grounds Maintenence Building - Concrete & Misc. Work	Tractors/Loaders/Backhoes	1	0.60	150	0.37

10.2 Grounds Maintenence Building - Concrete & Misc. Work	Welders	0	0.00	46	0.45
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Aerial Lifts	1	1.30	90	0.31
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Cement and Mortar Mixers	0	0.00	9	0.56
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Cranes	1	0.60	300	0.29
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Forklifts	1	1.30	100	0.20
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Off-Highway Trucks	1	0.30	325	0.38
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Off-Highway Trucks	1	5.10	350	0.38
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Pavers	0	0.00	130	0.42
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Paving Equipment	0	0.00	132	0.36
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Rollers	0	0.00	80	0.38
10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving	Tractors/Loaders/Backhoes	1	0.60	150	0.37
11.0 LAPP2	Cranes	0	0.00	231	0.29
11.0 LAPP2	Forklifts	1	0.20	100	0.20
11.0 LAPP2	Generator Sets	0	0.00	84	0.74
11.0 LAPP2	Tractors/Loaders/Backhoes	0	0.00	97	0.37
11.0 LAPP2	Welders	0	0.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
1.0 Mobilization	21	40.00	0.00	880.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.3 UV/CCB - Large Diameter Pipeline Jac	14	30.00	0.00	2,106.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
4.0 Upper(South) Spillway Bifurcation an	7	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
2.0 Demolition of Maintenance and Gro	21	40.00	0.00	320.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

6.1 UV/CCB - Install Secant Pile Wall	11	40.00	0.00	1,568.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
3.1 SEBC - Excavation and Retain	7	10.00	0.00	154.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
5.0 South Generator Construction	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
3.2 SEBC - Concrete and Miscellaneous wo	7	10.00	0.00	190.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.2 UV/CCB - Upper Excavation	18	40.00	0.00	9,064.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
3.3 SEBC - Pre-Fab Building Installation	7	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.4 UV/CCB - Lower Excavation	16	40.00	0.00	4,472.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.5 UV/CCB - CCB Concrete Work	19	40.00	0.00	4,536.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.7 UV/CCB - UV Concrete Work	11	40.00	0.00	8,878.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
7.1 MAUVE Concrete Work	10	50.00	0.00	4,896.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.8 UV/CCB - UV Backfill	11	40.00	0.00	1,856.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.6 UV/CCB - CCB Backfill	8	40.00	0.00	1,850.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
7.2 MAUVE Building Construction	6	50.00	0.00	516.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.9 UV/CCB - Large Diameter Pipeline Tie-	7	40.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
6.10 UV/CCB - Backfill of Large Diameter Pip	8	40.00	0.00	2,280.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
8.1 Perimeter Fencing Installation	1	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
8.2 Landscaping	15	6.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
9.1 LAPP - Excavation	6	10.00	0.00	46.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
9.2 LAPP - Concrete and Miscellaneous Wo	6	10.00	0.00	384.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
9.3 LAPP - Pre-fab Building Installation	6	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
10.1 Grounds Maintenance Building	6	10.00	0.00	114.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
10.2 Grounds Maintenance Building	6	10.00	0.00	504.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
10.3 Grounds maintenance Building	6	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
11.0 LAPP2	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 1.0 Mobilization - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0464	0.4207	0.3425	9.8000e-004		0.0173	0.0173		0.0162	0.0162	0.0000	85.7382	85.7382	0.0236	0.0000	86.3276
Total	**0.0464**	**0.4207**	**0.3425**	**9.8000e-004**	**5.3000e-004**	**0.0173**	**0.0178**	**6.0000e-005**	**0.0162**	**0.0163**	**0.0000**	**85.7382**	**85.7382**	**0.0236**	**0.0000**	**86.3276**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.4200e-003	0.1178	0.0234	3.4000e-004	7.4500e-003	3.7000e-004	7.8300e-003	2.0500e-003	3.6000e-004	2.4100e-003	0.0000	32.9527	32.9527	1.4500e-003	0.0000	32.9889
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4500e-003	3.8100e-003	0.0403	1.3000e-004	0.0140	9.0000e-005	0.0141	3.7100e-003	8.0000e-005	3.8000e-003	0.0000	11.8118	11.8118	2.7000e-004	0.0000	11.8185
Total	**8.8700e-003**	**0.1216**	**0.0637**	**4.7000e-004**	**0.0214**	**4.6000e-004**	**0.0219**	**5.7600e-003**	**4.4000e-004**	**6.2100e-003**	**0.0000**	**44.7645**	**44.7645**	**1.7200e-003**	**0.0000**	**44.8074**

3.2 1.0 Mobilization - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0116	0.0503	0.4833	9.8000e-004		1.5500e-003	1.5500e-003		1.5500e-003	1.5500e-003	0.0000	85.7380	85.7380	0.0236	0.0000	86.3275
Total	**0.0116**	**0.0503**	**0.4833**	**9.8000e-004**	**5.3000e-004**	**1.5500e-003**	**2.0800e-003**	**6.0000e-005**	**1.5500e-003**	**1.6100e-003**	**0.0000**	**85.7380**	**85.7380**	**0.0236**	**0.0000**	**86.3275**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.4200e-003	0.1178	0.0234	3.4000e-004	7.4500e-003	3.7000e-004	7.8300e-003	2.0500e-003	3.6000e-004	2.4100e-003	0.0000	32.9527	32.9527	1.4500e-003	0.0000	32.9889
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4500e-003	3.8100e-003	0.0403	1.3000e-004	0.0140	9.0000e-005	0.0141	3.7100e-003	8.0000e-005	3.8000e-003	0.0000	11.8118	11.8118	2.7000e-004	0.0000	11.8185
Total	**8.8700e-003**	**0.1216**	**0.0637**	**4.7000e-004**	**0.0214**	**4.6000e-004**	**0.0219**	**5.7600e-003**	**4.4000e-004**	**6.2100e-003**	**0.0000**	**44.7645**	**44.7645**	**1.7200e-003**	**0.0000**	**44.8074**

3.3 6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0321	0.3123	0.2270	6.2000e-004		0.0125	0.0125		0.0119	0.0119	0.0000	53.6750	53.6750	0.0137	0.0000	54.0185
Total	**0.0321**	**0.3123**	**0.2270**	**6.2000e-004**		**0.0125**	**0.0125**		**0.0119**	**0.0119**	**0.0000**	**53.6750**	**53.6750**	**0.0137**	**0.0000**	**54.0185**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1200e-003	0.0731	0.0145	2.1000e-004	0.0145	2.3000e-004	0.0148	3.7000e-003	2.2000e-004	3.9200e-003	0.0000	20.4457	20.4457	9.0000e-004	0.0000	20.4681
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2300e-003	2.9500e-003	0.0313	1.0000e-004	0.0108	7.0000e-005	0.0109	2.8800e-003	6.0000e-005	2.9400e-003	0.0000	9.1608	9.1608	2.1000e-004	0.0000	9.1661
Total	**6.3500e-003**	**0.0760**	**0.0458**	**3.1000e-004**	**0.0254**	**3.0000e-004**	**0.0257**	**6.5800e-003**	**2.8000e-004**	**6.8600e-003**	**0.0000**	**29.6065**	**29.6065**	**1.1100e-003**	**0.0000**	**29.6341**

3.3 6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.1100e-003	0.0333	0.2903	6.2000e-004		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	53.6749	53.6749	0.0137	0.0000	54.0184
Total	**7.1100e-003**	**0.0333**	**0.2903**	**6.2000e-004**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**53.6749**	**53.6749**	**0.0137**	**0.0000**	**54.0184**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1200e-003	0.0731	0.0145	2.1000e-004	0.0145	2.3000e-004	0.0148	3.7000e-003	2.2000e-004	3.9200e-003	0.0000	20.4457	20.4457	9.0000e-004	0.0000	20.4681
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2300e-003	2.9500e-003	0.0313	1.0000e-004	0.0108	7.0000e-005	0.0109	2.8800e-003	6.0000e-005	2.9400e-003	0.0000	9.1608	9.1608	2.1000e-004	0.0000	9.1661
Total	**6.3500e-003**	**0.0760**	**0.0458**	**3.1000e-004**	**0.0254**	**3.0000e-004**	**0.0257**	**6.5800e-003**	**2.8000e-004**	**6.8600e-003**	**0.0000**	**29.6065**	**29.6065**	**1.1100e-003**	**0.0000**	**29.6341**

3.3 6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0820	0.7442	0.6194	1.7700e-003		0.0298	0.0298		0.0282	0.0282	0.0000	153.3472	153.3472	0.0391	0.0000	154.3256
Total	**0.0820**	**0.7442**	**0.6194**	**1.7700e-003**		**0.0298**	**0.0298**		**0.0282**	**0.0282**	**0.0000**	**153.3472**	**153.3472**	**0.0391**	**0.0000**	**154.3256**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.7100e-003	0.1915	0.0406	6.0000e-004	0.0167	5.6000e-004	0.0173	4.4800e-003	5.4000e-004	5.0200e-003	0.0000	57.6357	57.6357	2.4800e-003	0.0000	57.6978
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0112	7.5700e-003	0.0821	2.8000e-004	0.0309	2.0000e-004	0.0311	8.2300e-003	1.8000e-004	8.4100e-003	0.0000	25.2020	25.2020	5.3000e-004	0.0000	25.2154
Total	**0.0169**	**0.1991**	**0.1227**	**8.8000e-004**	**0.0476**	**7.6000e-004**	**0.0484**	**0.0127**	**7.2000e-004**	**0.0134**	**0.0000**	**82.8377**	**82.8377**	**3.0100e-003**	**0.0000**	**82.9131**

3.3 6.3 UV/CCB - Large Diameter Pipeline Jacking and Installation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0203	0.0952	0.8293	1.7700e-003		2.6800e-003	2.6800e-003		2.6800e-003	2.6800e-003	0.0000	153.3470	153.3470	0.0391	0.0000	154.3254
Total	**0.0203**	**0.0952**	**0.8293**	**1.7700e-003**		**2.6800e-003**	**2.6800e-003**		**2.6800e-003**	**2.6800e-003**	**0.0000**	**153.3470**	**153.3470**	**0.0391**	**0.0000**	**154.3254**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.7100e-003	0.1915	0.0406	6.0000e-004	0.0167	5.6000e-004	0.0173	4.4800e-003	5.4000e-004	5.0200e-003	0.0000	57.6357	57.6357	2.4800e-003	0.0000	57.6978
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0112	7.5700e-003	0.0821	2.8000e-004	0.0309	2.0000e-004	0.0311	8.2300e-003	1.8000e-004	8.4100e-003	0.0000	25.2020	25.2020	5.3000e-004	0.0000	25.2154
Total	**0.0169**	**0.1991**	**0.1227**	**8.8000e-004**	**0.0476**	**7.6000e-004**	**0.0484**	**0.0127**	**7.2000e-004**	**0.0134**	**0.0000**	**82.8377**	**82.8377**	**3.0100e-003**	**0.0000**	**82.9131**

3.4 4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.0500e-003	0.0631	0.0405	1.5000e-004		2.2800e-003	2.2800e-003		2.1000e-003	2.1000e-003	0.0000	13.3669	13.3669	4.0100e-003	0.0000	13.4673
Total	**7.0500e-003**	**0.0631**	**0.0405**	**1.5000e-004**		**2.2800e-003**	**2.2800e-003**		**2.1000e-003**	**2.1000e-003**	**0.0000**	**13.3669**	**13.3669**	**4.0100e-003**	**0.0000**	**13.4673**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0400e-003	7.3000e-004	7.6700e-003	2.0000e-005	2.6600e-003	2.0000e-005	2.6700e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	2.2483	2.2483	5.0000e-005	0.0000	2.2495
Total	**1.0400e-003**	**7.3000e-004**	**7.6700e-003**	**2.0000e-005**	**2.6600e-003**	**2.0000e-005**	**2.6700e-003**	**7.1000e-004**	**2.0000e-005**	**7.2000e-004**	**0.0000**	**2.2483**	**2.2483**	**5.0000e-005**	**0.0000**	**2.2495**

3.4 4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8300e-003	7.9300e-003	0.0671	1.5000e-004		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	13.3669	13.3669	4.0100e-003	0.0000	13.4673
Total	**1.8300e-003**	**7.9300e-003**	**0.0671**	**1.5000e-004**		**2.4000e-004**	**2.4000e-004**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**13.3669**	**13.3669**	**4.0100e-003**	**0.0000**	**13.4673**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0400e-003	7.3000e-004	7.6700e-003	2.0000e-005	2.6600e-003	2.0000e-005	2.6700e-003	7.1000e-004	2.0000e-005	7.2000e-004	0.0000	2.2483	2.2483	5.0000e-005	0.0000	2.2495
Total	**1.0400e-003**	**7.3000e-004**	**7.6700e-003**	**2.0000e-005**	**2.6600e-003**	**2.0000e-005**	**2.6700e-003**	**7.1000e-004**	**2.0000e-005**	**7.2000e-004**	**0.0000**	**2.2483**	**2.2483**	**5.0000e-005**	**0.0000**	**2.2495**

3.4 4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5000e-004	4.3800e-003	3.4000e-003	1.0000e-005		1.6000e-004	1.6000e-004		1.5000e-004	1.5000e-004	0.0000	1.1975	1.1975	3.6000e-004	0.0000	1.2065
Total	**5.5000e-004**	**4.3800e-003**	**3.4000e-003**	**1.0000e-005**		**1.6000e-004**	**1.6000e-004**		**1.5000e-004**	**1.5000e-004**	**0.0000**	**1.1975**	**1.1975**	**3.6000e-004**	**0.0000**	**1.2065**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1939	0.1939	0.0000	0.0000	0.1940
Total	**9.0000e-005**	**6.0000e-005**	**6.3000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1939**	**0.1939**	**0.0000**	**0.0000**	**0.1940**

3.4 4.0 Upper(South) Spillway Bifurcation and Briones Weir Actuator Installation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6000e-004	7.1000e-004	6.0100e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.1975	1.1975	3.6000e-004	0.0000	1.2065
Total	**1.6000e-004**	**7.1000e-004**	**6.0100e-003**	**1.0000e-005**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**1.1975**	**1.1975**	**3.6000e-004**	**0.0000**	**1.2065**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.0000e-005	6.0000e-005	6.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1939	0.1939	0.0000	0.0000	0.1940
Total	**9.0000e-005**	**6.0000e-005**	**6.3000e-004**	**0.0000**	**2.4000e-004**	**0.0000**	**2.4000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1939**	**0.1939**	**0.0000**	**0.0000**	**0.1940**

3.5 2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.2700e-003	0.0478	0.0389	1.1000e-004		1.9600e-003	1.9600e-003		1.8400e-003	1.8400e-003	0.0000	9.7430	9.7430	2.6800e-003	0.0000	9.8100
Total	**5.2700e-003**	**0.0478**	**0.0389**	**1.1000e-004**	**5.3000e-004**	**1.9600e-003**	**2.4900e-003**	**6.0000e-005**	**1.8400e-003**	**1.9000e-003**	**0.0000**	**9.7430**	**9.7430**	**2.6800e-003**	**0.0000**	**9.8100**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2400e-003	0.0428	8.4900e-003	1.2000e-004	2.7100e-003	1.4000e-004	2.8500e-003	7.5000e-004	1.3000e-004	8.7000e-004	0.0000	11.9828	11.9828	5.3000e-004	0.0000	11.9960
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.3000e-004	4.5800e-003	1.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3423	1.3423	3.0000e-005	0.0000	1.3430
Total	**1.8600e-003**	**0.0433**	**0.0131**	**1.3000e-004**	**4.3000e-003**	**1.5000e-004**	**4.4500e-003**	**1.1700e-003**	**1.4000e-004**	**1.3000e-003**	**0.0000**	**13.3251**	**13.3251**	**5.6000e-004**	**0.0000**	**13.3390**

3.5 2.0 Demolition of Maintenance and Grounds Service Buildings and Site Clearing - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.3200e-003	5.7200e-003	0.0549	1.1000e-004		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	9.7430	9.7430	2.6800e-003	0.0000	9.8099
Total	**1.3200e-003**	**5.7200e-003**	**0.0549**	**1.1000e-004**	**5.3000e-004**	**1.8000e-004**	**7.1000e-004**	**6.0000e-005**	**1.8000e-004**	**2.4000e-004**	**0.0000**	**9.7430**	**9.7430**	**2.6800e-003**	**0.0000**	**9.8099**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2400e-003	0.0428	8.4900e-003	1.2000e-004	2.7100e-003	1.4000e-004	2.8500e-003	7.5000e-004	1.3000e-004	8.7000e-004	0.0000	11.9828	11.9828	5.3000e-004	0.0000	11.9960
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2000e-004	4.3000e-004	4.5800e-003	1.0000e-005	1.5900e-003	1.0000e-005	1.6000e-003	4.2000e-004	1.0000e-005	4.3000e-004	0.0000	1.3423	1.3423	3.0000e-005	0.0000	1.3430
Total	**1.8600e-003**	**0.0433**	**0.0131**	**1.3000e-004**	**4.3000e-003**	**1.5000e-004**	**4.4500e-003**	**1.1700e-003**	**1.4000e-004**	**1.3000e-003**	**0.0000**	**13.3251**	**13.3251**	**5.6000e-004**	**0.0000**	**13.3390**

3.6 6.1 UV/CCB - Install Secant Pile Wall - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0690	0.6945	0.4909	1.5000e-003		0.0259	0.0259		0.0239	0.0239	0.0000	131.7633	131.7633	0.0425	0.0000	132.8257
Total	**0.0690**	**0.6945**	**0.4909**	**1.5000e-003**		**0.0259**	**0.0259**		**0.0239**	**0.0239**	**0.0000**	**131.7633**	**131.7633**	**0.0425**	**0.0000**	**132.8257**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2200e-003	0.1799	0.0357	5.2000e-004	0.0128	5.7000e-004	0.0134	3.4800e-003	5.4000e-004	4.0200e-003	0.0000	50.3278	50.3278	2.2100e-003	0.0000	50.3830
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9700e-003	2.0800e-003	0.0220	7.0000e-005	7.6100e-003	5.0000e-005	7.6600e-003	2.0200e-003	5.0000e-005	2.0700e-003	0.0000	6.4428	6.4428	1.5000e-004	0.0000	6.4465
Total	**8.1900e-003**	**0.1820**	**0.0577**	**5.9000e-004**	**0.0204**	**6.2000e-004**	**0.0210**	**5.5000e-003**	**5.9000e-004**	**6.0900e-003**	**0.0000**	**56.7706**	**56.7706**	**2.3600e-003**	**0.0000**	**56.8294**

3.6 6.1 UV/CCB - Install Secant Pile Wall - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0184	0.0796	0.6958	1.5000e-003		2.4500e-003	2.4500e-003		2.4500e-003	2.4500e-003	0.0000	131.7631	131.7631	0.0425	0.0000	132.8255
Total	**0.0184**	**0.0796**	**0.6958**	**1.5000e-003**		**2.4500e-003**	**2.4500e-003**		**2.4500e-003**	**2.4500e-003**	**0.0000**	**131.7631**	**131.7631**	**0.0425**	**0.0000**	**132.8255**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.2200e-003	0.1799	0.0357	5.2000e-004	0.0128	5.7000e-004	0.0134	3.4800e-003	5.4000e-004	4.0200e-003	0.0000	50.3278	50.3278	2.2100e-003	0.0000	50.3830
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9700e-003	2.0800e-003	0.0220	7.0000e-005	7.6100e-003	5.0000e-005	7.6600e-003	2.0200e-003	5.0000e-005	2.0700e-003	0.0000	6.4428	6.4428	1.5000e-004	0.0000	6.4465
Total	**8.1900e-003**	**0.1820**	**0.0577**	**5.9000e-004**	**0.0204**	**6.2000e-004**	**0.0210**	**5.5000e-003**	**5.9000e-004**	**6.0900e-003**	**0.0000**	**56.7706**	**56.7706**	**2.3600e-003**	**0.0000**	**56.8294**

3.6 6.1 UV/CCB - Install Secant Pile Wall - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0101	0.0932	0.0768	2.5000e-004		3.4900e-003	3.4900e-003		3.2200e-003	3.2200e-003	0.0000	21.9412	21.9412	7.0800e-003	0.0000	22.1181
Total	**0.0101**	**0.0932**	**0.0768**	**2.5000e-004**		**3.4900e-003**	**3.4900e-003**		**3.2200e-003**	**3.2200e-003**	**0.0000**	**21.9412**	**21.9412**	**7.0800e-003**	**0.0000**	**22.1181**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2000e-004	0.0275	5.8300e-003	9.0000e-005	0.0104	8.0000e-005	0.0105	2.6200e-003	8.0000e-005	2.6900e-003	0.0000	8.2759	8.2759	3.6000e-004	0.0000	8.2848
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	3.1000e-004	3.3700e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.4000e-004	0.0000	1.0339	1.0339	2.0000e-005	0.0000	1.0345
Total	**1.2800e-003**	**0.0278**	**9.2000e-003**	**1.0000e-004**	**0.0117**	**9.0000e-005**	**0.0118**	**2.9600e-003**	**9.0000e-005**	**3.0300e-003**	**0.0000**	**9.3098**	**9.3098**	**3.8000e-004**	**0.0000**	**9.3193**

3.6 6.1 UV/CCB - Install Secant Pile Wall - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0600e-003	0.0133	0.1160	2.5000e-004		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	21.9412	21.9412	7.0800e-003	0.0000	22.1181
Total	**3.0600e-003**	**0.0133**	**0.1160**	**2.5000e-004**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**21.9412**	**21.9412**	**7.0800e-003**	**0.0000**	**22.1181**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.2000e-004	0.0275	5.8300e-003	9.0000e-005	0.0104	8.0000e-005	0.0105	2.6200e-003	8.0000e-005	2.6900e-003	0.0000	8.2759	8.2759	3.6000e-004	0.0000	8.2848
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	3.1000e-004	3.3700e-003	1.0000e-005	1.2700e-003	1.0000e-005	1.2800e-003	3.4000e-004	1.0000e-005	3.4000e-004	0.0000	1.0339	1.0339	2.0000e-005	0.0000	1.0345
Total	**1.2800e-003**	**0.0278**	**9.2000e-003**	**1.0000e-004**	**0.0117**	**9.0000e-005**	**0.0118**	**2.9600e-003**	**9.0000e-005**	**3.0300e-003**	**0.0000**	**9.3098**	**9.3098**	**3.8000e-004**	**0.0000**	**9.3193**

3.7 3.1 SEBC - Excavation and Retaining Wall Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0000e-004	1.8800e-003	1.5200e-003	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.3790	0.3790	7.0000e-005	0.0000	0.3808
Total	**2.0000e-004**	**1.8800e-003**	**1.5200e-003**	**0.0000**	**5.3000e-004**	**7.0000e-005**	**6.0000e-004**	**6.0000e-005**	**7.0000e-005**	**1.3000e-004**	**0.0000**	**0.3790**	**0.3790**	**7.0000e-005**	**0.0000**	**0.3808**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-004	0.0206	4.0900e-003	6.0000e-005	1.3000e-003	7.0000e-005	1.3700e-003	3.6000e-004	6.0000e-005	4.2000e-004	0.0000	5.7667	5.7667	2.5000e-004	0.0000	5.7731
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.2000e-004	1.2600e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3691	0.3691	1.0000e-005	0.0000	0.3693
Total	**7.7000e-004**	**0.0207**	**5.3500e-003**	**6.0000e-005**	**1.7400e-003**	**7.0000e-005**	**1.8100e-003**	**4.8000e-004**	**6.0000e-005**	**5.4000e-004**	**0.0000**	**6.1359**	**6.1359**	**2.6000e-004**	**0.0000**	**6.1424**

3.7 3.1 SEBC - Excavation and Retaining Wall Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.0000e-005	2.0000e-004	1.9300e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.3790	0.3790	7.0000e-005	0.0000	0.3808
Total	**5.0000e-005**	**2.0000e-004**	**1.9300e-003**	**0.0000**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**6.0000e-005**	**1.0000e-005**	**7.0000e-005**	**0.0000**	**0.3790**	**0.3790**	**7.0000e-005**	**0.0000**	**0.3808**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.0000e-004	0.0206	4.0900e-003	6.0000e-005	1.3000e-003	7.0000e-005	1.3700e-003	3.6000e-004	6.0000e-005	4.2000e-004	0.0000	5.7667	5.7667	2.5000e-004	0.0000	5.7731
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.2000e-004	1.2600e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3691	0.3691	1.0000e-005	0.0000	0.3693
Total	**7.7000e-004**	**0.0207**	**5.3500e-003**	**6.0000e-005**	**1.7400e-003**	**7.0000e-005**	**1.8100e-003**	**4.8000e-004**	**6.0000e-005**	**5.4000e-004**	**0.0000**	**6.1359**	**6.1359**	**2.6000e-004**	**0.0000**	**6.1424**

3.8 5.0 South Generator Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.8000e-003	0.0159	0.0108	4.0000e-005		5.8000e-004	5.8000e-004		5.4000e-004	5.4000e-004	0.0000	3.5630	3.5630	9.8000e-004	0.0000	3.5874
Total	**1.8000e-003**	**0.0159**	**0.0108**	**4.0000e-005**		**5.8000e-004**	**5.8000e-004**		**5.4000e-004**	**5.4000e-004**	**0.0000**	**3.5630**	**3.5630**	**9.8000e-004**	**0.0000**	**3.5874**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	4.4000e-004	4.6900e-003	2.0000e-005	1.6300e-003	1.0000e-005	1.6400e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.3758	1.3758	3.0000e-005	0.0000	1.3766
Total	**6.3000e-004**	**4.4000e-004**	**4.6900e-003**	**2.0000e-005**	**1.6300e-003**	**1.0000e-005**	**1.6400e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.3758**	**1.3758**	**3.0000e-005**	**0.0000**	**1.3766**

3.8 5.0 South Generator Construction - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8000e-004	2.0900e-003	0.0177	4.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	3.5630	3.5630	9.8000e-004	0.0000	3.5874
Total	**4.8000e-004**	**2.0900e-003**	**0.0177**	**4.0000e-005**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**3.5630**	**3.5630**	**9.8000e-004**	**0.0000**	**3.5874**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3000e-004	4.4000e-004	4.6900e-003	2.0000e-005	1.6300e-003	1.0000e-005	1.6400e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	1.3758	1.3758	3.0000e-005	0.0000	1.3766
Total	**6.3000e-004**	**4.4000e-004**	**4.6900e-003**	**2.0000e-005**	**1.6300e-003**	**1.0000e-005**	**1.6400e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.3758**	**1.3758**	**3.0000e-005**	**0.0000**	**1.3766**

3.8 5.0 South Generator Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4700e-003	0.0115	9.3800e-003	4.0000e-005		4.2000e-004	4.2000e-004		3.9000e-004	3.9000e-004	0.0000	3.3031	3.3031	9.0000e-004	0.0000	3.3257
Total	**1.4700e-003**	**0.0115**	**9.3800e-003**	**4.0000e-005**		**4.2000e-004**	**4.2000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**3.3031**	**3.3031**	**9.0000e-004**	**0.0000**	**3.3257**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.7000e-004	4.0000e-003	1.0000e-005	1.5100e-003	1.0000e-005	1.5200e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.2278	1.2278	3.0000e-005	0.0000	1.2284
Total	**5.5000e-004**	**3.7000e-004**	**4.0000e-003**	**1.0000e-005**	**1.5100e-003**	**1.0000e-005**	**1.5200e-003**	**4.0000e-004**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**1.2278**	**1.2278**	**3.0000e-005**	**0.0000**	**1.2284**

3.8 5.0 South Generator Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.5000e-004	1.9400e-003	0.0164	4.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	3.3031	3.3031	9.0000e-004	0.0000	3.3257
Total	**4.5000e-004**	**1.9400e-003**	**0.0164**	**4.0000e-005**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**3.3031**	**3.3031**	**9.0000e-004**	**0.0000**	**3.3257**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5000e-004	3.7000e-004	4.0000e-003	1.0000e-005	1.5100e-003	1.0000e-005	1.5200e-003	4.0000e-004	1.0000e-005	4.1000e-004	0.0000	1.2278	1.2278	3.0000e-005	0.0000	1.2284
Total	**5.5000e-004**	**3.7000e-004**	**4.0000e-003**	**1.0000e-005**	**1.5100e-003**	**1.0000e-005**	**1.5200e-003**	**4.0000e-004**	**1.0000e-005**	**4.1000e-004**	**0.0000**	**1.2278**	**1.2278**	**3.0000e-005**	**0.0000**	**1.2284**

3.9 3.2 SEBC - Concrete and Miscellaneous work - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5000e-004	3.2500e-003	2.6300e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	0.6546	0.6546	1.2000e-004	0.0000	0.6577
Total	**3.5000e-004**	**3.2500e-003**	**2.6300e-003**	**1.0000e-005**		**1.3000e-004**	**1.3000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**0.6546**	**0.6546**	**1.2000e-004**	**0.0000**	**0.6577**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.4000e-004	0.0254	5.0400e-003	7.0000e-005	1.6100e-003	8.0000e-005	1.6900e-003	4.4000e-004	8.0000e-005	5.2000e-004	0.0000	7.1148	7.1148	3.1000e-004	0.0000	7.1226
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.1800e-003	1.0000e-005	7.5000e-004	0.0000	7.6000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6376	0.6376	1.0000e-005	0.0000	0.6379
Total	**1.0300e-003**	**0.0257**	**7.2200e-003**	**8.0000e-005**	**2.3600e-003**	**8.0000e-005**	**2.4500e-003**	**6.4000e-004**	**8.0000e-005**	**7.2000e-004**	**0.0000**	**7.7524**	**7.7524**	**3.2000e-004**	**0.0000**	**7.7605**

3.9 3.2 SEBC - Concrete and Miscellaneous work - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0000e-005	3.5000e-004	3.3400e-003	1.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.6546	0.6546	1.2000e-004	0.0000	0.6577
Total	**8.0000e-005**	**3.5000e-004**	**3.3400e-003**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**0.6546**	**0.6546**	**1.2000e-004**	**0.0000**	**0.6577**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.4000e-004	0.0254	5.0400e-003	7.0000e-005	1.6100e-003	8.0000e-005	1.6900e-003	4.4000e-004	8.0000e-005	5.2000e-004	0.0000	7.1148	7.1148	3.1000e-004	0.0000	7.1226
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9000e-004	2.1000e-004	2.1800e-003	1.0000e-005	7.5000e-004	0.0000	7.6000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6376	0.6376	1.0000e-005	0.0000	0.6379
Total	**1.0300e-003**	**0.0257**	**7.2200e-003**	**8.0000e-005**	**2.3600e-003**	**8.0000e-005**	**2.4500e-003**	**6.4000e-004**	**8.0000e-005**	**7.2000e-004**	**0.0000**	**7.7524**	**7.7524**	**3.2000e-004**	**0.0000**	**7.7605**

3.10 6.2 UV/CCB - Upper Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1836	1.4769	1.2823	4.7400e-003		0.0545	0.0545		0.0503	0.0503	0.0000	413.8092	413.8092	0.1327	0.0000	417.1266
Total	**0.1836**	**1.4769**	**1.2823**	**4.7400e-003**	**5.3000e-004**	**0.0545**	**0.0550**	**6.0000e-005**	**0.0503**	**0.0504**	**0.0000**	**413.8092**	**413.8092**	**0.1327**	**0.0000**	**417.1266**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0332	1.1126	0.2360	3.4700e-003	0.0768	3.2700e-003	0.0801	0.0211	3.1300e-003	0.0242	0.0000	334.8782	334.8782	0.0144	0.0000	335.2389
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0119	7.9900e-003	0.0867	2.9000e-004	0.0327	2.1000e-004	0.0329	8.6900e-003	1.9000e-004	8.8800e-003	0.0000	26.6237	26.6237	5.6000e-004	0.0000	26.6378
Total	**0.0450**	**1.1206**	**0.3227**	**3.7600e-003**	**0.1095**	**3.4800e-003**	**0.1129**	**0.0298**	**3.3200e-003**	**0.0331**	**0.0000**	**361.5019**	**361.5019**	**0.0150**	**0.0000**	**361.8767**

3.10 6.2 UV/CCB - Upper Excavation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0571	0.2475	2.1531	4.7400e-003		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	413.8088	413.8088	0.1327	0.0000	417.1261
Total	**0.0571**	**0.2475**	**2.1531**	**4.7400e-003**	**5.3000e-004**	**7.6200e-003**	**8.1500e-003**	**6.0000e-005**	**7.6200e-003**	**7.6800e-003**	**0.0000**	**413.8088**	**413.8088**	**0.1327**	**0.0000**	**417.1261**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0332	1.1126	0.2360	3.4700e-003	0.0768	3.2700e-003	0.0801	0.0211	3.1300e-003	0.0242	0.0000	334.8782	334.8782	0.0144	0.0000	335.2389
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0119	7.9900e-003	0.0867	2.9000e-004	0.0327	2.1000e-004	0.0329	8.6900e-003	1.9000e-004	8.8800e-003	0.0000	26.6237	26.6237	5.6000e-004	0.0000	26.6378
Total	**0.0450**	**1.1206**	**0.3227**	**3.7600e-003**	**0.1095**	**3.4800e-003**	**0.1129**	**0.0298**	**3.3200e-003**	**0.0331**	**0.0000**	**361.5019**	**361.5019**	**0.0150**	**0.0000**	**361.8767**

3.11 3.3 SEBC - Pre-Fab Building Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5000e-004	4.8100e-003	4.3700e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.8000e-004	1.8000e-004	0.0000	1.1369	1.1369	2.1000e-004	0.0000	1.1423
Total	**5.5000e-004**	**4.8100e-003**	**4.3700e-003**	**1.0000e-005**		**1.9000e-004**	**1.9000e-004**		**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.1369**	**1.1369**	**2.1000e-004**	**0.0000**	**1.1423**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	6.4000e-004	6.9400e-003	2.0000e-005	2.6200e-003	2.0000e-005	2.6300e-003	7.0000e-004	2.0000e-005	7.1000e-004	0.0000	2.1325	2.1325	5.0000e-005	0.0000	2.1336
Total	**9.5000e-004**	**6.4000e-004**	**6.9400e-003**	**2.0000e-005**	**2.6200e-003**	**2.0000e-005**	**2.6300e-003**	**7.0000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.1325**	**2.1325**	**5.0000e-005**	**0.0000**	**2.1336**

3.11 3.3 SEBC - Pre-Fab Building Installation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4000e-004	6.1000e-004	5.8000e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.1369	1.1369	2.1000e-004	0.0000	1.1423
Total	**1.4000e-004**	**6.1000e-004**	**5.8000e-003**	**1.0000e-005**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**1.1369**	**1.1369**	**2.1000e-004**	**0.0000**	**1.1423**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5000e-004	6.4000e-004	6.9400e-003	2.0000e-005	2.6200e-003	2.0000e-005	2.6300e-003	7.0000e-004	2.0000e-005	7.1000e-004	0.0000	2.1325	2.1325	5.0000e-005	0.0000	2.1336
Total	**9.5000e-004**	**6.4000e-004**	**6.9400e-003**	**2.0000e-005**	**2.6200e-003**	**2.0000e-005**	**2.6300e-003**	**7.0000e-004**	**2.0000e-005**	**7.1000e-004**	**0.0000**	**2.1325**	**2.1325**	**5.0000e-005**	**0.0000**	**2.1336**

3.12 6.4 UV/CCB - Lower Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0446	0.3578	0.3101	1.1600e-003		0.0131	0.0131		0.0121	0.0121	0.0000	101.5729	101.5729	0.0327	0.0000	102.3910
Total	**0.0446**	**0.3578**	**0.3101**	**1.1600e-003**	**5.3000e-004**	**0.0131**	**0.0137**	**6.0000e-005**	**0.0121**	**0.0122**	**0.0000**	**101.5729**	**101.5729**	**0.0327**	**0.0000**	**102.3910**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0145	0.4856	0.1030	1.5100e-003	0.0368	1.4300e-003	0.0382	0.0100	1.3700e-003	0.0114	0.0000	146.1583	146.1583	6.3000e-003	0.0000	146.3157
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	1.7800e-003	0.0194	7.0000e-005	7.3000e-003	5.0000e-005	7.3400e-003	1.9400e-003	4.0000e-005	1.9800e-003	0.0000	5.9451	5.9451	1.3000e-004	0.0000	5.9482
Total	**0.0171**	**0.4874**	**0.1224**	**1.5800e-003**	**0.0441**	**1.4800e-003**	**0.0456**	**0.0120**	**1.4100e-003**	**0.0134**	**0.0000**	**152.1033**	**152.1033**	**6.4300e-003**	**0.0000**	**152.2639**

3.12 6.4 UV/CCB - Lower Excavation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0141	0.0612	0.5307	1.1600e-003		1.8800e-003	1.8800e-003		1.8800e-003	1.8800e-003	0.0000	101.5728	101.5728	0.0327	0.0000	102.3909
Total	**0.0141**	**0.0612**	**0.5307**	**1.1600e-003**	**5.3000e-004**	**1.8800e-003**	**2.4100e-003**	**6.0000e-005**	**1.8800e-003**	**1.9400e-003**	**0.0000**	**101.5728**	**101.5728**	**0.0327**	**0.0000**	**102.3909**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0145	0.4856	0.1030	1.5100e-003	0.0368	1.4300e-003	0.0382	0.0100	1.3700e-003	0.0114	0.0000	146.1583	146.1583	6.3000e-003	0.0000	146.3157
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6500e-003	1.7800e-003	0.0194	7.0000e-005	7.3000e-003	5.0000e-005	7.3400e-003	1.9400e-003	4.0000e-005	1.9800e-003	0.0000	5.9451	5.9451	1.3000e-004	0.0000	5.9482
Total	**0.0171**	**0.4874**	**0.1224**	**1.5800e-003**	**0.0441**	**1.4800e-003**	**0.0456**	**0.0120**	**1.4100e-003**	**0.0134**	**0.0000**	**152.1033**	**152.1033**	**6.4300e-003**	**0.0000**	**152.2639**

3.12 6.4 UV/CCB - Lower Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5200e-003	0.0412	0.0396	1.5000e-004		1.5100e-003	1.5100e-003		1.3900e-003	1.3900e-003	0.0000	13.2569	13.2569	4.2700e-003	0.0000	13.3637
Total	**5.5200e-003**	**0.0412**	**0.0396**	**1.5000e-004**	**5.3000e-004**	**1.5100e-003**	**2.0400e-003**	**6.0000e-005**	**1.3900e-003**	**1.4500e-003**	**0.0000**	**13.2569**	**13.2569**	**4.2700e-003**	**0.0000**	**13.3637**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2900e-003	0.0417	0.0121	1.9000e-004	0.0295	8.0000e-005	0.0296	7.3700e-003	7.0000e-005	7.4400e-003	0.0000	18.3379	18.3379	7.1000e-004	0.0000	18.3557
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.1000e-004	2.3200e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.6000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7453	0.7453	1.0000e-005	0.0000	0.7457
Total	**1.6100e-003**	**0.0419**	**0.0144**	**2.0000e-004**	**0.0304**	**9.0000e-005**	**0.0305**	**7.6200e-003**	**8.0000e-005**	**7.7000e-003**	**0.0000**	**19.0832**	**19.0832**	**7.2000e-004**	**0.0000**	**19.1014**

3.12 6.4 UV/CCB - Lower Excavation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	7.9800e-003	0.0692	1.5000e-004		2.5000e-004	2.5000e-004		2.5000e-004	2.5000e-004	0.0000	13.2569	13.2569	4.2700e-003	0.0000	13.3637
Total	**1.8400e-003**	**7.9800e-003**	**0.0692**	**1.5000e-004**	**5.3000e-004**	**2.5000e-004**	**7.8000e-004**	**6.0000e-005**	**2.5000e-004**	**3.1000e-004**	**0.0000**	**13.2569**	**13.2569**	**4.2700e-003**	**0.0000**	**13.3637**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2900e-003	0.0417	0.0121	1.9000e-004	0.0295	8.0000e-005	0.0296	7.3700e-003	7.0000e-005	7.4400e-003	0.0000	18.3379	18.3379	7.1000e-004	0.0000	18.3557
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.2000e-004	2.1000e-004	2.3200e-003	1.0000e-005	9.5000e-004	1.0000e-005	9.6000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.7453	0.7453	1.0000e-005	0.0000	0.7457
Total	**1.6100e-003**	**0.0419**	**0.0144**	**2.0000e-004**	**0.0304**	**9.0000e-005**	**0.0305**	**7.6200e-003**	**8.0000e-005**	**7.7000e-003**	**0.0000**	**19.0832**	**19.0832**	**7.2000e-004**	**0.0000**	**19.1014**

3.13 6.5 UV/CCB - CCB Concrete Work - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2428	2.0142	1.8063	5.9600e-003		0.0767	0.0767		0.0716	0.0716	0.0000	536.2477	536.2477	0.1380	0.0000	539.6976
Total	**0.2428**	**2.0142**	**1.8063**	**5.9600e-003**		**0.0767**	**0.0767**		**0.0716**	**0.0716**	**0.0000**	**536.2477**	**536.2477**	**0.1380**	**0.0000**	**539.6976**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.6100e-003	0.2465	0.0715	1.1200e-003	0.0353	4.5000e-004	0.0357	9.4200e-003	4.3000e-004	9.8500e-003	0.0000	108.3215	108.3215	4.2100e-003	0.0000	108.4268
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0136	8.8500e-003	0.0983	3.5000e-004	0.0403	2.5000e-004	0.0405	0.0107	2.3000e-004	0.0110	0.0000	31.5520	31.5520	6.2000e-004	0.0000	31.5676
Total	**0.0212**	**0.2554**	**0.1698**	**1.4700e-003**	**0.0756**	**7.0000e-004**	**0.0763**	**0.0201**	**6.6000e-004**	**0.0208**	**0.0000**	**139.8735**	**139.8735**	**4.8300e-003**	**0.0000**	**139.9944**

3.13 6.5 UV/CCB - CCB Concrete Work - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0720	0.3132	2.7345	5.9600e-003		9.5900e-003	9.5900e-003		9.5900e-003	9.5900e-003	0.0000	536.2471	536.2471	0.1380	0.0000	539.6969
Total	**0.0720**	**0.3132**	**2.7345**	**5.9600e-003**		**9.5900e-003**	**9.5900e-003**		**9.5900e-003**	**9.5900e-003**	**0.0000**	**536.2471**	**536.2471**	**0.1380**	**0.0000**	**539.6969**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.6100e-003	0.2465	0.0715	1.1200e-003	0.0353	4.5000e-004	0.0357	9.4200e-003	4.3000e-004	9.8500e-003	0.0000	108.3215	108.3215	4.2100e-003	0.0000	108.4268
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0136	8.8500e-003	0.0983	3.5000e-004	0.0403	2.5000e-004	0.0405	0.0107	2.3000e-004	0.0110	0.0000	31.5520	31.5520	6.2000e-004	0.0000	31.5676
Total	**0.0212**	**0.2554**	**0.1698**	**1.4700e-003**	**0.0756**	**7.0000e-004**	**0.0763**	**0.0201**	**6.6000e-004**	**0.0208**	**0.0000**	**139.8735**	**139.8735**	**4.8300e-003**	**0.0000**	**139.9944**

3.13 6.5 UV/CCB - CCB Concrete Work - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1157	0.9182	0.8652	2.9100e-003		0.0347	0.0347		0.0323	0.0323	0.0000	261.8094	261.8094	0.0673	0.0000	263.4906
Total	**0.1157**	**0.9182**	**0.8652**	**2.9100e-003**		**0.0347**	**0.0347**		**0.0323**	**0.0323**	**0.0000**	**261.8094**	**261.8094**	**0.0673**	**0.0000**	**263.4906**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6700e-003	0.1178	0.0350	5.4000e-004	0.0320	2.2000e-004	0.0322	8.2200e-003	2.1000e-004	8.4200e-003	0.0000	52.5039	52.5039	2.0400e-003	0.0000	52.5549
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2200e-003	3.9000e-003	0.0444	1.6000e-004	0.0197	1.2000e-004	0.0198	5.2300e-003	1.1000e-004	5.3400e-003	0.0000	14.7847	14.7847	2.7000e-004	0.0000	14.7916
Total	**9.8900e-003**	**0.1217**	**0.0794**	**7.0000e-004**	**0.0516**	**3.4000e-004**	**0.0520**	**0.0135**	**3.2000e-004**	**0.0138**	**0.0000**	**67.2886**	**67.2886**	**2.3100e-003**	**0.0000**	**67.3464**

3.13 6.5 UV/CCB - CCB Concrete Work - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0351	0.1529	1.3350	2.9100e-003		4.6800e-003	4.6800e-003		4.6800e-003	4.6800e-003	0.0000	261.8091	261.8091	0.0673	0.0000	263.4903
Total	**0.0351**	**0.1529**	**1.3350**	**2.9100e-003**		**4.6800e-003**	**4.6800e-003**		**4.6800e-003**	**4.6800e-003**	**0.0000**	**261.8091**	**261.8091**	**0.0673**	**0.0000**	**263.4903**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6700e-003	0.1178	0.0350	5.4000e-004	0.0320	2.2000e-004	0.0322	8.2200e-003	2.1000e-004	8.4200e-003	0.0000	52.5039	52.5039	2.0400e-003	0.0000	52.5549
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2200e-003	3.9000e-003	0.0444	1.6000e-004	0.0197	1.2000e-004	0.0198	5.2300e-003	1.1000e-004	5.3400e-003	0.0000	14.7847	14.7847	2.7000e-004	0.0000	14.7916
Total	**9.8900e-003**	**0.1217**	**0.0794**	**7.0000e-004**	**0.0516**	**3.4000e-004**	**0.0520**	**0.0135**	**3.2000e-004**	**0.0138**	**0.0000**	**67.2886**	**67.2886**	**2.3100e-003**	**0.0000**	**67.3464**

3.14 6.7 UV/CCB - UV Concrete Work - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0345	0.3099	0.2639	8.2000e-004		0.0117	0.0117		0.0109	0.0109	0.0000	74.4686	74.4686	0.0199	0.0000	74.9672
Total	**0.0345**	**0.3099**	**0.2639**	**8.2000e-004**		**0.0117**	**0.0117**		**0.0109**	**0.0109**	**0.0000**	**74.4686**	**74.4686**	**0.0199**	**0.0000**	**74.9672**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0136	0.4390	0.1273	2.0000e-003	0.0679	8.1000e-004	0.0687	0.0180	7.7000e-004	0.0188	0.0000	192.9032	192.9032	7.5000e-003	0.0000	193.0908
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3300e-003	4.1100e-003	0.0457	1.6000e-004	0.0187	1.2000e-004	0.0188	4.9800e-003	1.1000e-004	5.0900e-003	0.0000	14.6580	14.6580	2.9000e-004	0.0000	14.6652
Total	**0.0199**	**0.4431**	**0.1730**	**2.1600e-003**	**0.0866**	**9.3000e-004**	**0.0875**	**0.0230**	**8.8000e-004**	**0.0239**	**0.0000**	**207.5612**	**207.5612**	**7.7900e-003**	**0.0000**	**207.7561**

3.14 6.7 UV/CCB - UV Concrete Work - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0101	0.0436	0.3735	8.2000e-004		1.3400e-003	1.3400e-003		1.3400e-003	1.3400e-003	0.0000	74.4685	74.4685	0.0199	0.0000	74.9671
Total	**0.0101**	**0.0436**	**0.3735**	**8.2000e-004**		**1.3400e-003**	**1.3400e-003**		**1.3400e-003**	**1.3400e-003**	**0.0000**	**74.4685**	**74.4685**	**0.0199**	**0.0000**	**74.9671**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0136	0.4390	0.1273	2.0000e-003	0.0679	8.1000e-004	0.0687	0.0180	7.7000e-004	0.0188	0.0000	192.9032	192.9032	7.5000e-003	0.0000	193.0908
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.3300e-003	4.1100e-003	0.0457	1.6000e-004	0.0187	1.2000e-004	0.0188	4.9800e-003	1.1000e-004	5.0900e-003	0.0000	14.6580	14.6580	2.9000e-004	0.0000	14.6652
Total	**0.0199**	**0.4431**	**0.1730**	**2.1600e-003**	**0.0866**	**9.3000e-004**	**0.0875**	**0.0230**	**8.8000e-004**	**0.0239**	**0.0000**	**207.5612**	**207.5612**	**7.7900e-003**	**0.0000**	**207.7561**

3.14 6.7 UV/CCB - UV Concrete Work - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0214	0.1848	0.1634	5.2000e-004		6.9900e-003	6.9900e-003		6.4800e-003	6.4800e-003	0.0000	47.3282	47.3282	0.0127	0.0000	47.6447
Total	**0.0214**	**0.1848**	**0.1634**	**5.2000e-004**		**6.9900e-003**	**6.9900e-003**		**6.4800e-003**	**6.4800e-003**	**0.0000**	**47.3282**	**47.3282**	**0.0127**	**0.0000**	**47.6447**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.5100e-003	0.2732	0.0811	1.2600e-003	0.0637	5.0000e-004	0.0642	0.0165	4.8000e-004	0.0170	0.0000	121.7328	121.7328	4.7300e-003	0.0000	121.8510
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7600e-003	2.3600e-003	0.0268	1.0000e-004	0.0119	7.0000e-005	0.0120	3.1600e-003	7.0000e-005	3.2300e-003	0.0000	8.9424	8.9424	1.7000e-004	0.0000	8.9465
Total	**0.0123**	**0.2755**	**0.1079**	**1.3600e-003**	**0.0756**	**5.7000e-004**	**0.0762**	**0.0197**	**5.5000e-004**	**0.0202**	**0.0000**	**130.6751**	**130.6751**	**4.9000e-003**	**0.0000**	**130.7975**

3.14 6.7 UV/CCB - UV Concrete Work - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.4000e-003	0.0277	0.2374	5.2000e-004		8.5000e-004	8.5000e-004		8.5000e-004	8.5000e-004	0.0000	47.3281	47.3281	0.0127	0.0000	47.6446
Total	**6.4000e-003**	**0.0277**	**0.2374**	**5.2000e-004**		**8.5000e-004**	**8.5000e-004**		**8.5000e-004**	**8.5000e-004**	**0.0000**	**47.3281**	**47.3281**	**0.0127**	**0.0000**	**47.6446**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.5100e-003	0.2732	0.0811	1.2600e-003	0.0637	5.0000e-004	0.0642	0.0165	4.8000e-004	0.0170	0.0000	121.7328	121.7328	4.7300e-003	0.0000	121.8510
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.7600e-003	2.3600e-003	0.0268	1.0000e-004	0.0119	7.0000e-005	0.0120	3.1600e-003	7.0000e-005	3.2300e-003	0.0000	8.9424	8.9424	1.7000e-004	0.0000	8.9465
Total	**0.0123**	**0.2755**	**0.1079**	**1.3600e-003**	**0.0756**	**5.7000e-004**	**0.0762**	**0.0197**	**5.5000e-004**	**0.0202**	**0.0000**	**130.6751**	**130.6751**	**4.9000e-003**	**0.0000**	**130.7975**

3.15 7.1 MAUVE Concrete Work - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0271	0.2267	0.2125	6.8000e-004		8.4900e-003	8.4900e-003		7.9200e-003	7.9200e-003	0.0000	61.0614	61.0614	0.0154	0.0000	61.4463
Total	**0.0271**	**0.2267**	**0.2125**	**6.8000e-004**		**8.4900e-003**	**8.4900e-003**		**7.9200e-003**	**7.9200e-003**	**0.0000**	**61.0614**	**61.0614**	**0.0154**	**0.0000**	**61.4463**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0121	0.3877	0.1151	1.7900e-003	0.0415	7.2000e-004	0.0422	0.0114	6.8000e-004	0.0121	0.0000	172.7547	172.7547	6.7100e-003	0.0000	172.9224
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0128	8.0100e-003	0.0913	3.4000e-004	0.0405	2.5000e-004	0.0407	0.0108	2.3000e-004	0.0110	0.0000	30.4041	30.4041	5.6000e-004	0.0000	30.4181
Total	**0.0249**	**0.3957**	**0.2063**	**2.1300e-003**	**0.0819**	**9.7000e-004**	**0.0829**	**0.0222**	**9.1000e-004**	**0.0231**	**0.0000**	**203.1588**	**203.1588**	**7.2700e-003**	**0.0000**	**203.3406**

3.15 7.1 MAUVE Concrete Work - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.1600e-003	0.0354	0.3124	6.8000e-004		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	61.0613	61.0613	0.0154	0.0000	61.4462
Total	**8.1600e-003**	**0.0354**	**0.3124**	**6.8000e-004**		**1.0900e-003**	**1.0900e-003**		**1.0900e-003**	**1.0900e-003**	**0.0000**	**61.0613**	**61.0613**	**0.0154**	**0.0000**	**61.4462**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0121	0.3877	0.1151	1.7900e-003	0.0415	7.2000e-004	0.0422	0.0114	6.8000e-004	0.0121	0.0000	172.7547	172.7547	6.7100e-003	0.0000	172.9224
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0128	8.0100e-003	0.0913	3.4000e-004	0.0405	2.5000e-004	0.0407	0.0108	2.3000e-004	0.0110	0.0000	30.4041	30.4041	5.6000e-004	0.0000	30.4181
Total	**0.0249**	**0.3957**	**0.2063**	**2.1300e-003**	**0.0819**	**9.7000e-004**	**0.0829**	**0.0222**	**9.1000e-004**	**0.0231**	**0.0000**	**203.1588**	**203.1588**	**7.2700e-003**	**0.0000**	**203.3406**

3.16 6.8 UV/CCB - UV Backfill - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0209	0.1582	0.1554	5.4000e-004		5.9300e-003	5.9300e-003		5.4600e-003	5.4600e-003	0.0000	47.2631	47.2631	0.0152	0.0000	47.6440
Total	**0.0209**	**0.1582**	**0.1554**	**5.4000e-004**		**5.9300e-003**	**5.9300e-003**		**5.4600e-003**	**5.4600e-003**	**0.0000**	**47.2631**	**47.2631**	**0.0152**	**0.0000**	**47.6440**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6900e-003	0.1185	0.0352	5.5000e-004	0.0150	2.2000e-004	0.0152	4.0500e-003	2.1000e-004	4.2500e-003	0.0000	52.7862	52.7862	2.0500e-003	0.0000	52.8374
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3800e-003	5.8800e-003	0.0669	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8900e-003	1.7000e-004	8.0600e-003	0.0000	22.2963	22.2963	4.1000e-004	0.0000	22.3066
Total	**0.0131**	**0.1243**	**0.1021**	**8.0000e-004**	**0.0446**	**4.0000e-004**	**0.0450**	**0.0119**	**3.8000e-004**	**0.0123**	**0.0000**	**75.0825**	**75.0825**	**2.4600e-003**	**0.0000**	**75.1440**

3.16 6.8 UV/CCB - UV Backfill - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.5500e-003	0.0284	0.2488	5.4000e-004		8.7000e-004	8.7000e-004		8.7000e-004	8.7000e-004	0.0000	47.2630	47.2630	0.0152	0.0000	47.6439
Total	**6.5500e-003**	**0.0284**	**0.2488**	**5.4000e-004**		**8.7000e-004**	**8.7000e-004**		**8.7000e-004**	**8.7000e-004**	**0.0000**	**47.2630**	**47.2630**	**0.0152**	**0.0000**	**47.6439**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6900e-003	0.1185	0.0352	5.5000e-004	0.0150	2.2000e-004	0.0152	4.0500e-003	2.1000e-004	4.2500e-003	0.0000	52.7862	52.7862	2.0500e-003	0.0000	52.8374
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3800e-003	5.8800e-003	0.0669	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8900e-003	1.7000e-004	8.0600e-003	0.0000	22.2963	22.2963	4.1000e-004	0.0000	22.3066
Total	**0.0131**	**0.1243**	**0.1021**	**8.0000e-004**	**0.0446**	**4.0000e-004**	**0.0450**	**0.0119**	**3.8000e-004**	**0.0123**	**0.0000**	**75.0825**	**75.0825**	**2.4600e-003**	**0.0000**	**75.1440**

3.16 6.8 UV/CCB - UV Backfill - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.8400e-003	0.0337	0.0369	1.3000e-004		1.2700e-003	1.2700e-003		1.1700e-003	1.1700e-003	0.0000	11.3681	11.3681	3.6600e-003	0.0000	11.4598
Total	**4.8400e-003**	**0.0337**	**0.0369**	**1.3000e-004**		**1.2700e-003**	**1.2700e-003**		**1.1700e-003**	**1.1700e-003**	**0.0000**	**11.3681**	**11.3681**	**3.6600e-003**	**0.0000**	**11.4598**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.8000e-004	0.0279	8.4800e-003	1.3000e-004	0.0126	5.0000e-005	0.0126	3.1700e-003	5.0000e-005	3.2200e-003	0.0000	12.6139	12.6139	4.9000e-004	0.0000	12.6261
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1300e-003	1.2800e-003	0.0149	6.0000e-005	7.1400e-003	4.0000e-005	7.1800e-003	1.9000e-003	4.0000e-005	1.9400e-003	0.0000	5.1440	5.1440	9.0000e-005	0.0000	5.1463
Total	**3.0100e-003**	**0.0292**	**0.0234**	**1.9000e-004**	**0.0197**	**9.0000e-005**	**0.0198**	**5.0700e-003**	**9.0000e-005**	**5.1600e-003**	**0.0000**	**17.7579**	**17.7579**	**5.8000e-004**	**0.0000**	**17.7724**

3.16 6.8 UV/CCB - UV Backfill - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.5800e-003	6.8300e-003	0.0599	1.3000e-004		2.1000e-004	2.1000e-004		2.1000e-004	2.1000e-004	0.0000	11.3681	11.3681	3.6600e-003	0.0000	11.4597
Total	**1.5800e-003**	**6.8300e-003**	**0.0599**	**1.3000e-004**		**2.1000e-004**	**2.1000e-004**		**2.1000e-004**	**2.1000e-004**	**0.0000**	**11.3681**	**11.3681**	**3.6600e-003**	**0.0000**	**11.4597**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.8000e-004	0.0279	8.4800e-003	1.3000e-004	0.0126	5.0000e-005	0.0126	3.1700e-003	5.0000e-005	3.2200e-003	0.0000	12.6139	12.6139	4.9000e-004	0.0000	12.6261
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1300e-003	1.2800e-003	0.0149	6.0000e-005	7.1400e-003	4.0000e-005	7.1800e-003	1.9000e-003	4.0000e-005	1.9400e-003	0.0000	5.1440	5.1440	9.0000e-005	0.0000	5.1463
Total	**3.0100e-003**	**0.0292**	**0.0234**	**1.9000e-004**	**0.0197**	**9.0000e-005**	**0.0198**	**5.0700e-003**	**9.0000e-005**	**5.1600e-003**	**0.0000**	**17.7579**	**17.7579**	**5.8000e-004**	**0.0000**	**17.7724**

3.17 6.6 UV/CCB - CCB Backfill - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0280	0.2382	0.2318	6.4000e-004		9.4700e-003	9.4700e-003		8.7700e-003	8.7700e-003	0.0000	55.3304	55.3304	0.0175	0.0000	55.7673
Total	**0.0280**	**0.2382**	**0.2318**	**6.4000e-004**		**9.4700e-003**	**9.4700e-003**		**8.7700e-003**	**8.7700e-003**	**0.0000**	**55.3304**	**55.3304**	**0.0175**	**0.0000**	**55.7673**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.5700e-003	0.1465	0.0435	6.7000e-004	0.0157	2.7000e-004	0.0160	4.3100e-003	2.6000e-004	4.5700e-003	0.0000	65.2770	65.2770	2.5400e-003	0.0000	65.3404
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8600e-003	1.1600e-003	0.0132	5.0000e-005	5.8700e-003	4.0000e-005	5.9000e-003	1.5600e-003	3.0000e-005	1.5900e-003	0.0000	4.4116	4.4116	8.0000e-005	0.0000	4.4136
Total	**6.4300e-003**	**0.1477**	**0.0567**	**7.2000e-004**	**0.0216**	**3.1000e-004**	**0.0219**	**5.8700e-003**	**2.9000e-004**	**6.1600e-003**	**0.0000**	**69.6886**	**69.6886**	**2.6200e-003**	**0.0000**	**69.7540**

3.17 6.6 UV/CCB - CCB Backfill - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.8100e-003	0.0405	0.3122	6.4000e-004		1.0200e-003	1.0200e-003		1.0200e-003	1.0200e-003	0.0000	55.3303	55.3303	0.0175	0.0000	55.7673
Total	**7.8100e-003**	**0.0405**	**0.3122**	**6.4000e-004**		**1.0200e-003**	**1.0200e-003**		**1.0200e-003**	**1.0200e-003**	**0.0000**	**55.3303**	**55.3303**	**0.0175**	**0.0000**	**55.7673**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.5700e-003	0.1465	0.0435	6.7000e-004	0.0157	2.7000e-004	0.0160	4.3100e-003	2.6000e-004	4.5700e-003	0.0000	65.2770	65.2770	2.5400e-003	0.0000	65.3404
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8600e-003	1.1600e-003	0.0132	5.0000e-005	5.8700e-003	4.0000e-005	5.9000e-003	1.5600e-003	3.0000e-005	1.5900e-003	0.0000	4.4116	4.4116	8.0000e-005	0.0000	4.4136
Total	**6.4300e-003**	**0.1477**	**0.0567**	**7.2000e-004**	**0.0216**	**3.1000e-004**	**0.0219**	**5.8700e-003**	**2.9000e-004**	**6.1600e-003**	**0.0000**	**69.6886**	**69.6886**	**2.6200e-003**	**0.0000**	**69.7540**

3.18 7.2 MAUVE Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.4400e-003	0.0621	0.0764	2.0000e-004		2.2700e-003	2.2700e-003		2.1000e-003	2.1000e-003	0.0000	17.3716	17.3716	5.5900e-003	0.0000	17.5115
Total	**7.4400e-003**	**0.0621**	**0.0764**	**2.0000e-004**		**2.2700e-003**	**2.2700e-003**		**2.1000e-003**	**2.1000e-003**	**0.0000**	**17.3716**	**17.3716**	**5.5900e-003**	**0.0000**	**17.5115**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-004	0.0149	4.4200e-003	7.0000e-005	3.6800e-003	3.0000e-005	3.7000e-003	9.5000e-004	3.0000e-005	9.8000e-004	0.0000	6.6336	6.6336	2.6000e-004	0.0000	6.6400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9500e-003	1.8500e-003	0.0210	8.0000e-005	9.3200e-003	6.0000e-005	9.3800e-003	2.4800e-003	5.0000e-005	2.5300e-003	0.0000	7.0049	7.0049	1.3000e-004	0.0000	7.0081
Total	**3.4100e-003**	**0.0167**	**0.0254**	**1.5000e-004**	**0.0130**	**9.0000e-005**	**0.0131**	**3.4300e-003**	**8.0000e-005**	**3.5100e-003**	**0.0000**	**13.6384**	**13.6384**	**3.9000e-004**	**0.0000**	**13.6481**

3.18 7.2 MAUVE Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.4100e-003	0.0104	0.1062	2.0000e-004		3.2000e-004	3.2000e-004		3.2000e-004	3.2000e-004	0.0000	17.3716	17.3716	5.5900e-003	0.0000	17.5114
Total	**2.4100e-003**	**0.0104**	**0.1062**	**2.0000e-004**		**3.2000e-004**	**3.2000e-004**		**3.2000e-004**	**3.2000e-004**	**0.0000**	**17.3716**	**17.3716**	**5.5900e-003**	**0.0000**	**17.5114**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-004	0.0149	4.4200e-003	7.0000e-005	3.6800e-003	3.0000e-005	3.7000e-003	9.5000e-004	3.0000e-005	9.8000e-004	0.0000	6.6336	6.6336	2.6000e-004	0.0000	6.6400
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.9500e-003	1.8500e-003	0.0210	8.0000e-005	9.3200e-003	6.0000e-005	9.3800e-003	2.4800e-003	5.0000e-005	2.5300e-003	0.0000	7.0049	7.0049	1.3000e-004	0.0000	7.0081
Total	**3.4100e-003**	**0.0167**	**0.0254**	**1.5000e-004**	**0.0130**	**9.0000e-005**	**0.0131**	**3.4300e-003**	**8.0000e-005**	**3.5100e-003**	**0.0000**	**13.6384**	**13.6384**	**3.9000e-004**	**0.0000**	**13.6481**

3.18 7.2 MAUVE Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0124	0.0979	0.1315	3.5000e-004		3.4800e-003	3.4800e-003		3.2000e-003	3.2000e-003	0.0000	30.2974	30.2974	9.7600e-003	0.0000	30.5413
Total	**0.0124**	**0.0979**	**0.1315**	**3.5000e-004**		**3.4800e-003**	**3.4800e-003**		**3.2000e-003**	**3.2000e-003**	**0.0000**	**30.2974**	**30.2974**	**9.7600e-003**	**0.0000**	**30.5413**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-004	0.0254	7.7200e-003	1.2000e-004	3.9700e-003	5.0000e-005	4.0200e-003	1.0600e-003	4.0000e-005	1.1000e-003	0.0000	11.4927	11.4927	4.5000e-004	0.0000	11.5038
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8400e-003	2.9200e-003	0.0339	1.3000e-004	0.0163	1.0000e-004	0.0164	4.3200e-003	9.0000e-005	4.4100e-003	0.0000	11.7169	11.7169	2.0000e-004	0.0000	11.7220
Total	**5.6400e-003**	**0.0283**	**0.0416**	**2.5000e-004**	**0.0202**	**1.5000e-004**	**0.0204**	**5.3800e-003**	**1.3000e-004**	**5.5100e-003**	**0.0000**	**23.2096**	**23.2096**	**6.5000e-004**	**0.0000**	**23.2258**

3.18 7.2 MAUVE Building Construction - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.2000e-003	0.0182	0.1852	3.5000e-004		5.6000e-004	5.6000e-004		5.6000e-004	5.6000e-004	0.0000	30.2974	30.2974	9.7600e-003	0.0000	30.5413
Total	**4.2000e-003**	**0.0182**	**0.1852**	**3.5000e-004**		**5.6000e-004**	**5.6000e-004**		**5.6000e-004**	**5.6000e-004**	**0.0000**	**30.2974**	**30.2974**	**9.7600e-003**	**0.0000**	**30.5413**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-004	0.0254	7.7200e-003	1.2000e-004	3.9700e-003	5.0000e-005	4.0200e-003	1.0600e-003	4.0000e-005	1.1000e-003	0.0000	11.4927	11.4927	4.5000e-004	0.0000	11.5038
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8400e-003	2.9200e-003	0.0339	1.3000e-004	0.0163	1.0000e-004	0.0164	4.3200e-003	9.0000e-005	4.4100e-003	0.0000	11.7169	11.7169	2.0000e-004	0.0000	11.7220
Total	**5.6400e-003**	**0.0283**	**0.0416**	**2.5000e-004**	**0.0202**	**1.5000e-004**	**0.0204**	**5.3800e-003**	**1.3000e-004**	**5.5100e-003**	**0.0000**	**23.2096**	**23.2096**	**6.5000e-004**	**0.0000**	**23.2258**

3.19 6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0260	0.2108	0.2207	6.2000e-004		8.5100e-003	8.5100e-003		8.0700e-003	8.0700e-003	0.0000	53.5261	53.5261	0.0136	0.0000	53.8657
Total	**0.0260**	**0.2108**	**0.2207**	**6.2000e-004**		**8.5100e-003**	**8.5100e-003**		**8.0700e-003**	**8.0700e-003**	**0.0000**	**53.5261**	**53.5261**	**0.0136**	**0.0000**	**53.8657**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1600e-003	1.3500e-003	0.0154	6.0000e-005	6.8200e-003	4.0000e-005	6.8600e-003	1.8100e-003	4.0000e-005	1.8500e-003	0.0000	5.1270	5.1270	9.0000e-005	0.0000	5.1293
Total	**2.1600e-003**	**1.3500e-003**	**0.0154**	**6.0000e-005**	**6.8200e-003**	**4.0000e-005**	**6.8600e-003**	**1.8100e-003**	**4.0000e-005**	**1.8500e-003**	**0.0000**	**5.1270**	**5.1270**	**9.0000e-005**	**0.0000**	**5.1293**

3.19 6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.3300e-003	0.0394	0.3058	6.2000e-004		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	53.5260	53.5260	0.0136	0.0000	53.8656
Total	**7.3300e-003**	**0.0394**	**0.3058**	**6.2000e-004**		**9.5000e-004**	**9.5000e-004**		**9.5000e-004**	**9.5000e-004**	**0.0000**	**53.5260**	**53.5260**	**0.0136**	**0.0000**	**53.8656**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1600e-003	1.3500e-003	0.0154	6.0000e-005	6.8200e-003	4.0000e-005	6.8600e-003	1.8100e-003	4.0000e-005	1.8500e-003	0.0000	5.1270	5.1270	9.0000e-005	0.0000	5.1293
Total	**2.1600e-003**	**1.3500e-003**	**0.0154**	**6.0000e-005**	**6.8200e-003**	**4.0000e-005**	**6.8600e-003**	**1.8100e-003**	**4.0000e-005**	**1.8500e-003**	**0.0000**	**5.1270**	**5.1270**	**9.0000e-005**	**0.0000**	**5.1293**

3.19 6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.4900e-003	0.0579	0.0656	1.9000e-004		2.2900e-003	2.2900e-003		2.1700e-003	2.1700e-003	0.0000	16.1825	16.1825	4.0900e-003	0.0000	16.2849
Total	**7.4900e-003**	**0.0579**	**0.0656**	**1.9000e-004**		**2.2900e-003**	**2.2900e-003**		**2.1700e-003**	**2.1700e-003**	**0.0000**	**16.1825**	**16.1825**	**4.0900e-003**	**0.0000**	**16.2849**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	3.7000e-004	4.3000e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.4861	1.4861	3.0000e-005	0.0000	1.4867
Total	**6.1000e-004**	**3.7000e-004**	**4.3000e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.4861**	**1.4861**	**3.0000e-005**	**0.0000**	**1.4867**

3.19 6.9 UV/CCB - Large Diameter Pipeline Tie-ins during Winter Shutdown - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2100e-003	0.0119	0.0925	1.9000e-004		2.9000e-004	2.9000e-004		2.9000e-004	2.9000e-004	0.0000	16.1825	16.1825	4.0900e-003	0.0000	16.2848
Total	**2.2100e-003**	**0.0119**	**0.0925**	**1.9000e-004**		**2.9000e-004**	**2.9000e-004**		**2.9000e-004**	**2.9000e-004**	**0.0000**	**16.1825**	**16.1825**	**4.0900e-003**	**0.0000**	**16.2848**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.1000e-004	3.7000e-004	4.3000e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.4861	1.4861	3.0000e-005	0.0000	1.4867
Total	**6.1000e-004**	**3.7000e-004**	**4.3000e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.4861**	**1.4861**	**3.0000e-005**	**0.0000**	**1.4867**

3.20 6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0115	0.0933	0.0854	3.0000e-004		3.4900e-003	3.4900e-003		3.2100e-003	3.2100e-003	0.0000	26.6194	26.6194	8.5700e-003	0.0000	26.8337
Total	**0.0115**	**0.0933**	**0.0854**	**3.0000e-004**		**3.4900e-003**	**3.4900e-003**		**3.2100e-003**	**3.2100e-003**	**0.0000**	**26.6194**	**26.6194**	**8.5700e-003**	**0.0000**	**26.8337**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.1600e-003	0.1014	0.0301	4.7000e-004	0.0172	1.9000e-004	0.0174	4.5400e-003	1.8000e-004	4.7200e-003	0.0000	45.1646	45.1646	1.7500e-003	0.0000	45.2085
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6100e-003	1.0100e-003	0.0115	4.0000e-005	5.0800e-003	3.0000e-005	5.1100e-003	1.3500e-003	3.0000e-005	1.3800e-003	0.0000	3.8154	3.8154	7.0000e-005	0.0000	3.8172
Total	**4.7700e-003**	**0.1024**	**0.0415**	**5.1000e-004**	**0.0223**	**2.2000e-004**	**0.0225**	**5.8900e-003**	**2.1000e-004**	**6.1000e-003**	**0.0000**	**48.9800**	**48.9800**	**1.8200e-003**	**0.0000**	**49.0257**

3.20 6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6900e-003	0.0160	0.1354	3.0000e-004		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	26.6194	26.6194	8.5700e-003	0.0000	26.8337
Total	**3.6900e-003**	**0.0160**	**0.1354**	**3.0000e-004**		**4.9000e-004**	**4.9000e-004**		**4.9000e-004**	**4.9000e-004**	**0.0000**	**26.6194**	**26.6194**	**8.5700e-003**	**0.0000**	**26.8337**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.1600e-003	0.1014	0.0301	4.7000e-004	0.0172	1.9000e-004	0.0174	4.5400e-003	1.8000e-004	4.7200e-003	0.0000	45.1646	45.1646	1.7500e-003	0.0000	45.2085
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6100e-003	1.0100e-003	0.0115	4.0000e-005	5.0800e-003	3.0000e-005	5.1100e-003	1.3500e-003	3.0000e-005	1.3800e-003	0.0000	3.8154	3.8154	7.0000e-005	0.0000	3.8172
Total	**4.7700e-003**	**0.1024**	**0.0415**	**5.1000e-004**	**0.0223**	**2.2000e-004**	**0.0225**	**5.8900e-003**	**2.1000e-004**	**6.1000e-003**	**0.0000**	**48.9800**	**48.9800**	**1.8200e-003**	**0.0000**	**49.0257**

3.20 6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.6000e-003	0.0654	0.0657	2.4000e-004		2.4700e-003	2.4700e-003		2.2700e-003	2.2700e-003	0.0000	20.7936	20.7936	6.7000e-003	0.0000	20.9610
Total	**8.6000e-003**	**0.0654**	**0.0657**	**2.4000e-004**		**2.4700e-003**	**2.4700e-003**		**2.2700e-003**	**2.2700e-003**	**0.0000**	**20.7936**	**20.7936**	**6.7000e-003**	**0.0000**	**20.9610**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.4400e-003	0.0774	0.0236	3.6000e-004	0.0166	1.4000e-004	0.0167	4.3200e-003	1.4000e-004	4.4600e-003	0.0000	35.0386	35.0386	1.3600e-003	0.0000	35.0725
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1800e-003	7.1000e-004	8.2700e-003	3.0000e-005	3.9700e-003	2.0000e-005	3.9900e-003	1.0500e-003	2.0000e-005	1.0800e-003	0.0000	2.8578	2.8578	5.0000e-005	0.0000	2.8590
Total	**3.6200e-003**	**0.0781**	**0.0318**	**3.9000e-004**	**0.0206**	**1.6000e-004**	**0.0207**	**5.3700e-003**	**1.6000e-004**	**5.5400e-003**	**0.0000**	**37.8964**	**37.8964**	**1.4100e-003**	**0.0000**	**37.9315**

3.20 6.10 UV/CCB - Backfill of Large Diameter Pipeline Tie-in Vaults - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8800e-003	0.0125	0.1058	2.4000e-004		3.8000e-004	3.8000e-004		3.8000e-004	3.8000e-004	0.0000	20.7936	20.7936	6.7000e-003	0.0000	20.9610
Total	**2.8800e-003**	**0.0125**	**0.1058**	**2.4000e-004**		**3.8000e-004**	**3.8000e-004**		**3.8000e-004**	**3.8000e-004**	**0.0000**	**20.7936**	**20.7936**	**6.7000e-003**	**0.0000**	**20.9610**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.4400e-003	0.0774	0.0236	3.6000e-004	0.0166	1.4000e-004	0.0167	4.3200e-003	1.4000e-004	4.4600e-003	0.0000	35.0386	35.0386	1.3600e-003	0.0000	35.0725
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1800e-003	7.1000e-004	8.2700e-003	3.0000e-005	3.9700e-003	2.0000e-005	3.9900e-003	1.0500e-003	2.0000e-005	1.0800e-003	0.0000	2.8578	2.8578	5.0000e-005	0.0000	2.8590
Total	**3.6200e-003**	**0.0781**	**0.0318**	**3.9000e-004**	**0.0206**	**1.6000e-004**	**0.0207**	**5.3700e-003**	**1.6000e-004**	**5.5400e-003**	**0.0000**	**37.8964**	**37.8964**	**1.4100e-003**	**0.0000**	**37.9315**

3.21 8.1 Perimeter Fencicng Installation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.9000e-004	1.7500e-003	1.9500e-003	1.0000e-005		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.7098	0.7098	2.3000e-004	0.0000	0.7155
Total	**2.9000e-004**	**1.7500e-003**	**1.9500e-003**	**1.0000e-005**	**5.3000e-004**	**6.0000e-005**	**5.9000e-004**	**6.0000e-005**	**6.0000e-005**	**1.2000e-004**	**0.0000**	**0.7098**	**0.7098**	**2.3000e-004**	**0.0000**	**0.7155**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	8.0000e-005	9.1000e-004	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3144	0.3144	1.0000e-005	0.0000	0.3145
Total	**1.3000e-004**	**8.0000e-005**	**9.1000e-004**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3144**	**0.3144**	**1.0000e-005**	**0.0000**	**0.3145**

3.21 8.1 Perimeter Fencicng Installation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0000e-004	4.3000e-004	3.6200e-003	1.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.7098	0.7098	2.3000e-004	0.0000	0.7155
Total	**1.0000e-004**	**4.3000e-004**	**3.6200e-003**	**1.0000e-005**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**6.0000e-005**	**1.0000e-005**	**7.0000e-005**	**0.0000**	**0.7098**	**0.7098**	**2.3000e-004**	**0.0000**	**0.7155**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	8.0000e-005	9.1000e-004	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3144	0.3144	1.0000e-005	0.0000	0.3145
Total	**1.3000e-004**	**8.0000e-005**	**9.1000e-004**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3144**	**0.3144**	**1.0000e-005**	**0.0000**	**0.3145**

3.22 8.2 Landscaping - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.1535	0.1482	5.0000e-004		5.8900e-003	5.8900e-003		5.4200e-003	5.4200e-003	0.0000	43.8966	43.8966	0.0141	0.0000	44.2501
Total	**0.0204**	**0.1535**	**0.1482**	**5.0000e-004**	**5.3000e-004**	**5.8900e-003**	**6.4200e-003**	**6.0000e-005**	**5.4200e-003**	**5.4800e-003**	**0.0000**	**43.8966**	**43.8966**	**0.0141**	**0.0000**	**44.2501**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.0000e-004	1.1900e-003	0.0000	5.7000e-004	0.0000	5.7000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4115	0.4115	1.0000e-005	0.0000	0.4117
Total	**1.7000e-004**	**1.0000e-004**	**1.1900e-003**	**0.0000**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.4115**	**0.4115**	**1.0000e-005**	**0.0000**	**0.4117**

3.22 8.2 Landscaping - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.0900e-003	0.0264	0.2305	5.0000e-004		8.1000e-004	8.1000e-004		8.1000e-004	8.1000e-004	0.0000	43.8965	43.8965	0.0141	0.0000	44.2501
Total	**6.0900e-003**	**0.0264**	**0.2305**	**5.0000e-004**	**5.3000e-004**	**8.1000e-004**	**1.3400e-003**	**6.0000e-005**	**8.1000e-004**	**8.7000e-004**	**0.0000**	**43.8965**	**43.8965**	**0.0141**	**0.0000**	**44.2501**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	1.0000e-004	1.1900e-003	0.0000	5.7000e-004	0.0000	5.7000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4115	0.4115	1.0000e-005	0.0000	0.4117
Total	**1.7000e-004**	**1.0000e-004**	**1.1900e-003**	**0.0000**	**5.7000e-004**	**0.0000**	**5.7000e-004**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**0.4115**	**0.4115**	**1.0000e-005**	**0.0000**	**0.4117**

3.23 9.1 LAPP - Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0000e-005	2.9000e-004	3.6000e-004	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	0.1034	0.1034	3.0000e-005	0.0000	0.1042
Total	**4.0000e-005**	**2.9000e-004**	**3.6000e-004**	**0.0000**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**6.0000e-005**	**1.0000e-005**	**7.0000e-005**	**0.0000**	**0.1034**	**0.1034**	**3.0000e-005**	**0.0000**	**0.1042**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.5600e-003	1.0800e-003	2.0000e-005	3.9000e-004	1.0000e-005	4.0000e-004	1.1000e-004	1.0000e-005	1.1000e-004	0.0000	1.6118	1.6118	6.0000e-005	0.0000	1.6133
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0286	0.0286	0.0000	0.0000	0.0286
Total	**1.2000e-004**	**3.5700e-003**	**1.1600e-003**	**2.0000e-005**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**1.2000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**1.6404**	**1.6404**	**6.0000e-005**	**0.0000**	**1.6419**

3.23 9.1 LAPP - Excavation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0000e-005	6.0000e-005	5.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.1034	0.1034	3.0000e-005	0.0000	0.1042
Total	**1.0000e-005**	**6.0000e-005**	**5.8000e-004**	**0.0000**	**5.3000e-004**	**0.0000**	**5.3000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1034**	**0.1034**	**3.0000e-005**	**0.0000**	**0.1042**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1000e-004	3.5600e-003	1.0800e-003	2.0000e-005	3.9000e-004	1.0000e-005	4.0000e-004	1.1000e-004	1.0000e-005	1.1000e-004	0.0000	1.6118	1.6118	6.0000e-005	0.0000	1.6133
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0286	0.0286	0.0000	0.0000	0.0286
Total	**1.2000e-004**	**3.5700e-003**	**1.1600e-003**	**2.0000e-005**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**	**1.2000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**1.6404**	**1.6404**	**6.0000e-005**	**0.0000**	**1.6419**

3.24 9.2 LAPP - Concrete and Miscellaneous Work - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.9000e-004	4.6500e-003	5.7800e-003	2.0000e-005		1.8000e-004	1.8000e-004		1.6000e-004	1.6000e-004	0.0000	1.6545	1.6545	5.4000e-004	0.0000	1.6678
Total	**6.9000e-004**	**4.6500e-003**	**5.7800e-003**	**2.0000e-005**		**1.8000e-004**	**1.8000e-004**		**1.6000e-004**	**1.6000e-004**	**0.0000**	**1.6545**	**1.6545**	**5.4000e-004**	**0.0000**	**1.6678**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0297	9.0400e-003	1.4000e-004	3.2500e-003	6.0000e-005	3.3100e-003	8.9000e-004	5.0000e-005	9.5000e-004	0.0000	13.4548	13.4548	5.2000e-004	0.0000	13.4678
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.1000e-004	1.3200e-003	1.0000e-005	6.3000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.4573	0.4573	1.0000e-005	0.0000	0.4574
Total	**1.1300e-003**	**0.0298**	**0.0104**	**1.5000e-004**	**3.8800e-003**	**6.0000e-005**	**3.9500e-003**	**1.0600e-003**	**5.0000e-005**	**1.1200e-003**	**0.0000**	**13.9121**	**13.9121**	**5.3000e-004**	**0.0000**	**13.9253**

3.24 9.2 LAPP - Concrete and Miscellaneous Work - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.3000e-004	1.0000e-003	9.2000e-003	2.0000e-005		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	1.6545	1.6545	5.4000e-004	0.0000	1.6678
Total	**2.3000e-004**	**1.0000e-003**	**9.2000e-003**	**2.0000e-005**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**1.6545**	**1.6545**	**5.4000e-004**	**0.0000**	**1.6678**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0297	9.0400e-003	1.4000e-004	3.2500e-003	6.0000e-005	3.3100e-003	8.9000e-004	5.0000e-005	9.5000e-004	0.0000	13.4548	13.4548	5.2000e-004	0.0000	13.4678
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.1000e-004	1.3200e-003	1.0000e-005	6.3000e-004	0.0000	6.4000e-004	1.7000e-004	0.0000	1.7000e-004	0.0000	0.4573	0.4573	1.0000e-005	0.0000	0.4574
Total	**1.1300e-003**	**0.0298**	**0.0104**	**1.5000e-004**	**3.8800e-003**	**6.0000e-005**	**3.9500e-003**	**1.0600e-003**	**5.0000e-005**	**1.1200e-003**	**0.0000**	**13.9121**	**13.9121**	**5.3000e-004**	**0.0000**	**13.9253**

3.25 9.3 LAPP - Pre-fab Building Installation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.4700e-003	9.8900e-003	0.0123	4.0000e-005		3.8000e-004	3.8000e-004		3.5000e-004	3.5000e-004	0.0000	3.5157	3.5157	1.1400e-003	0.0000	3.5442
Total	**1.4700e-003**	**9.8900e-003**	**0.0123**	**4.0000e-005**		**3.8000e-004**	**3.8000e-004**		**3.5000e-004**	**3.5000e-004**	**0.0000**	**3.5157**	**3.5157**	**1.1400e-003**	**0.0000**	**3.5442**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	4.8000e-004	5.6300e-003	2.0000e-005	2.7000e-003	2.0000e-005	2.7100e-003	7.2000e-004	1.0000e-005	7.3000e-004	0.0000	1.9433	1.9433	3.0000e-005	0.0000	1.9441
Total	**8.0000e-004**	**4.8000e-004**	**5.6300e-003**	**2.0000e-005**	**2.7000e-003**	**2.0000e-005**	**2.7100e-003**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**1.9433**	**1.9433**	**3.0000e-005**	**0.0000**	**1.9441**

3.25 9.3 LAPP - Pre-fab Building Installation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.9000e-004	2.1300e-003	0.0196	4.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	3.5157	3.5157	1.1400e-003	0.0000	3.5441
Total	**4.9000e-004**	**2.1300e-003**	**0.0196**	**4.0000e-005**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**3.5157**	**3.5157**	**1.1400e-003**	**0.0000**	**3.5441**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-004	4.8000e-004	5.6300e-003	2.0000e-005	2.7000e-003	2.0000e-005	2.7100e-003	7.2000e-004	1.0000e-005	7.3000e-004	0.0000	1.9433	1.9433	3.0000e-005	0.0000	1.9441
Total	**8.0000e-004**	**4.8000e-004**	**5.6300e-003**	**2.0000e-005**	**2.7000e-003**	**2.0000e-005**	**2.7100e-003**	**7.2000e-004**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**1.9433**	**1.9433**	**3.0000e-005**	**0.0000**	**1.9441**

3.26 10.1 Grounds Maintenence Building - Excavation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.1000e-004	3.4200e-003	4.1400e-003	1.0000e-005		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	1.2283	1.2283	4.0000e-004	0.0000	1.2382
Total	**5.1000e-004**	**3.4200e-003**	**4.1400e-003**	**1.0000e-005**	**5.3000e-004**	**1.3000e-004**	**6.6000e-004**	**6.0000e-005**	**1.2000e-004**	**1.8000e-004**	**0.0000**	**1.2283**	**1.2283**	**4.0000e-004**	**0.0000**	**1.2382**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	8.8300e-003	2.6800e-003	4.0000e-005	9.7000e-004	2.0000e-005	9.8000e-004	2.7000e-004	2.0000e-005	2.8000e-004	0.0000	3.9944	3.9944	1.5000e-004	0.0000	3.9983
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.5000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0857	0.0857	0.0000	0.0000	0.0858
Total	**3.2000e-004**	**8.8500e-003**	**2.9300e-003**	**4.0000e-005**	**1.0900e-003**	**2.0000e-005**	**1.1000e-003**	**3.0000e-004**	**2.0000e-005**	**3.1000e-004**	**0.0000**	**4.0801**	**4.0801**	**1.5000e-004**	**0.0000**	**4.0840**

3.26 10.1 Grounds Maintenence Building - Excavation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.3000e-004	0.0000	5.3000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.7000e-004	7.4000e-004	6.7500e-003	1.0000e-005		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	1.2283	1.2283	4.0000e-004	0.0000	1.2382
Total	**1.7000e-004**	**7.4000e-004**	**6.7500e-003**	**1.0000e-005**	**5.3000e-004**	**2.0000e-005**	**5.5000e-004**	**6.0000e-005**	**2.0000e-005**	**8.0000e-005**	**0.0000**	**1.2283**	**1.2283**	**4.0000e-004**	**0.0000**	**1.2382**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	8.8300e-003	2.6800e-003	4.0000e-005	9.7000e-004	2.0000e-005	9.8000e-004	2.7000e-004	2.0000e-005	2.8000e-004	0.0000	3.9944	3.9944	1.5000e-004	0.0000	3.9983
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	2.0000e-005	2.5000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0857	0.0857	0.0000	0.0000	0.0858
Total	**3.2000e-004**	**8.8500e-003**	**2.9300e-003**	**4.0000e-005**	**1.0900e-003**	**2.0000e-005**	**1.1000e-003**	**3.0000e-004**	**2.0000e-005**	**3.1000e-004**	**0.0000**	**4.0801**	**4.0801**	**1.5000e-004**	**0.0000**	**4.0840**

3.27 10.2 Grounds Maintenence Building - Concrete & Misc. Work - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.5700e-003	0.0240	0.0290	1.0000e-004		8.9000e-004	8.9000e-004		8.2000e-004	8.2000e-004	0.0000	8.5978	8.5978	2.7800e-003	0.0000	8.6673
Total	**3.5700e-003**	**0.0240**	**0.0290**	**1.0000e-004**		**8.9000e-004**	**8.9000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**8.5978**	**8.5978**	**2.7800e-003**	**0.0000**	**8.6673**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2300e-003	0.0390	0.0119	1.8000e-004	4.2700e-003	7.0000e-005	4.3400e-003	1.1700e-003	7.0000e-005	1.2400e-003	0.0000	17.6594	17.6594	6.8000e-004	0.0000	17.6766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.5000e-004	1.7400e-003	1.0000e-005	8.3000e-004	0.0000	8.4000e-004	2.2000e-004	0.0000	2.3000e-004	0.0000	0.6001	0.6001	1.0000e-005	0.0000	0.6004
Total	**1.4800e-003**	**0.0392**	**0.0136**	**1.9000e-004**	**5.1000e-003**	**7.0000e-005**	**5.1800e-003**	**1.3900e-003**	**7.0000e-005**	**1.4700e-003**	**0.0000**	**18.2596**	**18.2596**	**6.9000e-004**	**0.0000**	**18.2770**

3.27 10.2 Grounds Maintenence Building - Concrete & Misc. Work - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	5.1900e-003	0.0473	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	8.5978	8.5978	2.7800e-003	0.0000	8.6673
Total	**1.2000e-003**	**5.1900e-003**	**0.0473**	**1.0000e-004**		**1.6000e-004**	**1.6000e-004**		**1.6000e-004**	**1.6000e-004**	**0.0000**	**8.5978**	**8.5978**	**2.7800e-003**	**0.0000**	**8.6673**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.2300e-003	0.0390	0.0119	1.8000e-004	4.2700e-003	7.0000e-005	4.3400e-003	1.1700e-003	7.0000e-005	1.2400e-003	0.0000	17.6594	17.6594	6.8000e-004	0.0000	17.6766
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.5000e-004	1.7400e-003	1.0000e-005	8.3000e-004	0.0000	8.4000e-004	2.2000e-004	0.0000	2.3000e-004	0.0000	0.6001	0.6001	1.0000e-005	0.0000	0.6004
Total	**1.4800e-003**	**0.0392**	**0.0136**	**1.9000e-004**	**5.1000e-003**	**7.0000e-005**	**5.1800e-003**	**1.3900e-003**	**7.0000e-005**	**1.4700e-003**	**0.0000**	**18.2596**	**18.2596**	**6.9000e-004**	**0.0000**	**18.2770**

3.28 10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.6400e-003	0.0445	0.0539	1.8000e-004		1.6500e-003	1.6500e-003		1.5100e-003	1.5100e-003	0.0000	15.9673	15.9673	5.1600e-003	0.0000	16.0964
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.6400e-003**	**0.0445**	**0.0539**	**1.8000e-004**		**1.6500e-003**	**1.6500e-003**		**1.5100e-003**	**1.5100e-003**	**0.0000**	**15.9673**	**15.9673**	**5.1600e-003**	**0.0000**	**16.0964**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	5.6000e-004	6.4500e-003	2.0000e-005	3.0900e-003	2.0000e-005	3.1100e-003	8.2000e-004	2.0000e-005	8.4000e-004	0.0000	2.2291	2.2291	4.0000e-005	0.0000	2.2300
Total	**9.2000e-004**	**5.6000e-004**	**6.4500e-003**	**2.0000e-005**	**3.0900e-003**	**2.0000e-005**	**3.1100e-003**	**8.2000e-004**	**2.0000e-005**	**8.4000e-004**	**0.0000**	**2.2291**	**2.2291**	**4.0000e-005**	**0.0000**	**2.2300**

3.28 10.3 Grounds maintenence Building - Pre-fab Bldg Construction & Paving - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2300e-003	9.6500e-003	0.0878	1.8000e-004		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	15.9673	15.9673	5.1600e-003	0.0000	16.0964
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.2300e-003**	**9.6500e-003**	**0.0878**	**1.8000e-004**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**15.9673**	**15.9673**	**5.1600e-003**	**0.0000**	**16.0964**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.2000e-004	5.6000e-004	6.4500e-003	2.0000e-005	3.0900e-003	2.0000e-005	3.1100e-003	8.2000e-004	2.0000e-005	8.4000e-004	0.0000	2.2291	2.2291	4.0000e-005	0.0000	2.2300
Total	**9.2000e-004**	**5.6000e-004**	**6.4500e-003**	**2.0000e-005**	**3.0900e-003**	**2.0000e-005**	**3.1100e-003**	**8.2000e-004**	**2.0000e-005**	**8.4000e-004**	**0.0000**	**2.2291**	**2.2291**	**4.0000e-005**	**0.0000**	**2.2300**

3.29 11.0 LAPP2 - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	8.0000e-005	7.6000e-004	1.0500e-003	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.1245	0.1245	4.0000e-005	0.0000	0.1255
Total	**8.0000e-005**	**7.6000e-004**	**1.0500e-003**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**0.1245**	**0.1245**	**4.0000e-005**	**0.0000**	**0.1255**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	1.9000e-004	2.1800e-003	1.0000e-005	1.0500e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.7545	0.7545	1.0000e-005	0.0000	0.7548
Total	**3.1000e-004**	**1.9000e-004**	**2.1800e-003**	**1.0000e-005**	**1.0500e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.7545**	**0.7545**	**1.0000e-005**	**0.0000**	**0.7548**

3.29 11.0 LAPP2 - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.0000e-005	8.0000e-005	1.0800e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.1245	0.1245	4.0000e-005	0.0000	0.1255
Total	**2.0000e-005**	**8.0000e-005**	**1.0800e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.1245**	**0.1245**	**4.0000e-005**	**0.0000**	**0.1255**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.1000e-004	1.9000e-004	2.1800e-003	1.0000e-005	1.0500e-003	1.0000e-005	1.0500e-003	2.8000e-004	1.0000e-005	2.8000e-004	0.0000	0.7545	0.7545	1.0000e-005	0.0000	0.7548
Total	**3.1000e-004**	**1.9000e-004**	**2.1800e-003**	**1.0000e-005**	**1.0500e-003**	**1.0000e-005**	**1.0500e-003**	**2.8000e-004**	**1.0000e-005**	**2.8000e-004**	**0.0000**	**0.7545**	**0.7545**	**1.0000e-005**	**0.0000**	**0.7548**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.597341	0.036425	0.184736	0.114304	0.014288	0.004933	0.010771	0.025203	0.001643	0.001653	0.005254	0.002704	0.000746

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1.0082	1.0082	1.0000e-004	2.0000e-005	1.0168
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1.0082	1.0082	1.0000e-004	2.0000e-005	1.0168
NaturalGas Mitigated	1.3000e-004	1.2100e-003	1.0200e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.3208	1.3208	3.0000e-005	2.0000e-005	1.3286
NaturalGas Unmitigated	1.3000e-004	1.2100e-003	1.0200e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.3208	1.3208	3.0000e-005	2.0000e-005	1.3286

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	24750	1.3000e-004	1.2100e-003	1.0200e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.3208	1.3208	3.0000e-005	2.0000e-005	1.3286
Total		**1.3000e-004**	**1.2100e-003**	**1.0200e-003**	**1.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**1.3208**	**1.3208**	**3.0000e-005**	**2.0000e-005**	**1.3286**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	24750	1.3000e-004	1.2100e-003	1.0200e-003	1.0000e-005		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005	0.0000	1.3208	1.3208	3.0000e-005	2.0000e-005	1.3286
Total		**1.3000e-004**	**1.2100e-003**	**1.0200e-003**	**1.0000e-005**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**1.3208**	**1.3208**	**3.0000e-005**	**2.0000e-005**	**1.3286**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	7560	1.0082	1.0000e-004	2.0000e-005	1.0168
Total		**1.0082**	**1.0000e-004**	**2.0000e-005**	**1.0168**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	7560	1.0082	1.0000e-004	2.0000e-005	1.0168
Total		**1.0082**	**1.0000e-004**	**2.0000e-005**	**1.0168**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.4300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.4300e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	5.2000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**4.4300e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2517	0.0149	0.0000	0.6236
Unmitigated	0.2517	0.0149	0.0000	0.6236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	1.24	0.2517	0.0149	0.0000	0.6236
Total		**0.2517**	**0.0149**	**0.0000**	**0.6236**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	2000	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0821	0.3669	0.2092	3.9000e-004		0.0121	0.0121		0.0121	0.0121	0.0000	38.0797	38.0797	5.3400e-003	0.0000	38.2132
Total	**0.0821**	**0.3669**	**0.2092**	**3.9000e-004**		**0.0121**	**0.0121**		**0.0121**	**0.0121**	**0.0000**	**38.0797**	**38.0797**	**5.3400e-003**	**0.0000**	**38.2132**

11.0 Vegetation

```
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.8.3
** Lakes Environmental Software Inc.
** Date: 4/25/2020
** File: C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
   MODELOPT DFAULT CONC
   AVERTIME ANNUAL
   POLLUTID PM_10
   FLAGPOLE 1.50
   RUNORNOT RUN
   ERRORFIL "Orinda WTP-rev.err"
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   570321.428  4194149.433      111.680
** DESCRSRC Construction area 1
   LOCATION PAREA2       AREAPOLY   570350.463  4194111.945      111.750
** DESCRSRC Construction Area 2
   LOCATION PAREA3       AREAPOLY   570331.719  4194050.568      116.410
** DESCRSRC Construction Area 4
   LOCATION PAREA4       AREAPOLY   570353.036  4194089.526      112.590
** DESCRSRC Construction Area 3
   LOCATION PAREA5       AREAPOLY   570052.399  4194223.305      118.140
** DESCRSRC Construction Area 5
** Source Parameters **
   SRCPARAM PAREA1       0.0002252702     5.000         7     1.500
   AREAVERT PAREA1       570321.428 4194149.433 570328.779 4194151.270
   AREAVERT PAREA1       570330.249 4194146.492 570355.608 4194160.826
   AREAVERT PAREA1       570344.950 4194198.681 570311.138 4194186.553
   AREAVERT PAREA1       570320.326 4194150.535
   SRCPARAM PAREA2       0.0002252529     5.000         4     1.500
   AREAVERT PAREA2       570350.463 4194111.945 570350.095 4194097.979
```

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   AREAVERT PAREA2       570371.779 4194098.346 570371.412 4194112.680
   SRCPARAM PAREA3       0.0002253136     5.000         4     1.500
   AREAVERT PAREA3       570331.719 4194050.568 570344.215 4194035.132
   AREAVERT PAREA3       570352.301 4194043.217 570337.967 4194059.389
   SRCPARAM PAREA4       0.0002252637     5.000         4     1.500
   AREAVERT PAREA4       570353.036 4194089.526 570342.010 4194075.927
   AREAVERT PAREA4       570352.301 4194068.209 570362.591 4194080.705
   SRCPARAM PAREA5       0.0002252742     5.000        13     1.500
   AREAVERT PAREA5       570052.399 4194223.305 570071.878 4194201.621
   AREAVERT PAREA5       570078.126 4194197.578 570086.579 4194200.151
   AREAVERT PAREA5       570106.425 4194213.382 570136.930 4194240.579
   AREAVERT PAREA5       570132.520 4194246.460 570117.084 4194234.331
   AREAVERT PAREA5       570105.323 4194248.297 570100.912 4194244.254
   AREAVERT PAREA5       570095.400 4194249.400 570089.887 4194245.357
   AREAVERT PAREA5       570088.049 4194248.297

** Variable Emissions Type: "By Hour / Seven Days (HRDOW7)"
** Variable Emission Scenario: "Scenario 1"
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   EMISFACT PAREA1       HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA1       HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA1       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
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   EMISFACT PAREA2       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA2       HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA2       HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA2       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
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   EMISFACT PAREA2       HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT PAREA2      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA2      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA2      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
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EMISFACT PAREA3      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA3      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA3      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA4      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA4      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA5      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA5      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
EMISFACT PAREA5      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
EMISFACT PAREA5      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
```

```
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA5      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA5      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
   EMISFACT PAREA5      HRDOW7 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   EMISFACT PAREA5      HRDOW7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
   SRCGROUP ALL
SO FINISHED
**
****************************************
** AERMOD Receptor Pathway
****************************************
**
**
RE STARTING
   INCLUDED "Orinda WTP-rev.rou"
RE FINISHED
**
****************************************
** AERMOD Meteorology Pathway
****************************************
**
**
ME STARTING
   SURFFILE "C:\Users\jni\Desktop\Orinda WTP\HRA\724930.SFC"
   PROFFILE "C:\Users\jni\Desktop\Orinda WTP\HRA\724930.PFL"
   SURFDATA 23230 2009 OAKLAND/WSO_AP
   UAIRDATA 23230 2009 OAKLAND/WSO_AP
   PROFBASE 7.0 METERS
ME FINISHED
**
****************************************
** AERMOD Output Pathway
****************************************
**
**
OU STARTING
** Auto-Generated Plotfiles
   PLOTFILE ANNUAL ALL "ORINDA WTP-REV.AD\AN00GALL.PLT" 31
   SUMMFILE "Orinda WTP-rev.sum"
OU FINISHED

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

```
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                          ***       13:30:21
                                                                                     PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                                   ***     MODEL SETUP OPTIONS SUMMARY      ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

 **Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Accepts FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM_10

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:      5 Source(s);       1 Source Group(s); and     244 Receptor(s)

               with:      0 POINT(s), including
                        0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      5 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
```

```
        Model Outputs Tables of ANNUAL Averages by Receptor
        Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
        Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     7.00 ;  Decay Coef. =    0.000     ;  Rot. Angle =
0.0
                 Emission Units = GRAMS/SEC                              ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp
 **Output Print File:             aermod.out

 **Detailed Error/Message File:   Orinda WTP-rev.err
 **File for Summary of Results:   Orinda WTP-rev.sum
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                         ***       13:30:21
                                                                                                PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL


                                       *** AREAPOLY SOURCE DATA ***

             NUMBER EMISSION RATE   LOCATION OF AREA  BASE     RELEASE  NUMBER     INIT.   URBAN
EMISSION RATE
  SOURCE      PART.  (GRAMS/SEC      X       Y      ELEV.    HEIGHT  OF VERTS.     SZ     SOURCE  SCALAR
VARY
    ID       CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)          (METERS)            BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

 PAREA1         0   0.22527E-03  570321.4 4194149.4   111.7     5.00      7       1.50    NO    HRDOW7
 PAREA2         0   0.22525E-03  570350.5 4194111.9   111.8     5.00      4       1.50    NO    HRDOW7
 PAREA3         0   0.22531E-03  570331.7 4194050.6   116.4     5.00      4       1.50    NO    HRDOW7
 PAREA4         0   0.22526E-03  570353.0 4194089.5   112.6     5.00      4       1.50    NO    HRDOW7
 PAREA5         0   0.22527E-03  570052.4 4194223.3   118.1     5.00     13       1.50    NO    HRDOW7
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                         ***       13:30:21
                                                                                                PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL


                                    *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                             SOURCE IDs
 -----------                                        ----------
```

```
  ALL       PAREA1     , PAREA2     , PAREA3     , PAREA4     , PAREA5     ,
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

              * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK
(HRDOW7) *

 SOURCE ID = PAREA1      ; SOURCE TYPE = AREAPOLY :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR
SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                  DAY OF WEEK = MONDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = TUESDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = WEDNESDY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = THURSDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = FRIDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
```

```
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***        04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                       ***        13:30:21
                                                                                      PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                 * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK
(HRDOW7) *

 SOURCE ID = PAREA2       ; SOURCE TYPE = AREAPOLY :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR
SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                DAY OF WEEK = MONDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                DAY OF WEEK = TUESDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                DAY OF WEEK = WEDNESDY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                DAY OF WEEK = THURSDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                DAY OF WEEK = FRIDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
```

```
.1000E+01
   17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                 DAY OF WEEK = SATURDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
    9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                 DAY OF WEEK = SUNDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
    9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
   17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                    ***       13:30:21
                                                                                   PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                 * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK
(HRDOW7) *

 SOURCE ID = PAREA3       ; SOURCE TYPE = AREAPOLY :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR
SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                                 DAY OF WEEK = MONDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
   17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                 DAY OF WEEK = TUESDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
   17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                 DAY OF WEEK = WEDNESDY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
    9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
   17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                 DAY OF WEEK = THURSDAY
    1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
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   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = FRIDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***        04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                          ***        13:30:21
                                                                                PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK
(HRDOW7) *

 SOURCE ID = PAREA4       ; SOURCE TYPE = AREAPOLY :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR
SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                              DAY OF WEEK = MONDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = TUESDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = WEDNESDY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
```

```
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = THURSDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = FRIDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***        04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                   ***        13:30:21
                                                                                  PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                * SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK
(HRDOW7) *

 SOURCE ID = PAREA5       ; SOURCE TYPE = AREAPOLY :
  HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR   SCALAR   HOUR
SCALAR   HOUR   SCALAR   HOUR   SCALAR
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
                              DAY OF WEEK = MONDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                              DAY OF WEEK = TUESDAY
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   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = WEDNESDY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = THURSDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = FRIDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .1000E+01   10  .1000E+01   11  .1000E+01   12  .1000E+01   13  .1000E+01   14  .1000E+01   15  .1000E+01   16
.1000E+01
  17  .1000E+01   18  .1000E+01   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = SATURDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
                                  DAY OF WEEK = SUNDAY
   1  .0000E+00    2  .0000E+00    3  .0000E+00    4  .0000E+00    5  .0000E+00    6  .0000E+00    7  .0000E+00    8
.0000E+00
   9  .0000E+00   10  .0000E+00   11  .0000E+00   12  .0000E+00   13  .0000E+00   14  .0000E+00   15  .0000E+00   16
.0000E+00
  17  .0000E+00   18  .0000E+00   19  .0000E+00   20  .0000E+00   21  .0000E+00   22  .0000E+00   23  .0000E+00
24  .0000E+00
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                    ***       13:30:21
                                                                              PAGE   9
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                              *** DISCRETE CARTESIAN RECEPTORS ***
                             (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                        (METERS)

    ( 570340.1, 4193908.8,     130.5,     581.0,       1.5);        ( 570300.1, 4193928.8,     128.4,     581.0,       1.5);
    ( 570320.1, 4193928.8,     127.7,     581.0,       1.5);        ( 570340.1, 4193928.8,     126.5,     581.0,       1.5);
    ( 570260.1, 4193948.8,     123.5,     581.0,       1.5);        ( 570280.1, 4193948.8,     124.5,     581.0,       1.5);
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   ( 570300.1, 4193948.8,     125.0,     581.0,       1.5);        ( 570320.1, 4193948.8,     124.4,     581.0,       1.5);
   ( 570340.1, 4193948.8,     123.1,     581.0,       1.5);        ( 570240.1, 4193968.8,     121.2,     581.0,       1.5);
   ( 570260.1, 4193968.8,     121.2,     581.0,       1.5);        ( 570280.1, 4193968.8,     122.0,     581.0,       1.5);
   ( 570300.1, 4193968.8,     122.5,     581.0,       1.5);        ( 570320.1, 4193968.8,     121.9,     581.0,       1.5);
   ( 570200.1, 4193988.8,     121.1,     581.0,       1.5);        ( 570220.1, 4193988.8,     120.5,     581.0,       1.5);
   ( 570240.1, 4193988.8,     120.0,     581.0,       1.5);        ( 570260.1, 4193988.8,     119.9,     581.0,       1.5);
   ( 570280.1, 4193988.8,     120.4,     581.0,       1.5);        ( 570300.1, 4193988.8,     120.6,     581.0,       1.5);
   ( 570320.1, 4193988.8,     120.0,     581.0,       1.5);        ( 570160.1, 4194008.8,     126.0,     581.0,       1.5);
   ( 570180.1, 4194008.8,     123.5,     581.0,       1.5);        ( 570200.1, 4194008.8,     121.4,     581.0,       1.5);
   ( 570220.1, 4194008.8,     120.5,     581.0,       1.5);        ( 570240.1, 4194008.8,     119.8,     581.0,       1.5);
   ( 570260.1, 4194008.8,     119.3,     581.0,       1.5);        ( 570280.1, 4194008.8,     119.4,     581.0,       1.5);
   ( 570300.1, 4194008.8,     119.3,     581.0,       1.5);        ( 570140.1, 4194028.8,     128.7,     581.0,       1.5);
   ( 570160.1, 4194028.8,     127.5,     581.0,       1.5);        ( 570180.1, 4194028.8,     125.6,     581.0,       1.5);
   ( 570200.1, 4194028.8,     122.4,     581.0,       1.5);        ( 570220.1, 4194028.8,     120.8,     581.0,       1.5);
   ( 570240.1, 4194028.8,     119.7,     581.0,       1.5);        ( 570260.1, 4194028.8,     118.8,     581.0,       1.5);
   ( 570280.1, 4194028.8,     118.6,     581.0,       1.5);        ( 570300.1, 4194028.8,     118.4,     581.0,       1.5);
   ( 570100.1, 4194048.8,     128.7,     581.0,       1.5);        ( 570120.1, 4194048.8,     127.8,     581.0,       1.5);
   ( 570140.1, 4194048.8,     127.8,     581.0,       1.5);        ( 570160.1, 4194048.8,     128.4,     581.0,       1.5);
   ( 570180.1, 4194048.8,     127.7,     581.0,       1.5);        ( 570200.1, 4194048.8,     123.8,     581.0,       1.5);
   ( 570220.1, 4194048.8,     121.4,     581.0,       1.5);        ( 570240.1, 4194048.8,     119.6,     581.0,       1.5);
   ( 570260.1, 4194048.8,     118.2,     581.0,       1.5);        ( 570280.1, 4194048.8,     117.9,     581.0,       1.5);
   ( 570060.1, 4194068.8,     129.5,     581.0,       1.5);        ( 570080.1, 4194068.8,     128.7,     581.0,       1.5);
   ( 570100.1, 4194068.8,     127.4,     581.0,       1.5);        ( 570120.1, 4194068.8,     126.5,     581.0,       1.5);
   ( 570140.1, 4194068.8,     126.5,     581.0,       1.5);        ( 570160.1, 4194068.8,     127.5,     581.0,       1.5);
   ( 570180.1, 4194068.8,     127.4,     581.0,       1.5);        ( 570200.1, 4194068.8,     124.9,     581.0,       1.5);
   ( 570220.1, 4194068.8,     122.0,     581.0,       1.5);        ( 570240.1, 4194068.8,     119.6,     581.0,       1.5);
   ( 570260.1, 4194068.8,     118.2,     581.0,       1.5);        ( 570040.1, 4194088.8,     127.8,     581.0,       1.5);
   ( 570060.1, 4194088.8,     126.9,     581.0,       1.5);        ( 570080.1, 4194088.8,     125.7,     581.0,       1.5);
   ( 570100.1, 4194088.8,     124.9,     581.0,       1.5);        ( 570120.1, 4194088.8,     124.3,     581.0,       1.5);
   ( 570140.1, 4194088.8,     124.3,     581.0,       1.5);        ( 570160.1, 4194088.8,     125.2,     581.0,       1.5);
   ( 570180.1, 4194088.8,     125.5,     581.0,       1.5);        ( 570200.1, 4194088.8,     124.0,     581.0,       1.5);
   ( 570220.1, 4194088.8,     121.5,     581.0,       1.5);        ( 570240.1, 4194088.8,     119.1,     581.0,       1.5);
   ( 570000.1, 4194108.8,     125.8,     581.0,       1.5);        ( 570020.1, 4194108.8,     125.7,     581.0,       1.5);
   ( 570040.1, 4194108.8,     125.1,     581.0,       1.5);        ( 570060.1, 4194108.8,     124.1,     581.0,       1.5);
   ( 570080.1, 4194108.8,     122.2,     581.0,       1.5);        ( 570100.1, 4194108.8,     121.9,     581.0,       1.5);
   ( 570120.1, 4194108.8,     121.8,     581.0,       1.5);        ( 570140.1, 4194108.8,     121.8,     581.0,       1.5);
   ( 570160.1, 4194108.8,     122.3,     581.0,       1.5);        ( 570180.1, 4194108.8,     122.5,     581.0,       1.5);
   ( 570200.1, 4194108.8,     121.8,     581.0,       1.5);        ( 569960.1, 4194128.8,     127.1,     581.0,       1.5);
   ( 569980.1, 4194128.8,     125.5,     581.0,       1.5);        ( 570000.1, 4194128.8,     124.2,     581.0,       1.5);
   ( 570020.1, 4194128.8,     123.2,     581.0,       1.5);        ( 570040.1, 4194128.8,     122.5,     581.0,       1.5);
   ( 570060.1, 4194128.8,     121.8,     581.0,       1.5);        ( 569940.1, 4194148.8,     126.7,     581.0,       1.5);
   ( 569960.1, 4194148.8,     125.4,     581.0,       1.5);        ( 569980.1, 4194148.8,     124.1,     581.0,       1.5);
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                     ***       13:30:21
                                                                                          PAGE  10
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                                    *** DISCRETE CARTESIAN RECEPTORS ***
                                  (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                              (METERS)

   ( 570000.1, 4194148.8,     122.8,     581.0,       1.5);        ( 570020.1, 4194148.8,     121.8,     581.0,       1.5);
   ( 569940.1, 4194168.8,     125.8,     581.0,       1.5);        ( 569960.1, 4194168.8,     124.2,     581.0,       1.5);
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    ( 569980.1, 4194168.8,     122.8,     581.0,       1.5);       ( 570000.1, 4194168.8,     121.7,     581.0,       1.5);
    ( 569940.1, 4194188.8,     127.2,     581.0,       1.5);       ( 569960.1, 4194188.8,     123.8,     581.0,       1.5);
    ( 569980.1, 4194188.8,     122.1,     581.0,       1.5);       ( 570417.6, 4194240.4,     124.6,     581.0,       1.5);
    ( 570437.6, 4194240.4,     127.6,     581.0,       1.5);       ( 570397.6, 4194260.4,     120.3,     581.0,       1.5);
    ( 570417.6, 4194260.4,     125.3,     581.0,       1.5);       ( 570437.6, 4194260.4,     128.4,     581.0,       1.5);
    ( 570457.6, 4194260.4,     130.6,     581.0,       1.5);       ( 570477.6, 4194260.4,     132.4,     581.0,       1.5);
    ( 570377.6, 4194280.4,     123.6,     581.0,       1.5);       ( 570397.6, 4194280.4,     125.8,     581.0,       1.5);
    ( 570417.6, 4194280.4,     128.4,     581.0,       1.5);       ( 570437.6, 4194280.4,     130.1,     581.0,       1.5);
    ( 570457.6, 4194280.4,     131.6,     581.0,       1.5);       ( 570337.6, 4194300.4,     126.1,     581.0,       1.5);
    ( 570357.6, 4194300.4,     127.0,     581.0,       1.5);       ( 570377.6, 4194300.4,     127.7,     581.0,       1.5);
    ( 570397.6, 4194300.4,     128.8,     581.0,       1.5);       ( 570417.6, 4194300.4,     130.2,     581.0,       1.5);
    ( 570437.6, 4194300.4,     131.5,     581.0,       1.5);       ( 570317.6, 4194320.4,     127.6,     581.0,       1.5);
    ( 570337.6, 4194320.4,     128.7,     581.0,       1.5);       ( 570357.6, 4194320.4,     129.4,     581.0,       1.5);
    ( 570377.6, 4194320.4,     130.1,     581.0,       1.5);       ( 570397.6, 4194320.4,     130.7,     581.0,       1.5);
    ( 570417.6, 4194320.4,     131.5,     581.0,       1.5);       ( 570277.6, 4194340.4,     124.0,     581.0,       1.5);
    ( 570297.6, 4194340.4,     126.9,     581.0,       1.5);       ( 570317.6, 4194340.4,     128.4,     581.0,       1.5);
    ( 570337.6, 4194340.4,     129.6,     581.0,       1.5);       ( 570357.6, 4194340.4,     130.7,     581.0,       1.5);
    ( 570377.6, 4194340.4,     131.4,     581.0,       1.5);       ( 570257.6, 4194360.4,     122.0,     581.0,       1.5);
    ( 570277.6, 4194360.4,     125.0,     581.0,       1.5);       ( 570297.6, 4194360.4,     127.7,     581.0,       1.5);
    ( 570317.6, 4194360.4,     129.1,     581.0,       1.5);       ( 570337.6, 4194360.4,     130.4,     581.0,       1.5);
    ( 570357.6, 4194360.4,     131.7,     581.0,       1.5);       ( 570237.6, 4194380.4,     120.6,     581.0,       1.5);
    ( 570257.6, 4194380.4,     123.4,     581.0,       1.5);       ( 570277.6, 4194380.4,     126.1,     581.0,       1.5);
    ( 570297.6, 4194380.4,     128.5,     581.0,       1.5);       ( 570317.6, 4194380.4,     129.9,     581.0,       1.5);
    ( 570337.6, 4194380.4,     131.3,     581.0,       1.5);       ( 570217.6, 4194400.4,     118.6,     581.0,       1.5);
    ( 570237.6, 4194400.4,     120.7,     581.0,       1.5);       ( 570257.6, 4194400.4,     124.5,     581.0,       1.5);
    ( 570277.6, 4194400.4,     127.5,     581.0,       1.5);       ( 570297.6, 4194400.4,     129.9,     581.0,       1.5);
    ( 570317.6, 4194400.4,     131.2,     581.0,       1.5);       ( 570197.6, 4194420.4,     119.0,     581.0,       1.5);
    ( 570217.6, 4194420.4,     120.1,     581.0,       1.5);       ( 570237.6, 4194420.4,     121.5,     581.0,       1.5);
    ( 570257.6, 4194420.4,     124.6,     581.0,       1.5);       ( 570277.6, 4194420.4,     127.4,     581.0,       1.5);
    ( 570297.6, 4194420.4,     129.9,     581.0,       1.5);       ( 570177.6, 4194440.4,     119.9,     581.0,       1.5);
    ( 570197.6, 4194440.4,     121.6,     581.0,       1.5);       ( 570217.6, 4194440.4,     122.6,     581.0,       1.5);
    ( 570237.6, 4194440.4,     123.4,     581.0,       1.5);       ( 570257.6, 4194440.4,     125.2,     581.0,       1.5);
    ( 570277.6, 4194440.4,     127.2,     581.0,       1.5);       ( 570157.6, 4194460.4,     120.7,     581.0,       1.5);
    ( 570177.6, 4194460.4,     122.9,     581.0,       1.5);       ( 570197.6, 4194460.4,     126.4,     581.0,       1.5);
    ( 570217.6, 4194460.4,     127.9,     581.0,       1.5);       ( 570237.6, 4194460.4,     128.5,     581.0,       1.5);
    ( 570257.6, 4194460.4,     128.9,     581.0,       1.5);       ( 570157.6, 4194480.4,     123.5,     581.0,       1.5);
    ( 570177.6, 4194480.4,     126.5,     581.0,       1.5);       ( 570197.6, 4194480.4,     130.2,     581.0,       1.5);
    ( 570217.6, 4194480.4,     131.8,     581.0,       1.5);       ( 570237.6, 4194480.4,     132.4,     581.0,       1.5);
    ( 570157.6, 4194500.4,     126.9,     581.0,       1.5);       ( 570177.6, 4194500.4,     130.6,     581.0,       1.5);
    ( 570197.6, 4194500.4,     133.6,     581.0,       1.5);       ( 570217.6, 4194500.4,     135.1,     581.0,       1.5);
    ( 570157.6, 4194520.4,     132.3,     581.0,       1.5);       ( 570177.6, 4194520.4,     135.0,     581.0,       1.5);
    ( 570197.6, 4194520.4,     136.7,     581.0,       1.5);       ( 570157.6, 4194540.4,     136.2,     581.0,       1.5);
    ( 570177.6, 4194540.4,     138.2,     581.0,       1.5);       ( 570157.6, 4194560.4,     139.3,     581.0,       1.5);
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                  ***       13:30:21
                                                                                   PAGE  11
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL


                                  *** DISCRETE CARTESIAN RECEPTORS ***
                                (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                           (METERS)

    ( 570177.6, 4194560.4,     140.7,     581.0,       1.5);       ( 570197.6, 4194560.4,     141.9,     581.0,       1.5);
```

```
   ( 570217.6, 4194560.4,    142.8,    581.0,      1.5);       ( 570237.6, 4194560.4,    143.5,    581.0,      1.5);
   ( 570257.6, 4194560.4,    144.2,    581.0,      1.5);       ( 570277.6, 4194560.4,    145.9,    581.0,      1.5);
   ( 570297.6, 4194560.4,    148.3,    581.0,      1.5);       ( 570317.6, 4194560.4,    152.3,    581.0,      1.5);
   ( 570337.6, 4194560.4,    155.0,    581.0,      1.5);       ( 570357.6, 4194560.4,    157.0,    581.0,      1.5);
   ( 570377.6, 4194560.4,    158.5,    581.0,      1.5);       ( 570397.6, 4194560.4,    160.0,    581.0,      1.5);
   ( 570417.6, 4194560.4,    161.2,    581.0,      1.5);       ( 570437.6, 4194560.4,    161.8,    581.0,      1.5);
   ( 570457.6, 4194560.4,    160.8,    581.0,      1.5);       ( 570477.6, 4194560.4,    160.3,    581.0,      1.5);
   ( 570497.6, 4194560.4,    164.1,    581.0,      1.5);       ( 570517.6, 4194560.4,    168.5,    581.0,      1.5);
   ( 570537.6, 4194560.4,    172.8,    581.0,      1.5);       ( 570557.6, 4194560.4,    176.4,    581.0,      1.5);
   ( 569797.3, 4194156.8,    146.0,    581.0,      1.5);       ( 569817.3, 4194156.8,    143.3,    581.0,      1.5);
   ( 569837.3, 4194156.8,    141.6,    581.0,      1.5);       ( 569857.3, 4194156.8,    137.8,    581.0,      1.5);
   ( 569877.3, 4194156.8,    133.6,    581.0,      1.5);       ( 569897.3, 4194156.8,    131.6,    581.0,      1.5);
   ( 569917.3, 4194156.8,    129.0,    581.0,      1.5);       ( 569797.3, 4194176.8,    144.4,    581.0,      1.5);
   ( 569817.3, 4194176.8,    141.4,    581.0,      1.5);       ( 569837.3, 4194176.8,    140.3,    581.0,      1.5);
   ( 569857.3, 4194176.8,    137.4,    581.0,      1.5);       ( 569877.3, 4194176.8,    133.9,    581.0,      1.5);
   ( 569897.3, 4194176.8,    131.2,    581.0,      1.5);       ( 569917.3, 4194176.8,    128.9,    581.0,      1.5);
   ( 569797.3, 4194196.8,    142.8,    581.0,      1.5);       ( 569817.3, 4194196.8,    138.9,    581.0,      1.5);
   ( 569837.3, 4194196.8,    138.2,    581.0,      1.5);       ( 569857.3, 4194196.8,    136.6,    581.0,      1.5);
   ( 569877.3, 4194196.8,    134.5,    581.0,      1.5);       ( 569897.3, 4194196.8,    131.8,    581.0,      1.5);
   ( 569917.3, 4194196.8,    130.1,    581.0,      1.5);       ( 569797.3, 4194216.8,    142.8,    581.0,      1.5);
   ( 569817.3, 4194216.8,    139.4,    581.0,      1.5);       ( 569837.3, 4194216.8,    137.8,    581.0,      1.5);
   ( 569857.3, 4194216.8,    136.0,    581.0,      1.5);       ( 569877.3, 4194216.8,    133.8,    581.0,      1.5);
   ( 569897.3, 4194216.8,    131.2,    581.0,      1.5);       ( 569917.3, 4194216.8,    129.4,    581.0,      1.5);
   ( 569937.3, 4194216.8,    127.6,    581.0,      1.5);       ( 569797.3, 4194236.8,    142.2,    581.0,      1.5);
   ( 569817.3, 4194236.8,    139.2,    581.0,      1.5);       ( 569837.3, 4194236.8,    137.0,    581.0,      1.5);
   ( 569857.3, 4194236.8,    134.6,    581.0,      1.5);       ( 569877.3, 4194236.8,    132.1,    581.0,      1.5);
   ( 569897.3, 4194236.8,    129.4,    581.0,      1.5);       ( 569917.3, 4194236.8,    127.4,    581.0,      1.5);
   ( 569937.3, 4194236.8,    125.3,    581.0,      1.5);       ( 569797.3, 4194256.8,    141.1,    581.0,      1.5);
   ( 569817.3, 4194256.8,    138.4,    581.0,      1.5);       ( 569837.3, 4194256.8,    135.8,    581.0,      1.5);
   ( 569857.3, 4194256.8,    132.6,    581.0,      1.5);       ( 569877.3, 4194256.8,    129.4,    581.0,      1.5);
   ( 569897.3, 4194256.8,    126.8,    581.0,      1.5);       ( 569917.3, 4194256.8,    124.1,    581.0,      1.5);
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                  ***       13:30:21
                                                                                 PAGE  12
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                               *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                           (1=YES; 0=NO)

          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

            NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS
INCLUDED IN THE DATA FILE.
```

```
                        *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                 (METERS/SEC)

                                   1.54,   3.09,   5.14,   8.23,  10.80,
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***        04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                  ***        13:30:21
                                                                                  PAGE  13
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                         *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file:   C:\Users\jni\Desktop\Orinda WTP\HRA\724930.SFC                          Met Version:  14134
  Profile file:   C:\Users\jni\Desktop\Orinda WTP\HRA\724930.PFL
  Surface format: FREE
  Profile format: FREE
  Surface station no.:    23230                Upper air station no.:    23230
            Name: OAKLAND/WSO_AP                              Name: OAKLAND/WSO_AP
            Year:   2009                                  Year:   2009

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS
WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 09 01 01   1 01  -17.2  0.303 -9.000 -9.000 -999.  401.    147.2  0.63   0.86   1.00    2.36   81.   10.0  282.5    2.0
 09 01 01   1 02  -21.8  0.383 -9.000 -9.000 -999.  569.    234.6  0.63   0.86   1.00    2.86   68.   10.0  282.0    2.0
 09 01 01   1 03  -26.3  0.460 -9.000 -9.000 -999.  749.    337.1  0.63   0.86   1.00    3.36   84.   10.0  280.9    2.0
 09 01 01   1 04  -15.4  0.270 -9.000 -9.000 -999.  368.    116.1  0.47   0.86   1.00    2.36   53.   10.0  280.9    2.0
 09 01 01   1 05  -26.3  0.460 -9.000 -9.000 -999.  749.    336.3  0.63   0.86   1.00    3.36   73.   10.0  280.4    2.0
 09 01 01   1 06  -21.9  0.383 -9.000 -9.000 -999.  573.    232.9  0.63   0.86   1.00    2.86   82.   10.0  280.4    2.0
 09 01 01   1 07  -22.0  0.383 -9.000 -9.000 -999.  569.    232.5  0.63   0.86   1.00    2.86   95.   10.0  279.9    2.0
 09 01 01   1 08  -11.2  0.196 -9.000 -9.000 -999.  238.     60.6  0.63   0.86   0.76    1.76   73.   10.0  279.9    2.0
 09 01 01   1 09   -2.2 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   0.39    0.00    0.   10.0  280.4    2.0
 09 01 01   1 10    6.8  0.266  0.264  0.016   98.  329.   -250.8  0.63   0.86   0.27    1.76   91.   10.0  280.9    2.0
 09 01 01   1 11   15.5 -9.000 -9.000 -9.000  177. -999. -99999.0  0.45   0.86   0.22    0.00    0.   10.0  282.0    2.0
 09 01 01   1 12   96.1  0.393  1.019  0.014  401.  591.    -57.4  0.22   0.86   0.21    3.36  266.   10.0  281.4    2.0
 09 01 01   1 13  102.5  0.395  1.092  0.014  462.  595.    -54.4  0.22   0.86   0.20    3.36  283.   10.0  282.0    2.0
 09 01 01   1 14   89.9  0.297  1.066  0.015  489.  394.    -26.5  0.22   0.86   0.21    2.36  249.   10.0  282.0    2.0
 09 01 01   1 15   62.1  0.383  0.954  0.014  507.  569.    -82.1  0.22   0.86   0.24    3.36  242.   10.0  282.5    2.0
 09 01 01   1 16   23.1  0.665  0.690  0.006  513. 1300.  -1150.4  0.52   0.86   0.33    4.86  304.   10.0  282.5    2.0
 09 01 01   1 17  -37.0  0.486 -9.000 -9.000 -999.  846.    280.6  0.22   0.86   0.56    4.86  291.   10.0  281.4    2.0
 09 01 01   1 18  -52.2  0.480 -9.000 -9.000 -999.  799.    191.9  0.52   0.86   1.00    3.86  307.   10.0  280.9    2.0
 09 01 01   1 19  -25.6  0.224 -9.000 -9.000 -999.  327.     39.8  0.52   0.86   1.00    2.36  334.   10.0  280.4    2.0
 09 01 01   1 20  -11.1  0.119 -9.000 -9.000 -999.  115.     13.8  0.52   0.86   1.00    1.76  317.   10.0  280.4    2.0
 09 01 01   1 21  -10.3  0.119 -9.000 -9.000 -999.   98.     14.7  0.52   0.86   1.00    1.76  320.   10.0  280.4    2.0
 09 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   1.00    0.00    0.   10.0  280.9    2.0
 09 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   1.00    0.00    0.   10.0  281.4    2.0
 09 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.45   0.86   1.00    0.00    0.   10.0  281.4    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 09 01 01 01   10.0 1   81.    2.36   282.6   99.0  -99.00  -99.00
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 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***        04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                          ***        13:30:21
                                                                                PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

               *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR
SOURCE GROUP: ALL      ***
                         INCLUDING SOURCE(S):     PAREA1      , PAREA2      , PAREA3      , PAREA4      , PAREA5
,

                              *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                           ** CONC OF PM_10    IN MICROGRAMS/M**3                      **

     X-COORD (M)   Y-COORD (M)       CONC                  X-COORD (M)   Y-COORD (M)       CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
       570340.12    4193908.77       0.40614               570300.12    4193928.77       0.44364
       570320.12    4193928.77       0.48046               570340.12    4193928.77       0.52069
       570260.12    4193948.77       0.51542               570280.12    4193948.77       0.54852
       570300.12    4193948.77       0.57942               570320.12    4193948.77       0.61737
       570340.12    4193948.77       0.66024               570240.12    4193968.77       0.61508
       570260.12    4193968.77       0.66896               570280.12    4193968.77       0.71184
       570300.12    4193968.77       0.74590               570320.12    4193968.77       0.78544
       570200.12    4193988.77       0.58757               570220.12    4193988.77       0.67350
       570240.12    4193988.77       0.75857               570260.12    4193988.77       0.83443
       570280.12    4193988.77       0.89429               570300.12    4193988.77       0.94310
       570320.12    4193988.77       0.99225               570160.12    4194008.77       0.42427
       570180.12    4194008.77       0.55269               570200.12    4194008.77       0.71712
       570220.12    4194008.77       0.81896               570240.12    4194008.77       0.92325
       570260.12    4194008.77       1.02726               570280.12    4194008.77       1.12960
       570300.12    4194008.77       1.24789               570140.12    4194028.77       0.38420
       570160.12    4194028.77       0.49928               570180.12    4194028.77       0.65503
       570200.12    4194028.77       0.85545               570220.12    4194028.77       1.00995
       570240.12    4194028.77       1.12931               570260.12    4194028.77       1.25155
       570280.12    4194028.77       1.38637               570300.12    4194028.77       1.58820
       570100.12    4194048.77       0.30408               570120.12    4194048.77       0.38373
       570140.12    4194048.77       0.48949               570160.12    4194048.77       0.61686
       570180.12    4194048.77       0.79789               570200.12    4194048.77       1.06637
       570220.12    4194048.77       1.26515               570240.12    4194048.77       1.40745
       570260.12    4194048.77       1.53897               570280.12    4194048.77       1.69094
       570060.12    4194068.77       0.27869               570080.12    4194068.77       0.31212
       570100.12    4194068.77       0.38295               570120.12    4194068.77       0.50562
       570140.12    4194068.77       0.67043               570160.12    4194068.77       0.85084
       570180.12    4194068.77       1.07560               570200.12    4194068.77       1.36739
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       570260.12    4194068.77       1.91572               570040.12    4194088.77       0.33436
       570060.12    4194088.77       0.36486               570080.12    4194088.77       0.42134
       570100.12    4194088.77       0.53380               570120.12    4194088.77       0.73715
       570140.12    4194088.77       1.01171               570160.12    4194088.77       1.29017
       570180.12    4194088.77       1.57729               570200.12    4194088.77       1.87358
       570220.12    4194088.77       2.10347               570240.12    4194088.77       2.28477
       570000.12    4194108.77       0.39087               570020.12    4194108.77       0.41781
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      570040.12   4194108.77       0.45391                  570060.12   4194108.77       0.50535
      570080.12   4194108.77       0.62093                  570100.12   4194108.77       0.83749
      570120.12   4194108.77       1.20712                  570140.12   4194108.77       1.67222
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                                                                              PAGE  15
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

              *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR
SOURCE GROUP: ALL      ***
                         INCLUDING SOURCE(S):     PAREA1      , PAREA2      , PAREA3      , PAREA4      , PAREA5
,

                                *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                             ** CONC OF PM_10    IN MICROGRAMS/M**3                      **

     X-COORD (M)   Y-COORD (M)       CONC                  X-COORD (M)   Y-COORD (M)       CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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      569980.12   4194128.77       0.42729                  570000.12   4194128.77       0.51462
      570020.12   4194128.77       0.58737                  570040.12   4194128.77       0.65194
      570060.12   4194128.77       0.72787                  569940.12   4194148.77       0.28096
      569960.12   4194148.77       0.36854                  569980.12   4194148.77       0.49364
      570000.12   4194148.77       0.64904                  570020.12   4194148.77       0.81029
      569940.12   4194168.77       0.28864                  569960.12   4194168.77       0.38259
      569980.12   4194168.77       0.52923                  570000.12   4194168.77       0.75234
      569940.12   4194188.77       0.28140                  569960.12   4194188.77       0.38838
      569980.12   4194188.77       0.54247                  570417.60   4194240.41       3.65061
      570437.60   4194240.41       3.15223                  570397.60   4194260.41       3.20809
      570417.60   4194260.41       2.72230                  570437.60   4194260.41       2.41422
      570457.60   4194260.41       2.17000                  570477.60   4194260.41       1.96288
      570377.60   4194280.41       2.48636                  570397.60   4194280.41       2.27442
      570417.60   4194280.41       2.06129                  570437.60   4194280.41       1.89286
      570457.60   4194280.41       1.74466                  570337.60   4194300.41       2.13129
      570357.60   4194300.41       2.00926                  570377.60   4194300.41       1.89985
      570397.60   4194300.41       1.77830                  570417.60   4194300.41       1.65550
      570437.60   4194300.41       1.53963                  570317.60   4194320.41       1.77835
      570337.60   4194320.41       1.68120                  570357.60   4194320.41       1.59963
      570377.60   4194320.41       1.52042                  570397.60   4194320.41       1.44223
      570417.60   4194320.41       1.36373                  570277.60   4194340.41       1.62145
      570297.60   4194340.41       1.50690                  570317.60   4194340.41       1.42906
      570337.60   4194340.41       1.36149                  570357.60   4194340.41       1.29971
      570377.60   4194340.41       1.24468                  570257.60   4194360.41       1.35779
      570277.60   4194360.41       1.27763                  570297.60   4194360.41       1.20525
      570317.60   4194360.41       1.15657                  570337.60   4194360.41       1.11112
      570357.60   4194360.41       1.06731                  570237.60   4194380.41       1.12987
      570257.60   4194380.41       1.06803                  570277.60   4194380.41       1.01978
      570297.60   4194380.41       0.97513                  570317.60   4194380.41       0.94402
      570337.60   4194380.41       0.91329                  570217.60   4194400.41       0.94015
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      570277.60   4194400.41       0.82406                  570297.60   4194400.41       0.79330
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        570317.60   4194400.41       0.77369                570197.60   4194420.41       0.76943
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        570257.60   4194420.41       0.71484                570277.60   4194420.41       0.68858
        570297.60   4194420.41       0.66442                570177.60   4194440.41       0.63190
        570197.60   4194440.41       0.62786                570217.60   4194440.41       0.62205
        570237.60   4194440.41       0.61457                570257.60   4194440.41       0.60087
        570277.60   4194440.41       0.58460                570157.60   4194460.41       0.52336
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                                                                                   PAGE  16
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

              *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR
SOURCE GROUP: ALL      ***
                         INCLUDING SOURCE(S):     PAREA1      , PAREA2      , PAREA3      , PAREA4      , PAREA5
,

                                 *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                              ** CONC OF PM_10    IN MICROGRAMS/M**3                        **

     X-COORD (M)   Y-COORD (M)        CONC                    X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        570177.60   4194460.41       0.51958                570197.60   4194460.41       0.50824
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        570177.60   4194480.41       0.43142                570197.60   4194480.41       0.42040
        570217.60   4194480.41       0.41657                570237.60   4194480.41       0.41577
        570157.60   4194500.41       0.36755                570177.60   4194500.41       0.36083
        570197.60   4194500.41       0.35373                570217.60   4194500.41       0.35131
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        570177.60   4194540.41       0.26231                570157.60   4194560.41       0.22980
        570177.60   4194560.41       0.22961                570197.60   4194560.41       0.22879
        570217.60   4194560.41       0.22855                570237.60   4194560.41       0.22904
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        570337.60   4194560.41       0.21443                570357.60   4194560.41       0.21130
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        570417.60   4194560.41       0.20364                570437.60   4194560.41       0.20170
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        569897.28   4194176.85       0.16958                569917.28   4194176.85       0.21307
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        569917.28   4194196.85       0.20960                569797.28   4194216.85       0.07149
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***       04/25/20
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                                                                                   PAGE  17
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

              *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR
SOURCE GROUP: ALL      ***
                         INCLUDING SOURCE(S):     PAREA1      , PAREA2      , PAREA3      , PAREA4      , PAREA5
,

                                 *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                              ** CONC OF PM_10    IN MICROGRAMS/M**3                        **

     X-COORD (M)   Y-COORD (M)       CONC                   X-COORD (M)   Y-COORD (M)       CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                         ***       13:30:21
                                                                                   PAGE  18
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

                          *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   5 YEARS
***



                           ** CONC OF PM_10    IN MICROGRAMS/M**3                        **

                                                                            NETWORK
GROUP ID                  AVERAGE CONC              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE
GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


ALL        1ST HIGHEST VALUE IS       3.65061 AT (  570417.60,  4194240.41,   124.59,   581.00,    1.50)  DC
       2ND HIGHEST VALUE IS       3.20809 AT (  570397.60,  4194260.41,   120.32,   581.00,    1.50)  DC
       3RD HIGHEST VALUE IS       3.15223 AT (  570437.60,  4194240.41,   127.57,   581.00,    1.50)  DC
       4TH HIGHEST VALUE IS       2.72230 AT (  570417.60,  4194260.41,   125.29,   581.00,    1.50)  DC
       5TH HIGHEST VALUE IS       2.66473 AT (  570200.12,  4194108.77,   121.80,   581.00,    1.50)  DC
       6TH HIGHEST VALUE IS       2.48636 AT (  570377.60,  4194280.41,   123.61,   581.00,    1.50)  DC
       7TH HIGHEST VALUE IS       2.41755 AT (  570180.12,  4194108.77,   122.52,   581.00,    1.50)  DC
       8TH HIGHEST VALUE IS       2.41422 AT (  570437.60,  4194260.41,   128.35,   581.00,    1.50)  DC
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   9TH HIGHEST VALUE IS       2.28477 AT (  570240.12,  4194088.77,   119.15,   581.00,    1.50)  DC
  10TH HIGHEST VALUE IS       2.27442 AT (  570397.60,  4194280.41,   125.79,   581.00,    1.50)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  19191 ***   *** C:\Lakes\AERMOD View\Orinda WTP-rev\Orinda WTP-rev.isc
***       04/25/20
 *** AERMET - VERSION  14134 ***   ***                                                    ***       13:30:21
                                                                                          PAGE  19
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  FLGPOL  RURAL

 *** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

 A Total of           0 Fatal Error Message(s)
 A Total of           1 Warning Message(s)
 A Total of        7953 Informational Message(s)

 A Total of       43872 Hours Were Processed

 A Total of        7152 Calm Hours Identified

 A Total of         801 Missing Hours Identified (  1.83 Percent)


   ******** FATAL ERROR MESSAGES ********
            ***  NONE  ***


   ********   WARNING MESSAGES   ********
 MX W481   43873        MAIN: Data Remaining After End of Year. Number of Hours=          48

   ***********************************
   *** AERMOD Finishes Successfully ***
   ***********************************
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APPENDIX F

Historic Landmark Ordinance

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BEFORE THE CITY COUNCIL OF THE CITY OF ORINDA

In the Matter of:)
)
Designating the Orinda Filter)
Plant as an Historical Landmark)
(Municipal Code Section 7-4011))

ORDINANCE NO.: 88-12

The City Council of the City of Orinda does ordain as follows:

SECTION 1. Introduction.

a. The Historic Landmark Ordinance (Municipal Code Sections 7-4001 through 7-4020) authorizes the City Council to designate by ordinance a site, building, structure, monument, tree, work of art or other object as an historical landmark. (Section 7-4011)

b. The Historic Landmark Committee has recommended that the Orinda Filter Plant be designated as an historic landmark. (Section 7-4014 (a))

c. On September 6, 1988, the Planning Commission held a noticed public hearing on the proposed designation. The Commission voted to recommend to the City Council that the designation be approved, and submitted a written recommendation to the Council. (Section 7-4014 (b))

d. On October 25, 1988, the City Council held a noticed public hearing and determined to approve the designation.

SECTION 2. The Property.

a. Description. The property is known as the Orinda Filter Plant, and is located on a 16-1/2 acre site at 190 Camino Pablo, Orinda (APN 263-110-001). The property boundaries are set forth more fully in Exhibit A attached to this ordinance.

b. Owner. The owner of the property is the East Bay Municipal Utility District.

c. Historical Background. A summary of the historical background of the site is attached as "Exhibit B." A more extensive report and photographs are on file in the City Offices.

d. Primary Features. The following primary features are considered to be of historical significance:

> Three buildings designed by Mark Daniels (1934): the main building, the chemical building, and the grounds/maintenance building (especially the gargoyles at the entrance, the arched entrance ceiling and chandelier, the lights on the building sides, the railings on the wells in the central section, and the light posts outside).

SECTION 3. Findings.

a. The City Council finds that the Orinda Filter Plant:

1. is part of the development and heritage characteristics of Orinda;
2. is located on a site of significant historic events;
3. represents a distinctive example of an architectural period and style; and
4. is associated with important governmental and social developments of the City.

(Sections 7-4012(1), (2), (5) and (8)).

SECTION 4. Designation.

The Orinda Filter Plant is designated as an historic landmark.

Notwithstanding the provisions of the Historical Landmark Ordinance (87-1), pursuant to Government Code Section 53091, the East Bay Municipal Utility District Filter Plant is exempt from any regulations imposed under the Historical Landmark Ordinance. The sole purpose of this landmark designation is to recognize the site as a place of historical significance.

The Planning Department is directed to add the Orinda Filter Plant to its list of designated landmarks. (Section 7-4018)

The City Clerk is directed to: 1) send a copy of this ordinance within 10 days of its adoption to the applicant and the property owner, and 2) file a copy of the ordinance in the office of the County Recorder. (Section 7-4014(c)).

SECTION 5. Publication.

The City Clerk shall either (1) have this ordinance published once within fifteen days after adoption in a newspaper of general circulation, or (2) have a summary of this ordinance published twice in a newspaper of general circulation once five (5) days before its adoption and again within fifteen (15) days after adoption.

SECTION 6. Effective Date.

This ordinance becomes effective thirty (30) days after adoption.

The foregoing ordinance was introduced at a meeting of the City Council of the City of Orinda at a meeting held on October 25, 1988, and was adopted and ordered published at a meeting of the Council held on November 15, 1988 by the following vote:

AYES: COUNCILMEMBERS: Dabel, Guidotti, Harb, Heggie, Landers

NOES: COUNCILMEMBERS: None

ABSTAIN: COUNCILMEMBERS: None

ABSENT: COUNCILMEMBERS: None

/s/ BOBBIE LANDERS
MAYOR

ATTEST:

THOMAS C. SINCLAIR
CITY CLERK

Exhibit A - Property Description
Exhibit B - Summary of Historical Background

EXHIBIT A

ORINDA FILTER PLANT
PROPOSED LANDMARK
CITY OF ORINDA

The Orinda Filter Plant

(1) Clear Identification and Description

The Orinda Filter Plant is identified in the Contra Costa County Assessor's public records as Parcel Number 263-110-001. The owner and operator of the Plant is the East Bay Municipal Utility District, 2130 Adeline Avenue, Oakland, California, 94607.

The Plant is located on a 16-1/2 acre site at 190 Camino Pablo, Orinda. Construction of the Filter Plant was started in the early 1930s, was completed in 1935 and open for service in 1936.

The Filter Plant consists of the main building, the chemical building, where chlorination takes place, and the gardeners and grounds-maintenance building. These three units were constructed at the same time.

In 1961 a new treatment system was inaugurated by Orinda. In the winter Orinda can serve all of the area served by EBMUD, but in the summer all of the areas served by EBMUD are served through the Orinda, El Sobrante and Oakland Filter Plants.

In 1988 EBMUD built two wash water filter ponds on the north side of Manzanita Drive in Orinda. A map of the area served by EBMUD in 1988 is attached. The purple and green lines on the map show service to these areas by El Sobrante and Oakland Filter Plants, respectively.

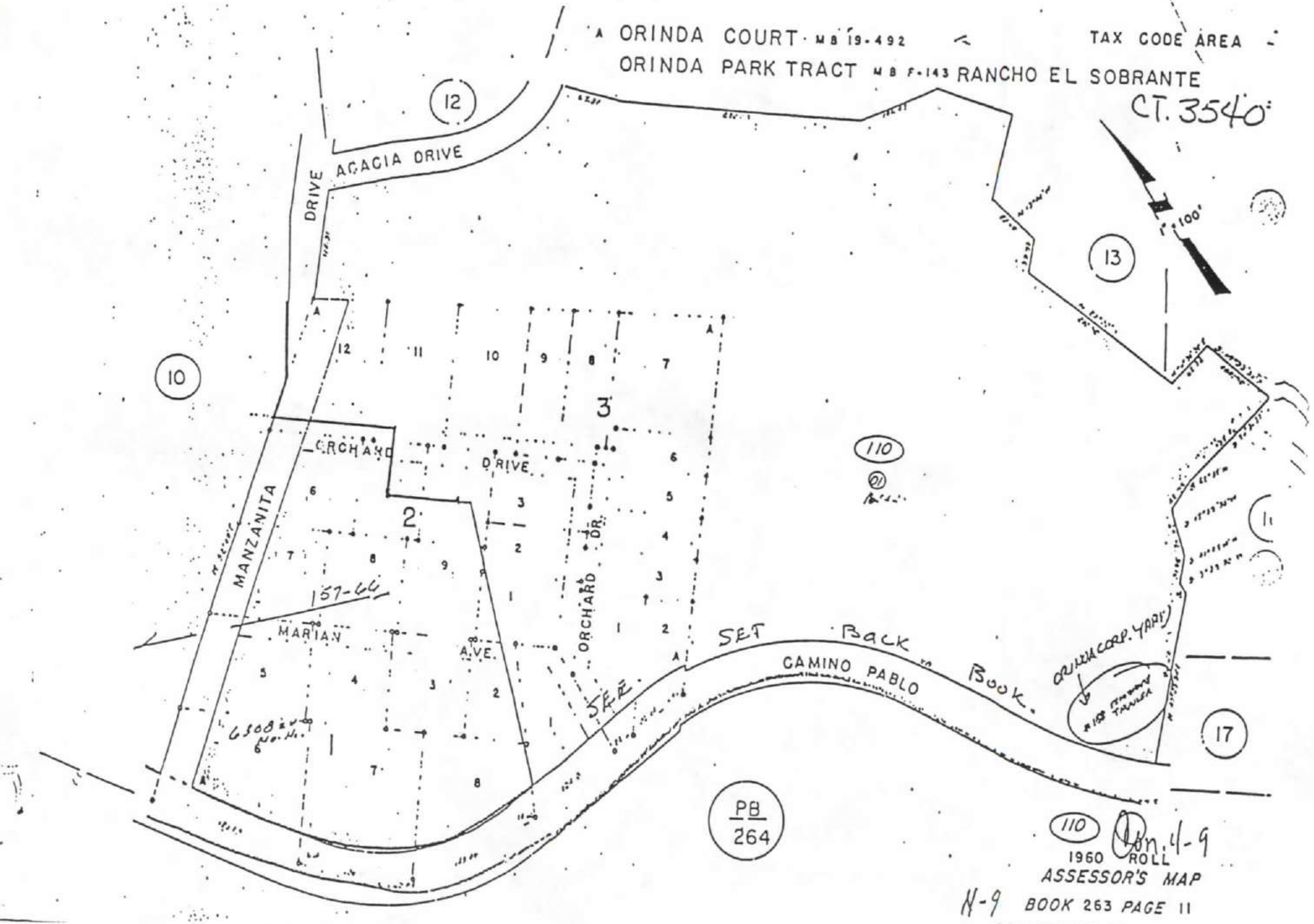

A ORINDA COURT · M B 19-492
ORINDA PARK TRACT M B F-143 RANCHO EL SOBRANTE
TAX CODE AREA
CT. 3540
1" = 100'
ACACIA DRIVE
DRIVE
MANZANITA
ORCHARD DRIVE
ORCHARD DR.
MARIAN AVE.
CAMINO PABLO
SET BACK
SEE BOOK
157-66
6308 No. H.
ORINDA CORP. YARD
110
01
PB 264
10
12
13
17
2
3
1960 ROLL
ASSESSOR'S MAP
N-9 BOOK 263 PAGE 11
110 Oon. 4-9

EXHIBIT B

Orinda Filter Plant

(3) Historical Background:

The Orinda Filter Plant is the largest of its type in the EBMUD system. It provides the filtration for all the water delivered to East Bay cities from Hayward to Crockett, and also serves the northern half of Orinda from Highway 24 to Bear Creek Road. Water for the southern half of Orinda, from Highway 24 to and including Moraga, comes from another filter plant located in Lafayette.

An ample supply of quality water has always been imperative for the settlement, growth and economic progress of the East Bay and Orinda. Soon after California statehood, as early as the 1860s, many small water companies were started to provide service to the growing population. By the turn of the century, one business - the Peoples Water Company - through years of acquisitions, became the dominant service in Western Contra Costa County, providing water for much of Oakland and Berkeley through reservoirs, flumes, aqueducts, pipelines and local water mains. The few ranches in Orinda got water from their own individual wells and springs. By 1917 ownership changed again, as Peoples was acquired by the East Bay Water Company, whose most distinguished action was the building of the San Pablo Reservoir, dedicated in 1920. The ranches and a few homes in the Orinda area still were too few in number to justify service from the Utility.

By 1921 E. I. deLaveaga developed his own water company and pipelines to provide service for the prospective buyers of hia new subdivision in Orinda.

But destiny was not to be denied. In 1923 the growing population of Alameda and Contra Costa Counties voted to establish the East Bay Municipal Utility District. Within the next four years, EBMUD had purchased all of the local watershed lands of the East Bay Water Company, built the Pardee Reservoir in the Sierra Foothills, and brought its water to the Orinda-San Pablo area from Pardee, using the Mokelumne River and large pipelines.

An independent water district operated in Orinda from 1932 to 1952, when it was finally dissolved and EBMUD became the sole' supplier.

(4) Justification of Proposed Designation

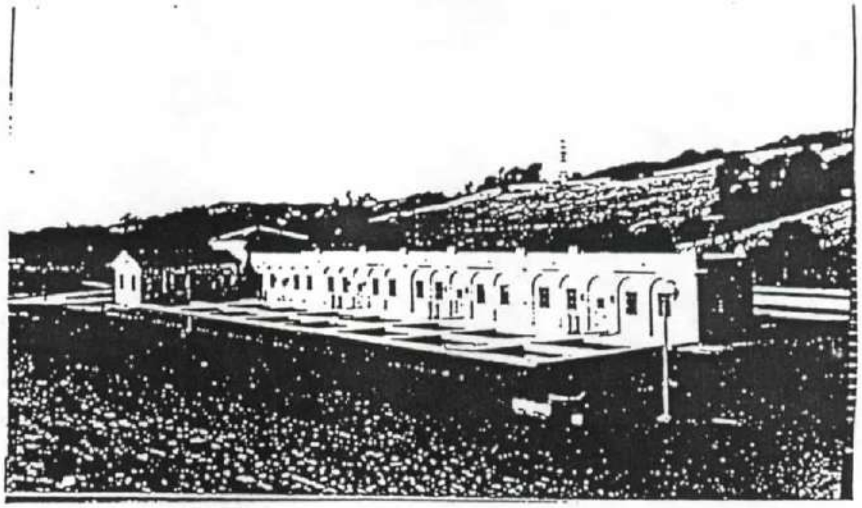
The Orinda Filter Plant consists of three buildings, and was designed by Mark Daniels in 1934, whose architectural talent developed this industrial building in the then-current Art Deco style. Essentially all of this design remains today. For example: the gargoyles at the entrance; the arched entrance ceiling and chandelier; the lights on the building sides; the railings on the wells in the central section; the light posts outside.

The front door was originally built of oak with glass panelled side windows fitted to the arched shape of the building entrance. The oak was later replaced by the present aluminum and glass, in a way that maintained the shape of the entrance and building style.

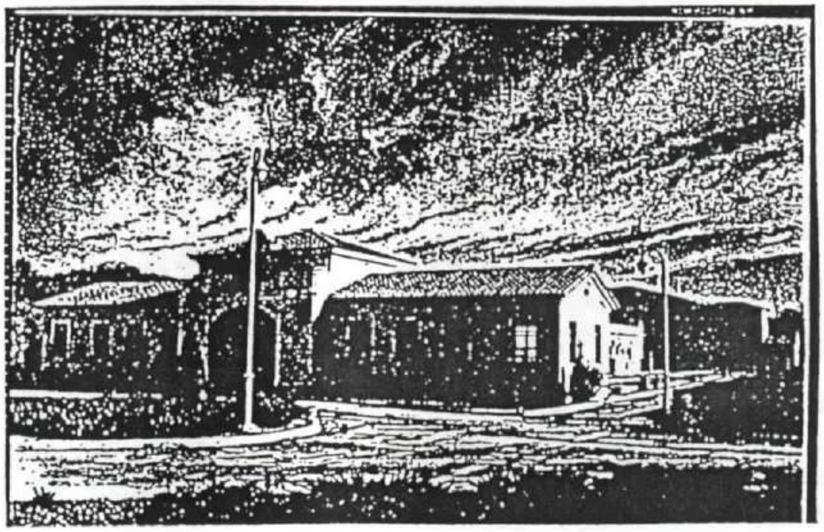
(5) Criteria:

The Orinda Landmarks Committee believes the Orinda Filter Plant meets the following criteria necessary to designate it as an historical landmark:

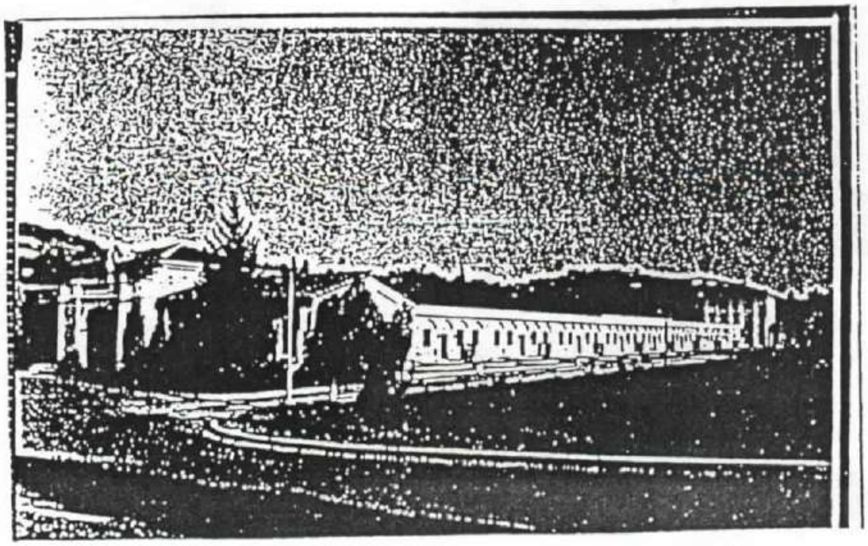
(2) Photographs



Original Construction
1929



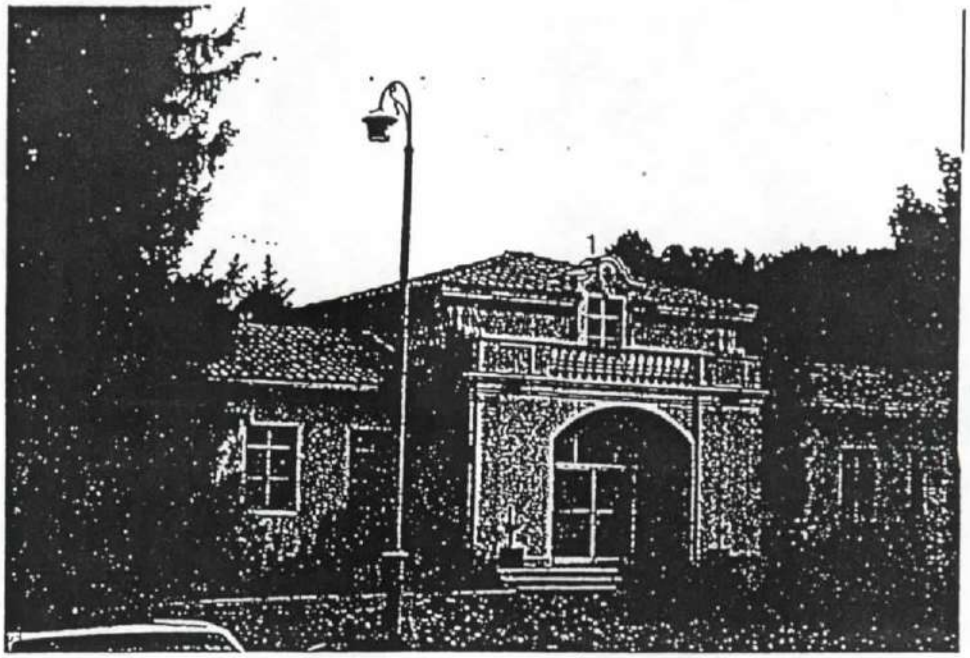
Jan. 9, 1939



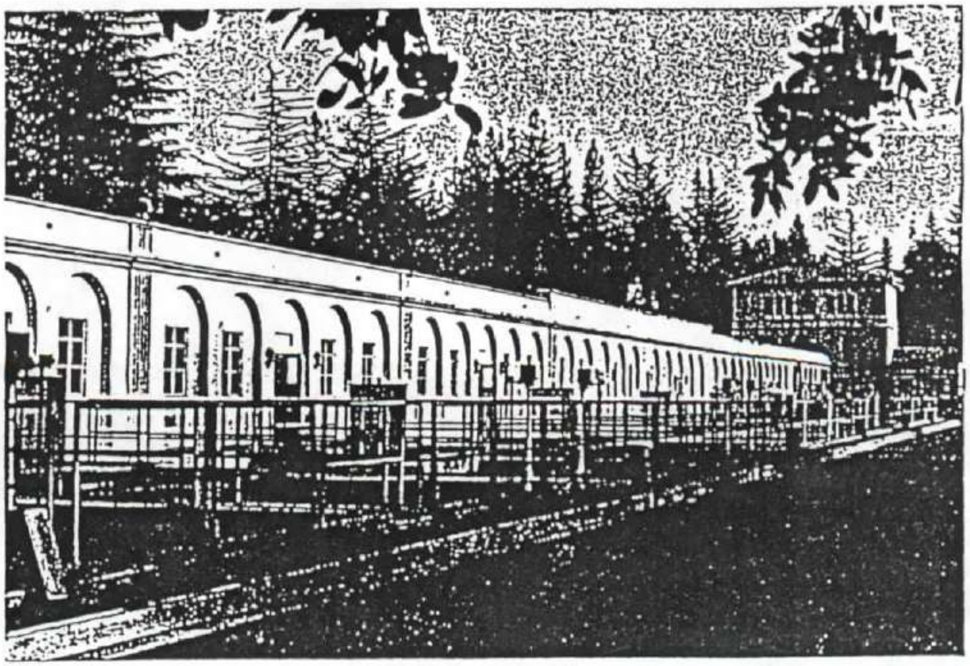
1960's

(2) Photographs

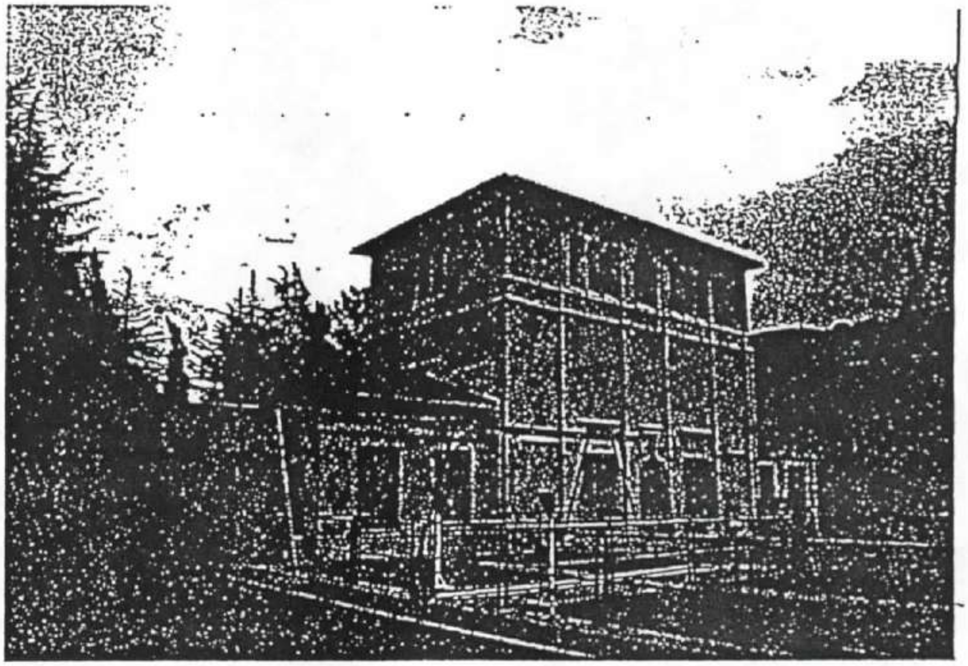
Jan., 1988



Jan., 1988



(2) Photographs



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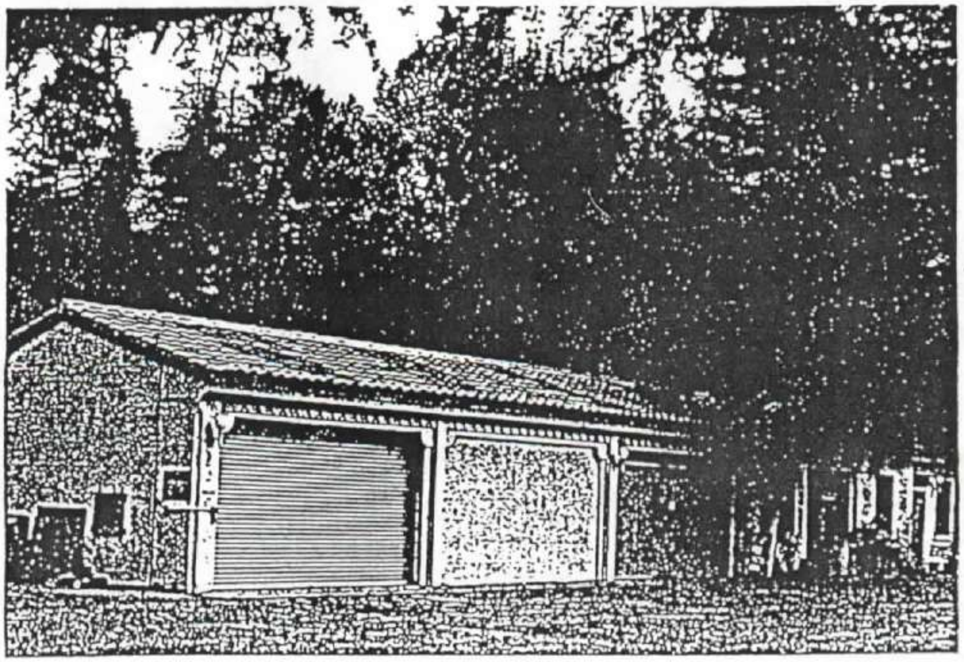

Jan., 1988

APPENDIX G

Traffic and Circulation Technical Report

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Prepared by
FEHR PEERS

100 Pringle Avenue
Suite 600
Walnut Creek, CA 94596

April 2020

Traffic and Circulation Technical Report

Orinda Water Treatment Plant Disinfection Improvements Project

Prepared for:
East Bay Municipal Utility District

East Bay Municipal Utility District

Orinda Water Treatment Plant Disinfection Improvements Project

Traffic and Circulation Technical Report

Prepared for:

East Bay Municipal Utility District

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April 2020

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Chapter 1. Introduction

The Orinda Water Treatment Plant Disinfection Improvements Project (Project) includes constructing new and upgrading existing facilities at the Orinda Water Treatment Plant (Orinda WTP), located at 190 Camino Pablo (Project site), in the city of Orinda, California. The Orinda WTP is located north of Highway 24 and is bounded by Camino Pablo to the southwest and San Pablo Creek to the northeast.

EBMUD is implementing a planned system of improvements as part of its Water Treatment and Transmission Improvements Program (WTTIP). The WTTIP includes new facilities and upgrades to existing facilities primarily in the cities of Lafayette, Moraga, Orinda, and Walnut Creek. The improvements are needed to address systemwide water treatment and distribution needs to ensure a reliable water supply for current and future customers. Improvements to the disinfection[1] system at the Orinda WTP were included in the WTTIP.

The environmental impacts of the WTTIP were evaluated in the WTTIP Environmental Impact Report (EIR, State Clearinghouse No. 2005092019), which was certified in December 2006. The WTTIP EIR evaluated some improvements at a project level, and some improvements, for which sufficient design details were not available, were evaluated at a program level. The installation of ultraviolet (UV) disinfection facilities and chlorine contact basins (CCBs) was evaluated programmatically in the WTTIP EIR.

Since preparation of the WTTIP EIR, the specific details of the design for disinfection improvements at the Orinda WTP, which were not available when the WTTIP EIR was prepared, have been developed. East Bay Municipal Utility District (EBMUD) is preparing a Supplemental EIR to the WTTIP EIR to analyze impacts and determine mitigation measures for the Project. Thus, this Project-specific supplemental traffic and circulation report has been prepared to address the current Project which will be used to analyze the traffic impacts in the Supplemental EIR. The mitigation measures provided in the adopted WTTIP Mitigation Monitoring and Reporting Program that were identified for improvements at the Orinda WTP have been incorporated into the Project description or revised and included as Project mitigation measures.

The Project includes a new disinfection facility comprised of a below-grade UV disinfection/CCB system and an aboveground maintenance and UV electrical building, two electrical buildings, a standby generator, pipelines and vaults, and other supporting facilities. The existing maintenance building at the Project disinfection facility site would be demolished as its associated uses incorporated into the new facility and a Grounds Maintenance Building on the Orinda WTP site.

The purpose of this report is to document the Existing Conditions and Cumulative Conditions and understand how the Project will affect the roadways during the duration of the Project.

---

[1] The purpose of disinfection is to minimize or eliminate the potential for disease from waterborne pathogens.

Schedule, Work Hours, and Staging

Table 1 lists Project construction activities and estimated durations for the Project work. Listed activities are generally sequential, with some overlapping activities as noted. Construction haul traffic for soil and demolition hauling and heavy equipment delivery trucks would occur between 9:00 AM and 4:00 PM Mondays through Fridays. Concrete delivery trucks for all pours occur from 6:00 AM to 6:00 PM throughout the year. Due to site constraints, large construction trucks can only access the Orinda WTP site one at a time. Therefore, haul trucks and concrete trucks that overlap in schedule on Table 1 will not overlap during a given hour, and only the larger estimate of the two truck types was used for this analysis (i.e. these two truck trip generation estimates will not be additive).

Table 1: Truck and Worker Vehicle Trip Estimates for Orinda WTP Disinfection Improvements Project

Construction Phasing	Working Days	Max Hourly One-Way Trips	
		Trucks[1]	Workers
Site Mobilization	88	3	20
Demolition of Maintenance & Grounds Service Buildings and Site Clearing	10	5	20
Excavation and Retaining Wall Construction	11	20	5
Concrete and Miscellaneous Work	19	16	5
Pre-Fabricated Building Installation	33	-	10
Upper (South) Spillway Bifurcation and Briones Weir Actuator Installation	73	-	5
South Generator Construction	259	-	5
Install Secant Pile Wall	56	4	20
Upper Excavation	206	20	20
Large Diameter Pipeline Jacking and Installation	351	20	15
Lower Excavation	52	20	20
CCB Concrete Work	378	16	20
CCB Backfill	37	20	20
UV Concrete Work	193	16	20
UV Backfill	232	20	20
Large Diameter Pipeline Tie-Ins during Winter Shutdown	56	-	20

Table 1: Truck and Worker Vehicle Trip Estimates for Orinda WTP Disinfection Improvements Project

Construction Phasing	Working Days	Max Hourly One-Way Trips	
		Trucks[1]	Workers
Backfill of Large Diameter Pipeline Tie-In Vaults	57	20	20
MAUVE Concrete Work	204	16	25
MAUVE Building Construction	129	20	25
Perimeter Fencing Installation	11	-	5
Landscaping	24	-	3
Excavation	1	20	5
Concrete and Miscellaneous Work	1	16	5
Pre-Fabricated Building Installation	34	-	10
Excavation	3	20	5
Concrete and Miscellaneous Work	21	16	5
Pre-Fabricated Building Installation and Paving	39	-	10
LAPP 2 – Electrical Modifications	66	-	2

Note:

1. Maximum number of trucks going to and leaving the project site in one hour.

Source: EBMUD, 2019.

Approach to Analysis

Fehr & Peers evaluated potential traffic and circulation effects based on the following:

- Field reconnaissance of the Project site and surrounding roadway network, including intersection control, lane configurations, pedestrian and bicycle facilities, and transit routes.
- Morning (7:00 AM to 9:00 AM), midday (11:00 AM to 3:00 PM), and evening (4:00 PM to 6:00 PM) peak period traffic volume counts for study intersections on a typical weekday when local schools were in session (Tuesday, November 5, 2019).
- Daily roadway segment counts along proposed truck routes.
- Estimated Project-generated peak-hour and daily worker and construction truck trips for the construction phase with the largest number of trips.
- Estimated Project-generated peak-hour and daily worker and construction truck trips for other EBMUD projects occurring in Orinda.
- Distribution of Project-generated trips and trips from other EBMUD projects to and from various sites/parking facilities.

Analysis Locations

Twelve study intersections and five roadway segments in the vicinity of the Project site were selected for analysis, as these locations provide access to the site and are likely routes that worker and construction vehicles will use during the construction phase of the proposed Project. The study intersection and roadway segment locations are listed below. The study intersection locations are shown on Figure 1 . Roadway segments are shown on Figure 2.

Study Intersections

1. Camino Pablo & SR-24 Eastbound Off-Ramp
2. Camino Pablo, Santa Maria Way & Camino Pablo Southbound/SR-24 Westbound On-Ramp
3. Camino Pablo & Camino Sobrante
4. Camino Pablo & Orinda Way/El Toyonal
5. Camino Pablo & Miner Road
6. Camino Pablo & Ardilla Road
7. Camino Pablo & Orinda WTP South Gate Entrance/Unnamed Road
8. Camino Pablo & Claremont Avenue
9. Camino Pablo & Manzanita Drive
10. Camino Pablo & Los Amigos Court/Sports Field
11. Camino Pablo & Monte Vista Road/Wagner Ranch
12. Camino Pablo & Wildcat Canyon Road/Bear Creek Road

Roadway Segments

1. Camino Pablo, South of Bear Creek Road/Wildcat Canyon Road
2. Bear Creek Road, East of Camino Pablo
3. Manzanita Drive, East of Camino Pablo
4. Camino Pablo, South of Manzanita Drive
5. Camino Pablo, South of Santa Maria Way

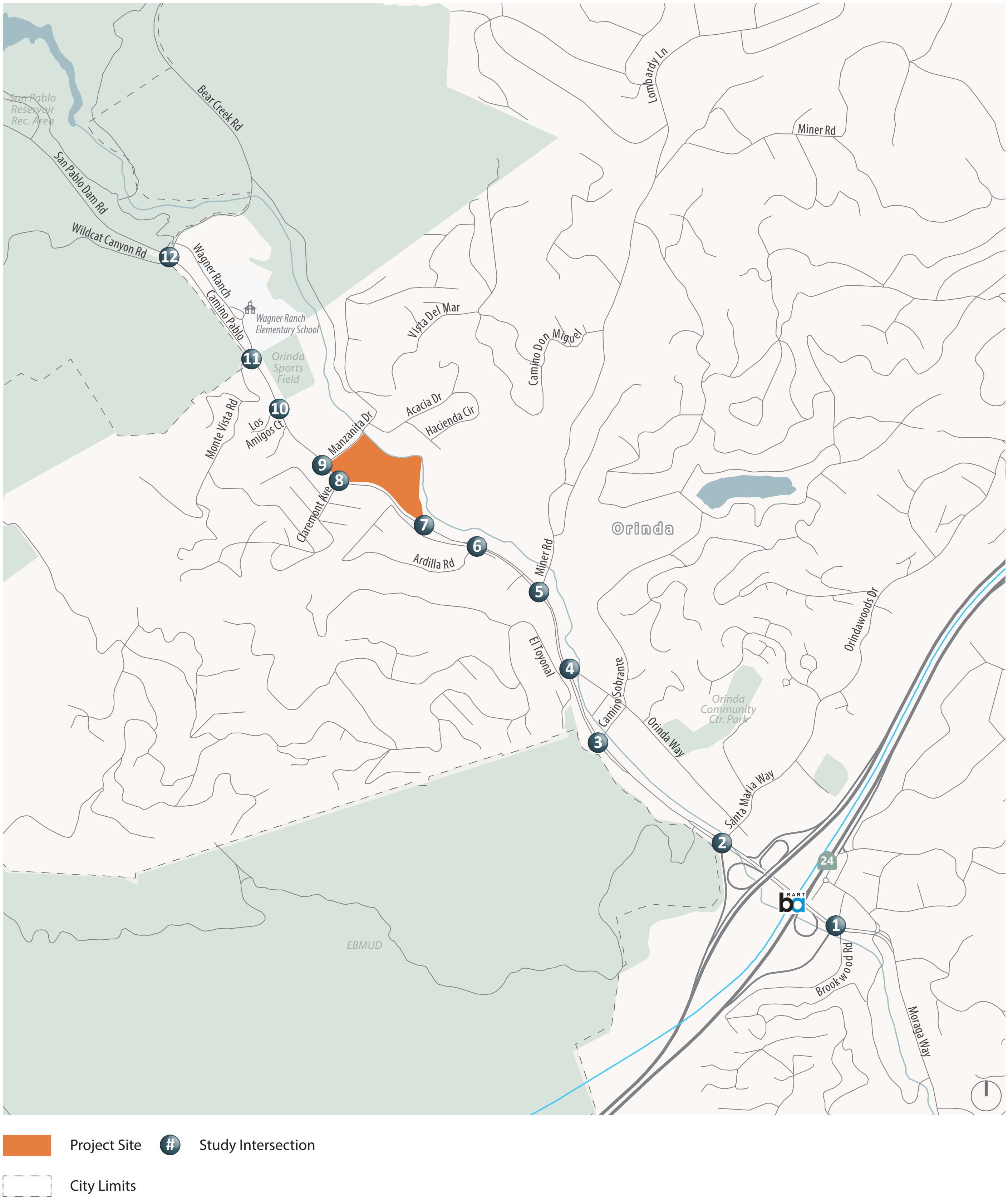


Figure 1

Project Site Vicinity and Analysis Locations

WC19-3659_1_StudyArea

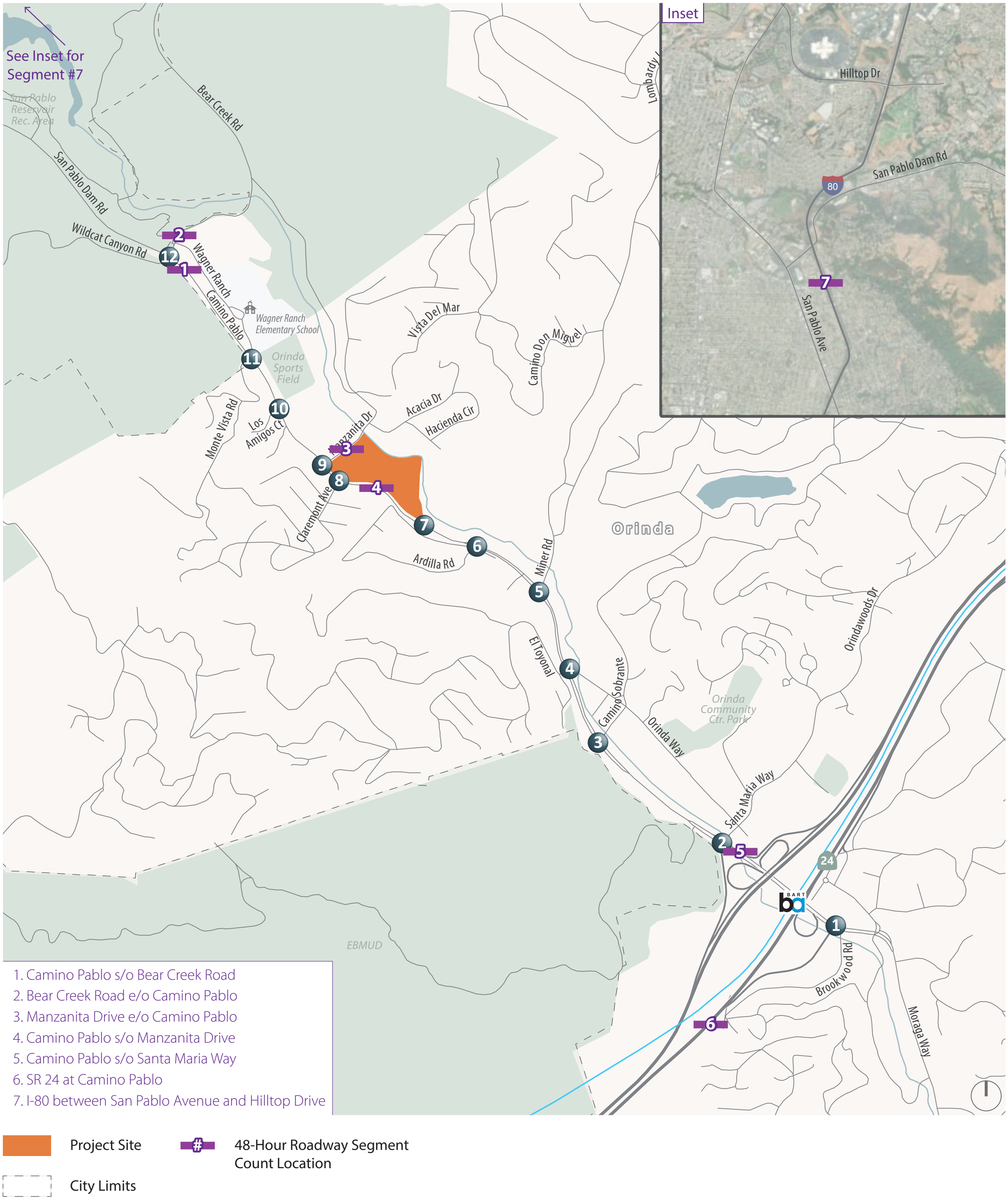


Figure 2

Study Segment Locations

Analysis Methods

The operations of roadway facilities are described with the term “level of service” (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., best operating conditions) to LOS F (worst operating conditions). LOS E corresponds to operations “at capacity.” When volumes exceed capacity, stop-and-go conditions result, and operations are designated as LOS F.

Different methods were used to assess operating conditions for the various types of facilities analyzed in this study, including signalized intersections and roadway segments. The methods for each of these facilities are described in the following sections.

Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the method from Chapter 19 of the Transportation Research Board’s *Highway Capacity Manual 2000* (HCM 2000) and *Highway Capacity Manual2010* (HCM 2010). HCM 2000 was used for Intersection 1 only. The Synchro software has limitations where 5-leg intersections can only be reported in HCM 2000. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. Table 2 summarizes the relationship between average delay per vehicle and LOS for signalized intersections. Synchro software version 10 was used to calculate signalized intersection LOS.

Table 2: Signalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	< 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and/or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with long delays indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0

Source: *Highway Capacity Manual* 2010 (Transportation Research Board, 2010).

Under Section 53091 of the California Government Code, EBMUD, as a local agency and utility district, is not subject to building and land use zoning ordinances (such as tree ordinances) for projects involving facilities for the production, generation, storage, treatment, or transmission of water. However, EBMUD's practice is to work with local jurisdictions and neighboring communities during project planning and to consider local environmental protected policies for guidance.

The City of Orinda General Plan Growth Management Element Policy 4.3.3.C provides LOS standards for signalized intersections in Orinda. All signalized intersections in Orinda are designated either "suburban" or "Central Business District" with their respective traffic standard for LOS. The LOS standards for Project study intersections are summarized in Table 3.

Table 3: Level of Service Standards for Signalized Intersections

Signalized Intersection	General Plan Designated Category	LOS	Delay[1]
1. Camino Pablo & SR-24 Eastbound Off-Ramp	Central Business District	Low-F	< 80.0
2. Camino Pablo, Santa Maria Way & Camino Pablo Southbound/SR-24 Westbound On-Ramp	Central Business District	Low-F	< 80.0
3. Camino Pablo & Camino Sobrante	Central Business District	Low-E	< 67.0
4. Camino Pablo & Orinda Way/El Toyonal	Central Business District	Low-E	< 67.0
5. Camino Pablo & Miner Road	Suburban	Low-D	< 47.0
6. Camino Pablo & Ardilla Road	Suburban	Low-D	< 47.0
7. Camino Pablo & Orinda WTP South Gate Entrance/Unnamed Road	Suburban	Low-D	< 47.0
8. Camino Pablo & Claremont Avenue	Suburban	Low-D	< 47.0
9. Camino Pablo & Manzanita Drive	Suburban	Low-D	< 47.0
10. Camino Pablo & Los Amigos Court/Sports Field	Suburban	Low-D	< 47.0
11. Camino Pablo & Monte Vista Road/Wagner Ranch	Suburban	Low-D	< 47.0
12. Camino Pablo & Wildcat Canyon Road/Bear Creek Road	Suburban	Low-D	< 47.0

Notes:
1. Delay measured in seconds.

Source: Growth Management Element of the City of Orinda General Plan

Roadway Segments

Roadway segment counts were collected in May 2019 at five locations along the corridor. The roadway segment data was used to get the average daily traffic and morning and afternoon volumes presented in Table 4.

Table 4: Existing Daily Traffic Volumes

Roadway	Location	Average Daily Traffic[1]	AM Peak Hour[2]	Midday Peak Hour[3]	PM Peak Hour[4]
1. Camino Pablo	South of Bear Creek Road/ Wildcat Canyon Road	17,211	1,720	1,014	1,765
2. Bear Creek Road	East of Camino Pablo	2,618	539	197	269
3. Manzanita Drive	East of Camino Pablo	1,022	108	86	100
4. Camino Pablo	South of Manzanita Drive	20,364	1,917	1,230	2,032
5. Camino Pablo	South of Santa Maria Way	30,911	2,153	2,174	2,842
6. State Route 24	Camino Pablo	188,000	-	-	-
7. Interstate 80	Between San Pablo Avenue & Hilltop Drive	214,200	-	-	-

Notes

1. Average daily two-way traffic measured over 2 days.
2. Maximum hourly volume between the hours of 7:00 AM and 9:00 AM.
3. Maximum hourly volume between the hours of 11:00 AM and 3:00 PM.
4. Maximum hourly volume between the hours of 4:00 PM and 6:00 PM.
5. I-80 and SR-24 ADT Source: Caltrans, 2017

Source: ESA, 2019

Chapter 2. Existing Conditions

This section discusses the existing transportation network in the vicinity of the Project site.

Regional Roadways

State Route 24 (SR-24) is an eight-lane, east-west freeway that connects Interstate 580 (I-580) and Interstate 980 (I-980) in the City of Oakland and Interstate 680 (I-680) in the City of Walnut Creek. SR-24 is a designated Surface Transportation Assistance Act Network route that allows large trucks with a maximum semitrailer length of 48 feet and no maximum for kingpin to rear axle length.

Interstate 80 (I-80) is an eight-lane, north-south transcontinental Interstate Highway in the United States (U.S.), stretching from San Francisco, California to Teaneck, New Jersey.

Local Roadway

Camino Pablo is a north-south road in the Project vicinity that runs perpendicular to SR-24 connecting to I-80 in the City of Richmond. It is a four-lane roadway between SR-24 and Miner Road, and a two-lane roadway from Miner Road to the Wildcat Canyon Road/Bear Creek Road intersection. South of Brookwood Road, the roadway's name changes to Moraga Way. North of the Wildcat Canyon Road/Bear Creek Road intersection, the roadway also changes its name to San Pablo Dam Road. Camino Pablo provides access to and from SR-24. Camino Pablo also provides access to Wagner Ranch Elementary School at Wagner Ranch. The posted speed limit is 45 miles per hour (mph) south of Miner Road and 30 mph north of Miner Road. No on-street parking is allowed on Camino Pablo at or surrounding the study intersections. Class II bike lanes (on-street bicycle facilities) are located along portions of Camino Pablo in the Project vicinity. Sidewalks are provided between Brookwood Road and the SR-24 eastbound overpass. The segment of Camino Pablo between the SR-24 eastbound overpass and El Toyonal-Orinda Way does not have sidewalks; however, there is an existing separated walkway on the east side of Camino Pablo that connects to Brookwood Road, Bryant Way, the BART station, and Orinda Way through a series of pedestrian overcrossings. A mix of narrow sidewalks and off-street pedestrian path segments is present on the east side of Camino Pablo between El Toyonal-Orinda Way and Monte Vista Road. Sidewalks are not present north of Monte Vista Road.

Miner Road is an east-west road that serves residential houses in Orinda and branches into Lombardy Lane east of Camino Sobrante. Miner Road is a two-lane roadway with no on-street parking and a posted speed limit of 25 mph and 25 mph at curves. Bicycle and pedestrian facilities are not present.

Manzanita Drive is an east-west two-lane roadway with a posted speed limit of 25 mph and no on-street parking. Manzanita Drive provides an entry and exit to the Orinda WTP and mostly serves residential housing. Sidewalks are provided on the south side of the roadway. No bicycle facilities are present.

Bear Creek Road-Wildcat Canyon Road is an east-west two-lane roadway. Bear Creek Road is east of Camino Pablo and provides access to Wagner Ranch Elementary School, PG&E Sobrante Substation, and the EBMUD Briones Reservoir site to name a few. Bear Creek Road does not have bike or pedestrian facilities. The posted speed limit is 35 mph. Wildcat Canyon Road is west of Camino Pablo and leads to Tilden Regional Park in the Berkeley Hills. Wildcat Canyon Road has a Class III bike route and no sidewalks. The posted speed limit is 25 mph.

Traffic Volumes

A traffic vendor was used to collect average daily traffic (ADT) data at the five roadway segment locations on Tuesday (May 14, 2019) when area schools were in session near the Project site. Counts collected during the school year are representative of typical traffic conditions for the majority of the year. Counts collected during summer months may be lower due to increased vacations and fewer school related trips. The ADT data for SR-24 and I-80 were collected through the Caltrans Traffic Census Program data from 2017. The ADT volumes on Camino Pablo at the five locations and two locations on SR-24 and I-80 are summarized in Table 4 above.

Peak period turning movement traffic counts for vehicles, bicyclists, and pedestrians were conducted between 7:00 AM and 9:00 AM, 11:00 AM and 3:00 PM, and 4:00 PM and 6:00 PM on a day with area schools in normal session (Tuesday, November 5, 2019) at the study intersections. Peak period counts collected during the school year represent typical traffic conditions during the majority of the year. For each intersection, the single hour with the highest traffic volumes during the three count periods was identified. The peak hour volumes are presented on Figure 3. The peak-hour data is used as the basis for intersection operations analysis. Existing intersection lane configurations and traffic control are also shown on Figure 3. Pedestrian and bicycle peak hour volumes are shown on Figure 4. Traffic count worksheets are provided in the Appendix.

Existing peak-hour intersection operations are summarized in Table 5, corresponding to the same intersection designations labeled in Figure 1. Depending on the peak hour, many of the study intersections currently operate poorly, characterized by long delays, and shown in bold in Table 5.

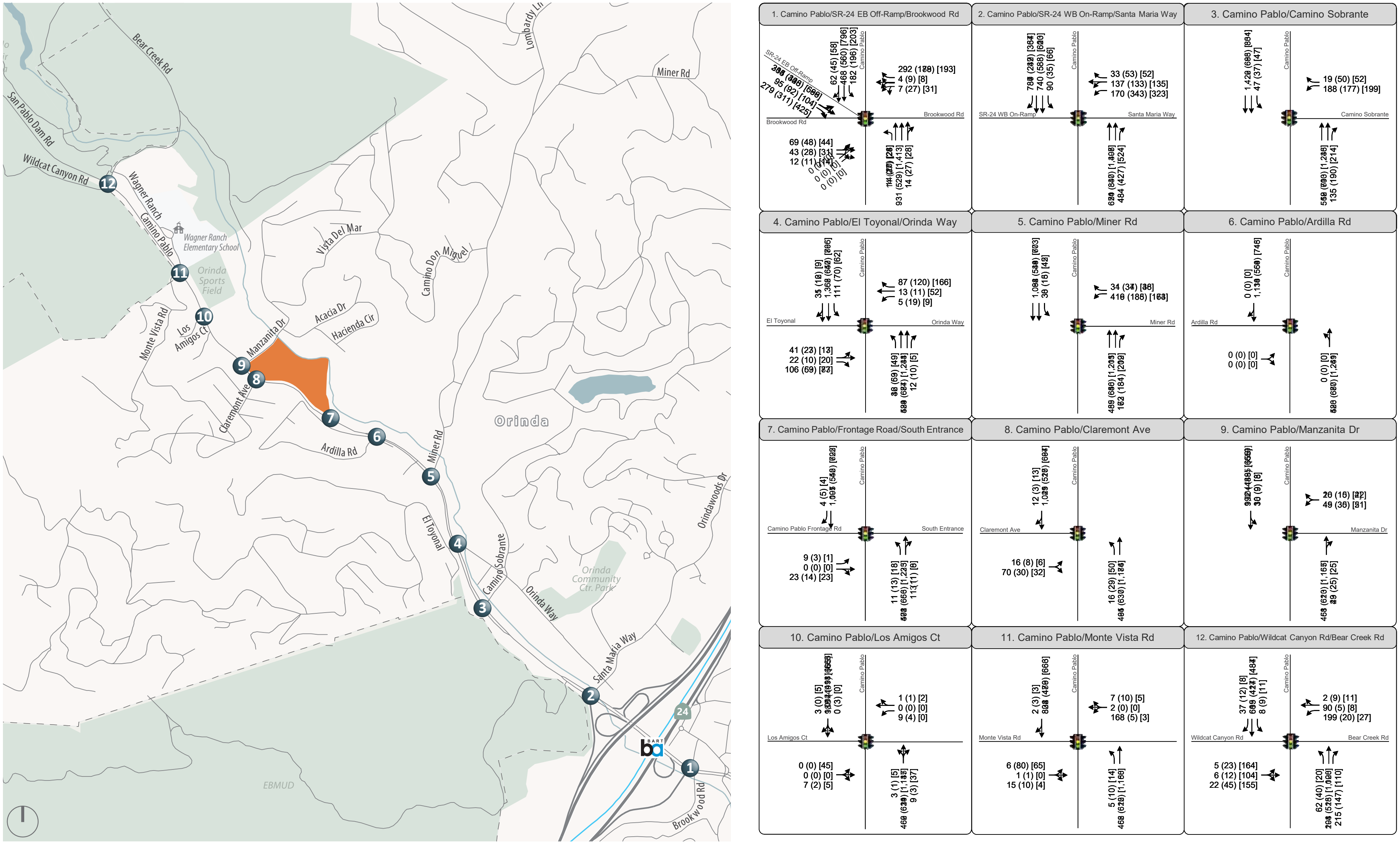
The following intersections currently operate below the City of Orinda LOS standards based on the General Plan guidelines:

- Intersection 1: Camino Pablo & SR-24 Eastbound Off-Ramp (PM)
- Intersection 3: Camino Pablo & Camino Sobrante (PM)
- Intersection 4: Camino Pablo & Orinda Way/El Toyonal (PM)
- Intersection 9: Camino Pablo & Manzanita Drive (PM)
- Intersection 10: Camino Pablo & Los Amigos Court/Sports Field (AM)
- Intersection 11: Camino Pablo & Monte Vista Road/Wagner Ranch (AM)

- Intersection 12: Camino Pablo & Wildcat Canyon Road/Bear Creek Road (AM and PM)

Field observations indicate that many of the intersections experience vehicle queue spillbacks from adjacent intersections.

Roadway truck percentage analysis for the Existing scenario can be found at the end of Chapter 4.



XX (YY) [ZZ] AM (Midday) [PM] Peak Hour Traffic Volumes 🚦 Signalized Intersection

🟧 Project Site ☐ City Limits # Study Intersection

Figure 9

CumulaExisting with Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

WC19-3569_3_Volumes

Table 5: Existing Intersection Operations

Intersection	Control	Peak Hour[1]	Delay[2]	LOS
1. Camino Pablo & SR-24 Eastbound Off-Ramp[3]	Signal	AM MD PM	45.9 42.7 **>100**	D D **F**
2. Camino Pablo, Santa Maria Way & Camino Pablo Southbound/SR-24 Westbound On-Ramp	Signal	AM MD PM	15.1 14.1 23.3	B B C
3. Camino Pablo & Camino Sobrante	Signal	AM MD PM	7.2 17.5 **87.0**	A B **F**
4. Camino Pablo & Orinda Way/El Toyonal	Signal	AM MD PM	12.9 26.0 **82.9**	B C **F**
5. Camino Pablo & Miner Road	Signal	AM MD PM	15.0 15.0 39.6	B B D
6. Camino Pablo & Ardilla Road	Signal	AM MD PM	1.4 2.4 2.9	A A A
7. Camino Pablo & Orinda WTP South Gate Entrance/Camino Pablo Frontage Road	Signal	AM MD PM	1.5 15.5 13.5	A B B
8. Camino Pablo & Claremont Avenue	Signal	AM MD PM	5.0 7.3 7.8	A A A
9. Camino Pablo & Manzanita Drive	Signal	AM MD PM	25.6 3.0 **56.8**	C A **E**
10. Camino Pablo & Los Amigos Court/ Sports Field	Signal	AM MD PM	**55.2** 1.4 22.2	**E** A C
11. Camino Pablo & Monte Vista Road/ Wagner Ranch	Signal	AM MD PM	**55.7** 5.5 30.5	**E** A C
12. Camino Pablo & Wildcat Canyon Road/Bear Creek Road	Signal	AM MD PM	**87.5** 10.5 **52.8**	**F** B **D**

Notes:
1. AM = morning; MD = midday; PM = evening
2. Delay measured in seconds.
3. LOS reported using HCM 2000 for 5-leg intersection.

Bold exceeds City of Orinda LOS standard.

Source: Fehr & Peers, 2020

Transit Service

There is one AC Transit route that operates within the Project site. Route 6 operates from Orinda BART to Lafayette BART. There are two stops in the Project vicinity at Camino Pablo and El Toyonal and the Orinda BART station. Route 6 runs from 6:00 AM to 9:00 PM on weekdays and from 9:00 AM to 6:10 PM on weekends. The Camino Pablo and El Toyonal stop only runs on weekdays with three stops throughout the day. The Orinda BART station runs on 20-minute headways on weekdays and 90-minute headways on the weekends. AC Transit does not pass by the Project site and staging areas.

Pedestrian/Bicycle Circulation

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Sidewalk availability is sporadic along the Camino Pablo corridor. The Central Business District provides a sidewalk parallel to Camino Pablo predominantly on the western side of the roadway. North of El Toyonal, a sidewalk is provided on the east side of the street, until just north of Wagner Ranch and Monte Vista Road.

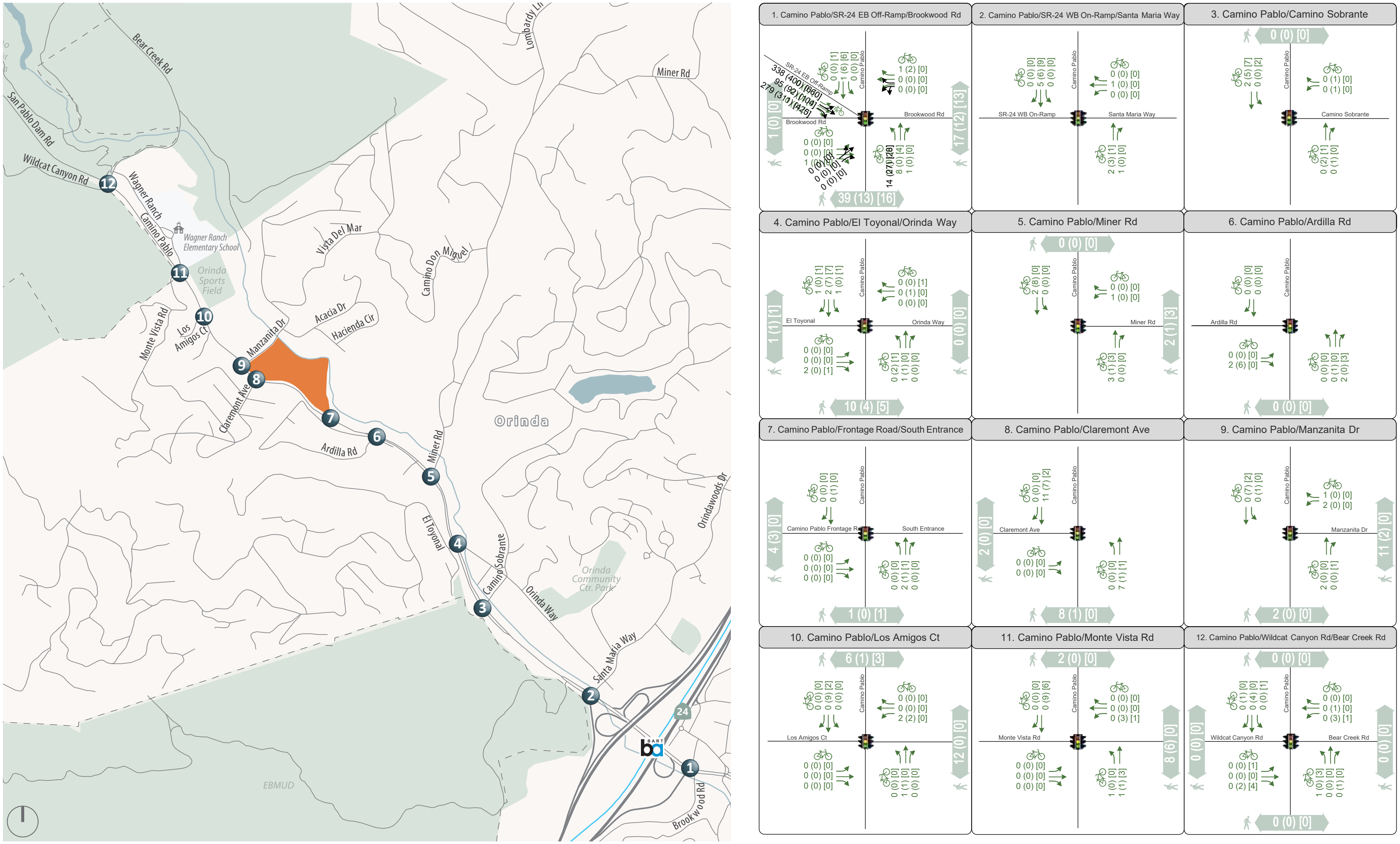
Marked crosswalks and pedestrian push buttons are present at all study intersections. However, marked crosswalks are fading at a few of the study intersections. During observations, pedestrians were observed to cross within crosswalks during the walk phase of the traffic signal. At intersections near the Wagner Ranch Elementary School, students are observed to activate pedestrian call buttons and wait to cross during the walk phase of the signal. Many students were observed to be accompanied by adults.

Bicycle facilities include:

- Bike paths (Class I) – Paved trails that are separated from roadways.
- Bike lanes (Class II) – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs.
- Bike routes (Class III) – Designated roadways for bicycle use by signs only; may or may not include additional pavement width for cyclists.

At some locations along the roadways, a Class I separated path is available to pedestrians and bicyclists. Camino Pablo has predominantly Class III bicycle facilities with short segments of Class I facilities. The high volumes and limited on-street bicycle facilities makes riding along Camino Pablo uncomfortable for inexperienced riders. Field observations show that most bicyclists cycling along Camino Pablo are experienced riders, with children using the Class I facilities between Manzanita Drive and Wagner Ranch/Monte Vista Road.

Pedestrian and bicycle volumes can be found on Figure 4 and summarized in Table 6.



0 (0) [0] AM (Midday) [PM] Peak Hour Pedestrian Volumes

0 (0) [0] AM (Midday) [PM] Peak Hour Bicycle Volumes

Signalized Intersection

🟧 Project Site

City Limits

\# Study Intersection

Figure 4

Existing Conditions Peak Hour Pedestrian and Bicycle Volumes

Table 6: Existing Pedestrian and Bicycle Summary

Intersection	AM		Mid-day		PM	
	Pedestrians	Bicyclists	Pedestrians	Bicyclists	Pedestrians	Bicyclists
1. Camino Pablo & SR-24 Eastbound Off-Ramp	57	12	25	8	29	11
2. Camino Pablo, Santa Maria Way & Camino Pablo Southbound/ SR-24 Westbound On-Ramp	0	9	0	9	0	10
3. Camino Pablo & Camino Sobrante	0	2	0	10	0	10
4. Camino Pablo & Orinda Way/El Toyonal	11	7	5	11	6	12
5. Camino Pablo & Miner Road	2	6	1	8	3	3
6. Camino Pablo & Ardilla Road	0	4	0	7	0	3
7. Camino Pablo & Orinda WTP South Gate Entrance/Camino Pablo Frontage Road	5	2	3	2	1	1
8. Camino Pablo & Claremont Avenue	10	18	1	8	0	3
9. Camino Pablo & Manzanita Drive	13	4	2	8	0	3
10. Camino Pablo & Los Amigos Court/ Sports Field	18	3	1	10	3	2
11. Camino Pablo & Monte Vista Road/ Wagner Ranch	10	2	6	10	0	9
12. Camino Pablo & Wildcat Canyon Road/Bear Creek Road	0	1	0	12	0	10

Chapter 3. Project Conditions

The section describes the trip generating potential during the construction of the proposed Project. Upon completion of the Project, the Project would not generate any new trips except for occasional maintenance, similar to existing conditions.

Trip Generation

EBMUD identified a preliminary construction schedule and the number of worker vehicles and construction trucks anticipated for each phase. Worker vehicles are vehicles used by workers to commute to and from the Project work sites. Construction trucks consist of material delivery or off-haul trucks entering and exiting the Project work sites. The estimates were based on the number of worker vehicles and construction trucks needed during each phase. The number of worker vehicles and construction truck trips can be found in Table 1 above.

Project trips were generated by using the largest number of hourly one-way worker and truck trips of overlapping phases at one time over the Project duration. The maximum hourly one-way worker trips are 60 trips. The number of workers in overlapping phases of construction will be additive, but one-third of workers are assumed to carpool to the Project site, so the maximum hourly one-way worker trips used in the analysis is 40 trips. All workers are assumed to arrive during the AM peak hour and to depart during PM peak hour. No workers trips will occur during the midday peak.

Construction truck trips for soil and demolition hauling, and heavy equipment delivery trucks will be limited to the midday peak period Mondays through Fridays. Concrete delivery trucks will be allowed to access the Project site from 6:00 AM to 6:00 PM every work day throughout the entire Project duration. Therefore, the maximum hourly one-way truck trips are 16 trips in the AM and PM peak hours and 20 trips in the midday peak hour. The 16 truck trips are estimated truck trips per hour for concrete pours – and are limited by concrete pumping times and access to pour sites. The 20 truck trips are the estimated truck trips per hour for material delivery and soil off-haul – and are limited by the time to unload or load the construction trucks and access to the excavation and building sites. The number of truck trips account for the maximum number of trucks going to and leaving the project site in one hour. Trucks behave differently than passenger vehicles as they take longer to accelerate, decelerate, and negotiate turns. Therefore, they affect intersection and roadway operations differently. Truck trips are analyzed as passenger car equivalent (PCE), using a ratio of 1:2 (one truck to two cars).

The Project trip generation estimate is summarized in Table 7.

Table 7: Project Trip Generation Estimates

Trip Type	AM			Midday			PM		
	Total	In	Out	Total	In	Out	Total	In	Out
Workers	40	40	0	0	0	0	40	0	40
Trucks	*16*	*8*	*8*	*20*	*10*	*10*	*16*	*8*	*8*
PCE (1:2)[1]	32	16	16	40	20	20	32	16	16
Total PCE	**72**	**56**	**16**	**40**	**20**	**20**	**72**	**16**	**56**

Notes:

1. PCE=Passenger car equivalent (1 truck=2 passenger cars)

Source: EBMUD and Fehr & Peers, 2019

Saturday Construction

There is the potential for construction to occur on a limited number of Saturdays during the Winter months of 2024 and 2025. This work would be limited to the hours between 10 AM and 5 PM, per the City of Orinda's noise ordinance.

To understand the differences between weekday and weekend vehicular volumes, anonymized and aggregated location data from Global Positioning Systems (GPS) and mobile devises was used. The data shows that Saturday traffic volumes along Camino Pablo are approximately 26% less than during a typical weekday[2]. Furthermore, construction traffic would be limited to 25 workers trips each direction and no large trucks. Therefore, this report focuses on the effects of construction traffic during a typical weekday, understanding that this represents a more conservative scenario than the Saturday condition.

Trip Distribution

This section describes the distribution patterns of vehicle trips during each phase of construction. The distribution of worker and truck trips is presented on Figure 5. Routes to/from the Project site and the regional roadway network were reviewed in the development of preliminary truck routing plans.

Construction Worker Trip Distribution

Construction workers are assumed to be non-local residents. It was also assumed that approximately one-third of workers access the site from SR-24 travelling east, one-third from SR-24 travelling west, and one-third from Camino Pablo travelling south because it is unknown at this time from which direction workers will approach the Project site. Workers can only access the Project site from Manzanita Drive.

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[2] Source: StreetLight Data, using anonymous data samples representing trips traveling on Camino Pablo near the Orinda WTP representing typical weekday conditions (Monday through Thursday) and weekend conditions (Saturday and Sunday) in 2019. See Appendix A for more information.

Truck Trip Distribution

All trucks would travel northbound on Camino Pablo from SR-24 and use the South Entrance to enter the site. Trucks exiting the site can only use Manzanita Drive, with half of the trucks going northbound on Camino Pablo and half going southbound on Camino Pablo. The assumed truck route plan is shown on Figure 6. While trucks will now be limited to approaching the project site northbound on Camino Pablo from SR-24, it is appropriate to assume this will be the typical access route because: a) the haul route within the Orinda WTP will proceed in a counter-clock-wise direction, and b) any construction trucks traveling southbound on Camino Pablo would need to turn onto smaller roadways to access the South Entrance from the northbound lanes of Camino Pablo.

🟧 Project Site

XX% Workers

→ Trucks in

→ Trucks Out

⬚ City Limits

Figure 5

Worker and Truck Trip Distribution

WC19-3659_5_TripDistro

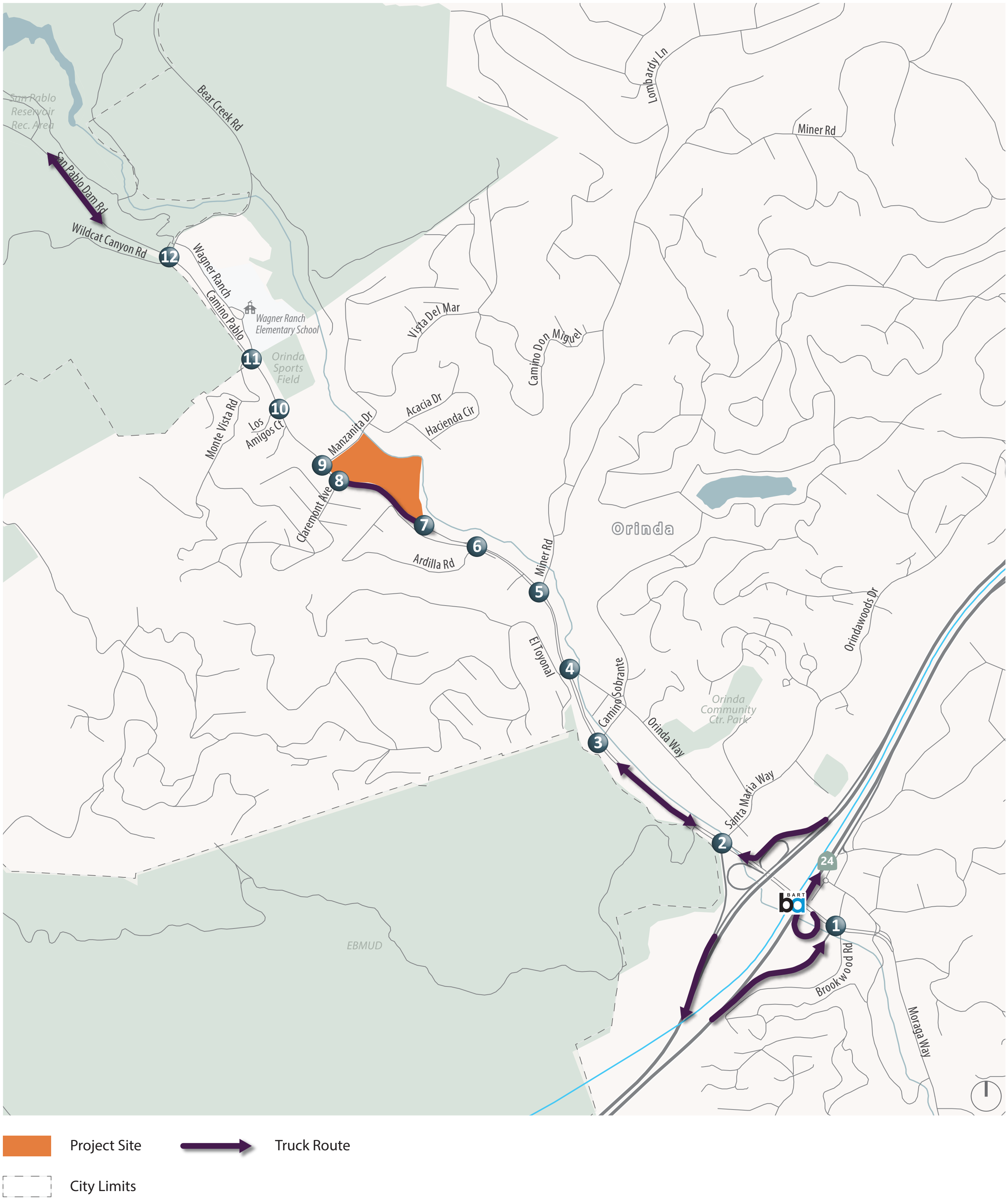


Figure 6

Truck Routing Plan

WC19-3569_6_TruckRts

Intersection Analysis

Daily traffic volumes during construction periods were added to the existing daily traffic volumes based on the trip generation in Table 7 and trip distribution percentages presented in the above paragraphs.

Using the hourly trip generation estimates from Table 1 and trip distribution described above, Existing Plus Project peak hour traffic volumes were determined for the Project's construction phase. For a conservative analysis, it was assumed that all worker vehicle trips would travel to the Project site during the AM peak hour and leave during the PM peak hour. It was also assumed that the hourly truck trips would be arriving at the site and leaving the Project site during each peak hour.

Peak hour intersection operations with construction traffic volumes assigned to the roadway network are summarized in Table 8.

Table 8: Existing Plus Project Intersection Operations

Intersection	Control	Peak Hour[1]	Existing		Existing Plus Project	
			Delay[2]	LOS	Delay[2]	LOS
1. Camino Pablo & SR-24 Eastbound Off-Ramp[3]	Signal	AM MD PM	45.9 42.7 **>100**	D D **F**	46.0 42.7 **>100**	D D **F**
2. Camino Pablo, Santa Maria Way & Camino Pablo Southbound/SR-24 Westbound On-Ramp	Signal	AM MD PM	15.1 14.1 23.3	B B C	15.3 14.2 23.4	B B C
3. Camino Pablo & Camino Sobrante	Signal	AM MD PM	7.2 17.5 **87.0**	A B **F**	7.2 17.5 **88.1**	A B **F**
4. Camino Pablo & Orinda Way/El Toyonal	Signal	AM MD PM	12.9 26.0 **82.9**	B C **F**	12.9 26.0 **84.4**	B C **F**
5. Camino Pablo & Miner Road	Signal	AM MD PM	15.0 15.0 39.6	B B D	15.0 15.0 40.2	B B D
6. Camino Pablo & Ardilla Road	Signal	AM MD PM	1.4 2.4 2.9	A A A	1.4 2.4 3.0	A A A
7. Camino Pablo & Orinda WTP South Gate Entrance/Camino Pablo Frontage Road	Signal	AM MD PM	1.5 15.5 13.5	A B B	1.4 15.7 14.4	A B B
8. Camino Pablo & Claremont Avenue	Signal	AM MD PM	5.0 7.3 7.8	A A A	5.3 7.3 10.1	A A B

Table 8: Existing Plus Project Intersection Operations

Intersection	Control	Peak Hour[1]	Existing		Existing Plus Project	
			Delay[2]	LOS	Delay[2]	LOS
9. Camino Pablo & Manzanita Drive	Signal	AM MD PM	25.6 3.0 **56.8**	C A **E**	33.0 3.0 **57.5**	C A **E**
10. Camino Pablo & Los Amigos Court/Sports Field	Signal	AM MD PM	**55.2** 1.4 22.2	**E** A C	**59.7** 1.4 26.7	**E** A C
11. Camino Pablo & Monte Vista Road/Wagner Ranch	Signal	AM MD PM	**55.7** 5.5 30.5	**E** A C	**60.7** 5.5 33.6	**E** A C
12. Camino Pablo & Wildcat Canyon Road/Bear Creek Road	Signal	AM MD PM	**87.5** 10.5 **52.8**	**F** B **D**	**90.0** 10.5 **53.9**	**F** B **D**

Notes
1. AM = morning; MD = midday; PM = evening
2. Delay measured in seconds.
3. LOS reported using HCM 2000 for 5-leg intersection.

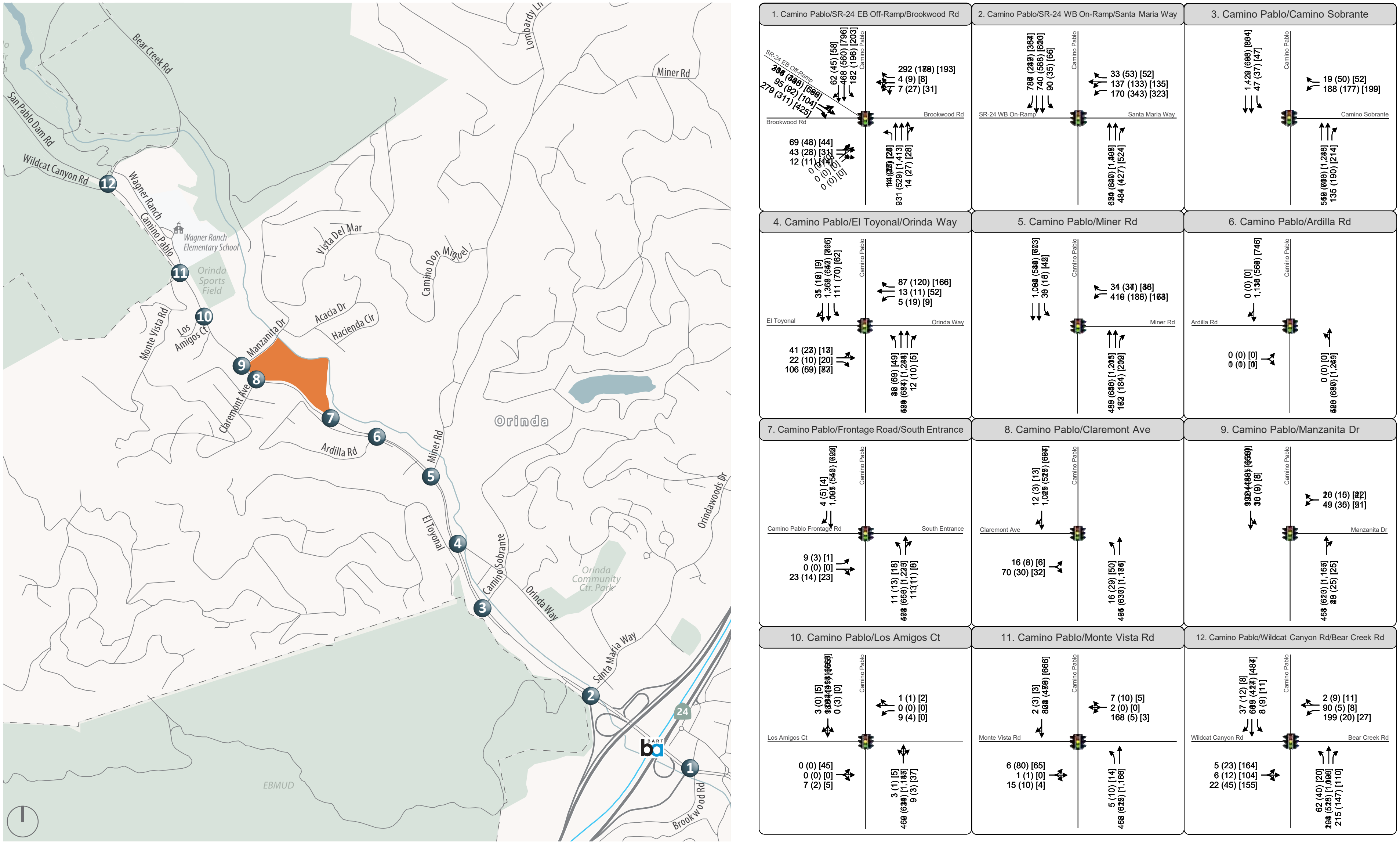
Bold exceeds LOS standard.
Source: Fehr & Peers, 2020

Project construction traffic is not expected to increase intersection delay to exceed the LOS standard at intersections currently operating at or above the LOS standards in any peak period. Project construction traffic is also not expected to degrade intersections already exceeding the LOS standard in any peak period. Existing Plus Project peak hour volumes are shown on Figure 7.

All the study intersections that operated below the City of Orinda LOS standards based on the General Plan under existing conditions continue to do so under Project conditions:

- Intersection 1: Camino Pablo & SR-24 Eastbound Off-Ramp (PM)
- Intersection 3: Camino Pablo & Camino Sobrante (PM)
- Intersection 4: Camino Pablo & Orinda Way/El Toyonal (PM)
- Intersection 9: Camino Pablo & Manzanita Drive (PM)
- Intersection 10: Camino Pablo & Los Amigos Court/Sports Field (AM)
- Intersection 11: Camino Pablo & Monte Vista Road/Wagner Ranch (AM)
- Intersection 12: Camino Pablo & Wildcat Canyon Road/Bear Creek Road (AM and PM)

Roadway truck percentage analysis for the Existing Plus Project scenario can be found at the end of Chapter 4.



XX (YY) [ZZ] AM (Midday) [PM] Peak Hour Traffic Volumes

🚦 Signalized Intersection

🟧 Project Site

⬚ City Limits

● Study Intersection

Figure 9

Cumulative without Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

WC19-3569_7_Volumes

Chapter 4. Cumulative Conditions

This section describes the potential effects of all previously identified EBMUD projects within or near the City of Orinda occurring at the same time as the Project.

EBMUD provided a construction schedule and the number of workers and trucks for all projects that are planned within or near the City of Orinda, provided in Table 9. The locations of all EBMUD projects planned within or near the City of Orinda are shown on Figure 8.

Table 9: Cumulative EBMUD Orinda Projects Truck and Worker Vehicle Trip Estimates

Work/Vehicle Type[1]	Max Hourly One-Way Trips		One-Way Truck Trips	
	Trucks[2]	Workers	Peak Hour[3]	Off-Peak Hour[4]
Duffel Photovoltaic Renewable Energy Project				
Whole Project	2	30	0	2
Briones Reservoir Inlet/Outlet Tower Retrofit Project				
Whole Project	2	10	2	2
Happy Valley Pumping Plant Project				
Whole Project	6	13	6	6
Westside Pumping Plant Replacement Project				
Whole Project	2	8	-	-
Off-haul, Material trucks	-	-	0	2
Concrete work	-	-	2	2
Off-haul, Material trucks	-	-	0	2
Concrete work	-	-	2	2
Off-haul, Material trucks	-	-	0	2
Dos Osos Reservoir Replacement Project				
Whole Project	8	10	-	-
Off-haul, Material trucks	-	-	0	8
Concrete work	-	-	8	8
Off-haul, Material trucks	-	-	0	8

Note:

1. Whole Project=duration of the whole project; Concrete work=concrete trucks, operate during peak and off-peak hours; Off-haul, Material trucks=all non-concrete trucks, operate only during off-peak hours
2. Maximum number of trucks going to and leaving the project site in one hour.

3. Peak Hour=peak commute hours 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. Where the Peak Hour for One-Way Truck Trips = 0, construction truck trips for these projects are limited to between 9:00 AM and 4:00 PM.
4. Off-Peak Hour=9:00 AM to 4:00 PM

Source: EBMUD, 2019.

Trip Generation

Cumulative worker and truck trips for all EBMUD projects planned within or near the City of Orinda were generated using the largest total number of hourly one-way worker and truck trips occurring over one period of time given the current schedules for all projects. All workers are assumed to travel to the various planned project sites in the AM peak period and travel home in the PM peak period. Truck trips will occur in the AM, midday, and PM peak periods, with half of the trips going in and half of the trips going out. The cumulative trip generation estimates for the period of time with the maximum number of trips are summarized in Table 10. Several projects will not generate any trips during the period of highest overall trip generation as they will have been completed before the period of greatest number of overlapping trips, as indicated by the zeros in Table 10.

Table 10: Cumulative Projects Maximum Worker and Truck Trip Generation Estimates

Trip Type	AM			Midday			PM		
	Total	In	Out	Total	In	Out	Total	In	Out
Duffel Photovoltaic Renewable Energy Project									
Workers	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Trucks (PCE)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total (PCE)	0	0	0	0	0	0	0	0	0
Briones Reservoir Inlet/Outlet Tower Retrofit Project									
Workers	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Trucks (PCE)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total (PCE)	0	0	0	0	0	0	0	0	0
Happy Valley Pumping Plant Project									
Workers	*13*	*13*	*0*	*0*	*0*	*0*	*13*	*0*	*13*
Trucks (PCE)	*12*	*6*	*6*	*12*	*6*	*6*	*12*	*6*	*6*
Total (PCE)	25	19	6	12	6	6	25	6	19
Westside Pumping Plant Replacement Project									
Workers	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Trucks (PCE)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Total (PCE)	0	0	0	0	0	0	0	0	0
Dos Osos Reservoirs Replacement Projects									
Workers	*10*	*10*	*0*	*0*	*0*	*0*	*10*	*0*	*10*

Table 10: Cumulative Projects Maximum Worker and Truck Trip Generation Estimates

Trip Type	**AM**			**Midday**			**PM**		
	Total	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**In**	**Out**
Trucks (PCE)	*0*	*0*	*0*	*16*	*8*	*8*	*0*	*0*	*0*
Total (PCE)	10	10	0	16	8	8	10	0	10
Total (PCE)	**35**	**29**	**6**	**28**	**14**	**14**	**35**	**6**	**29**

PCE=Passenger car equivalent (1 truck=2 passenger cars)
Source: EBMUD and Fehr and Peers, 2019

Trip Distribution

Trip distribution for worker vehicles and construction trucks under the Cumulative condition is assumed to have the same assumptions and distribution as under the Project conditions. Approximately one-third of workers access the site from SR-24 travelling east, one-third from SR-24 travelling west, and one-third from Camino Pablo travelling south. Trucks were assumed to have an even split for Cumulative project trips coming from and going to the north (I-80) and south (SR-24).

All workers and trucks will access the Duffel Photovoltaic Renewable Energy Project and Briones Reservoir Inlet/Outlet Tower Retrofit Project sites via Bear Creek Road; Happy Valley Pumping Plant Project site via Miner Road; and Westside Pumping Plant Replacement Project and Dos Osos Reservoirs Replacement Project sites via El Toyonal.

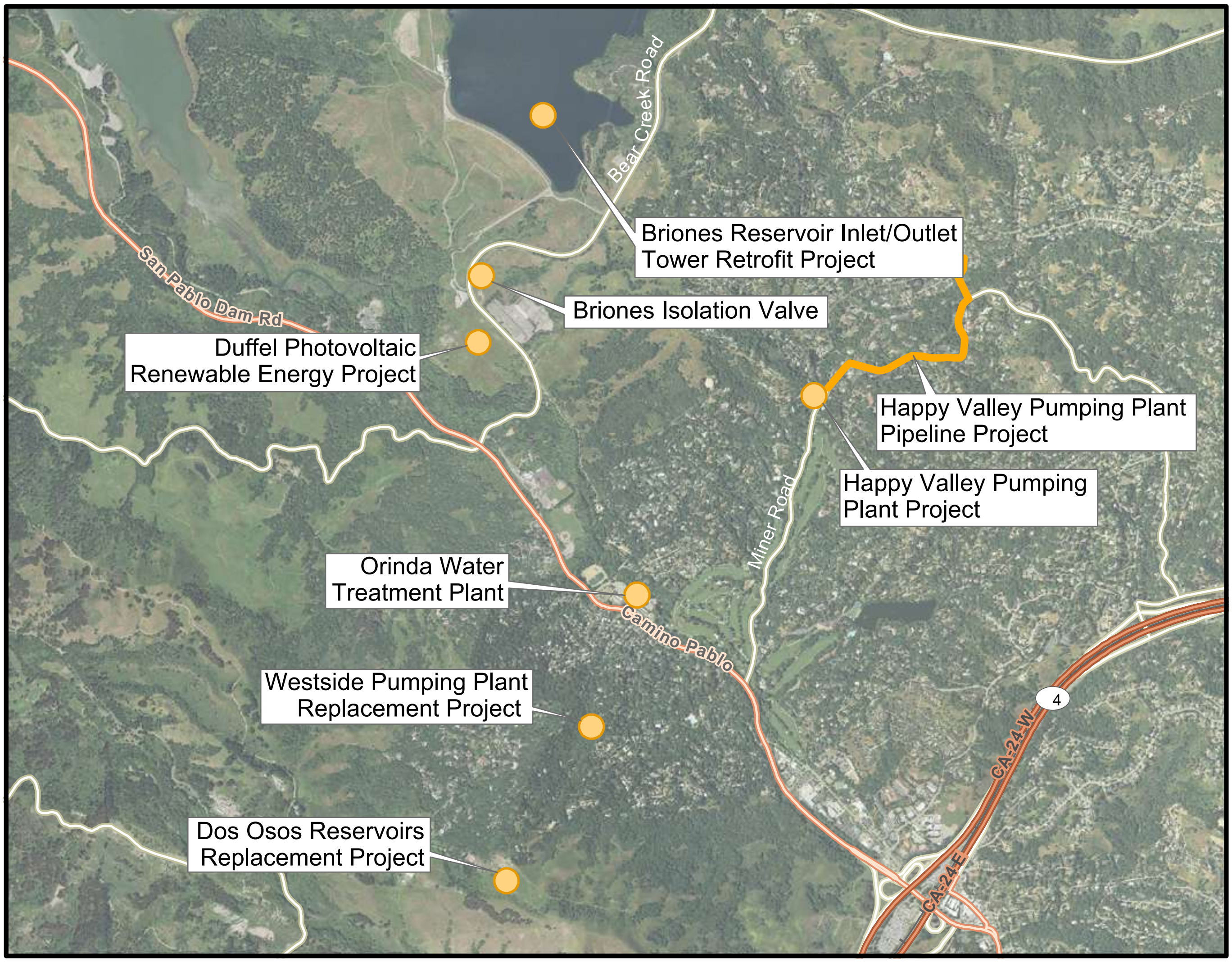


Image Source: ESA and EBMUD, 2019.

Figure 8

EBMUD Orinda Cumulative Project Sites

WC19-3569_8_EBMUD_Orinda_Sites

Intersection and Roadway Analysis

Cumulative trips were assigned to the roadway network and added to Existing Plus Project volumes. Peak hour intersection operations for Cumulative conditions are summarized in Table 11.

Table 11: Existing Plus Project and Cumulative Plus Project Intersection Operations

Intersection	Control	Peak Hour[1]	Existing Plus Project		Cumulative Plus Project	
			Delay[2]	LOS	Delay[2]	LOS
1. Camino Pablo & SR-24 Eastbound Off-Ramp[3]	Signal	AM MD PM	46.0 42.7 **>100**	D D **F**	46.1 42.8 **>100**	D D **F**
2. Camino Pablo, Santa Maria Way & Camino Pablo Southbound/SR-24 Westbound On-Ramp1	Signal	AM MD PM	15.3 14.2 23.4	B B C	15.3 14.2 23.4	B B C
3. Camino Pablo & Camino Sobrante	Signal	AM MD PM	7.2 17.5 **88.1**	A B **F**	7.2 17.5 **88.3**	A B **F**
4. Camino Pablo & Orinda Way/El Toyonal	Signal	AM MD PM	12.9 26.0 **84.4**	B C **F**	13.2 26.1 **84.8**	B C **F**
5. Camino Pablo & Miner Road	Signal	AM MD PM	15.0 15.0 40.2	B B D	15.4 15.2 40.8	B B D
6. Camino Pablo & Ardilla Road	Signal	AM MD PM	1.4 2.4 3.0	A A A	1.4 2.4 3.1	A A A
7. Camino Pablo & Orinda WTP South Gate Entrance/Camino Pablo Frontage Road	Signal	AM MD PM	1.4 15.7 14.4	A B B	1.4 15.9 16.0	A B B
8. Camino Pablo & Claremont Avenue	Signal	AM MD PM	5.3 7.3 10.1	A A B	6.8 7.4 12.2	A A B
9. Camino Pablo & Manzanita Drive	Signal	AM MD PM	33.0 3.0 **57.5**	C A **E**	36.8 3.1 **58.3**	D A **E**
10. Camino Pablo & Los Amigos Court/Sports Field	Signal	AM MD PM	**59.7** 1.4 26.7	**E** A C	**64.4** 1.4 29.6	**E** A C
11. Camino Pablo & Monte Vista Road/Wagner Ranch	Signal	AM MD PM	**60.7** 5.5 33.6	**E** A C	**65.3** 5.5 36.3	**E** A D

Table 11: Existing Plus Project and Cumulative Plus Project Intersection Operations

Intersection	Control	Peak Hour[1]	Existing Plus Project		Cumulative Plus Project	
			Delay[2]	LOS	Delay[2]	LOS
12. Camino Pablo & Wildcat Canyon Road/Bear Creek Road	Signal	AM MD PM	**90.0** 10.5 **53.9**	**F** B **D**	**92.4** 10.5 **54.7**	**F** B **D**

Notes

1. AM = morning; MD = midday; PM = evening
2. Delay measured in seconds.
3. LOS reported using HCM 2000 for 5-leg intersection.

Bold exceeds LOS standard.

Source: Fehr & Peers, 2020

Construction traffic during the cumulative Project conditions is not expected to increase intersection delay to exceed the LOS standard at intersections operating at or above the LOS standards in the Existing condition in any peak period. Cumulative construction traffic is also not expected to degrade Existing intersections exceeding the LOS standard in any peak period.

Study intersections that operated below the City of Orinda LOS standards based on the General Plan under existing conditions continue to do so under Cumulative with Project conditions include:

- Intersection 1: Camino Pablo & SR-24 Eastbound Off-Ramp (PM)
- Intersection 3: Camino Pablo & Camino Sobrante (PM)
- Intersection 4: Camino Pablo & Orinda Way/El Toyonal (PM)
- Intersection 9: Camino Pablo & Manzanita Drive (PM)
- Intersection 10: Camino Pablo & Los Amigos Court/Sports Field (AM)
- Intersection 11: Camino Pablo & Monte Vista Road/Wagner Ranch (AM)
- Intersection 12: Camino Pablo & Wildcat Canyon Road/Bear Creek Road (AM and PM)

Cumulative with Project peak hour volumes are shown in Figure 9.

Roadway Truck Percentages

Based on the ADT volumes collected along the five segments, the truck traffic along the corridor represents approximately 3 percent of overall traffic in the Existing conditions. In the Existing plus Project and Cumulative with Project scenarios, the truck percentages along the study segments remain at approximately 3 percent, except on Manzanita Drive which increases to 14 percent. This additional truck traffic would occur between Camino Pablo and the North Gate of the Orinda WTP (300 feet east of Camino Pablo). SR-24 and I-80 ADT and truck percentages were collected from the Caltrans database. I-80 experiences a higher percentage of trucks on the roadway at 3.8 percent while SR-24 experiences a lower percentage of trucks at 2.3 percent. There is at most a 1.4 percent change along Camino Pablo. Project truck percentages along the study roadways can be found in Table 12.

Table 12: Project Truck Percentage Along Study Roadways

Segments	ADT	Existing Truck %	Existing Plus Project Truck %	Cumulative Plus Project Truck %
Camino Pablo s/o Bear Creek Road	17,211	3.0%	3.3%	4.0%
Bear Creek Road e/o Camino Pablo	2,618	3.0%	3.0%	3.0%
Manzanita Drive e/o Camino Pablo	1,022	3.0%	14.0%	14.0%
Camino Pablo s/o Manzanita Drive	20,364	3.0%	3.3%	3.9%
Camino Pablo b/t Santa Maria @ SR-24 Ramps	30,911	3.0%	3.4%	3.6%
SR-24 at Camino Pablo	188,000	2.3%	2.4%	2.4%
I-80 between San Pablo Avenue & Hilltop Drive	214,200	3.8%	3.8%	3.9%

Notes

1. SR-24 and I-80 Truck Percentages are based on Caltrans Traffic Census Program, Truck Traffic: AADT, 2018

In the Existing plus Project and Cumulative plus Project scenarios, the worker and truck trips along the study segments represent approximately a 0.5 percent increase in traffic except on Manzanita Drive. On Manzanita Drive, the percentage of vehicles from the Project represent an 18.6 percent increase in vehicle volume throughout the day. This increase in traffic volume only occurs between the Camino Pablo intersection and the North Gate of the Orinda WTP (300 feet east of Camino Pablo). The increase in vehicle percentages for the Project along the study roadways are found in Table 13.

Aside from Manzanita Drive, these changes in daily traffic are within the typical daily fluctuations experienced on roadways (plus or minus 10 percent) and therefore, do not represent a substantial increase in traffic.

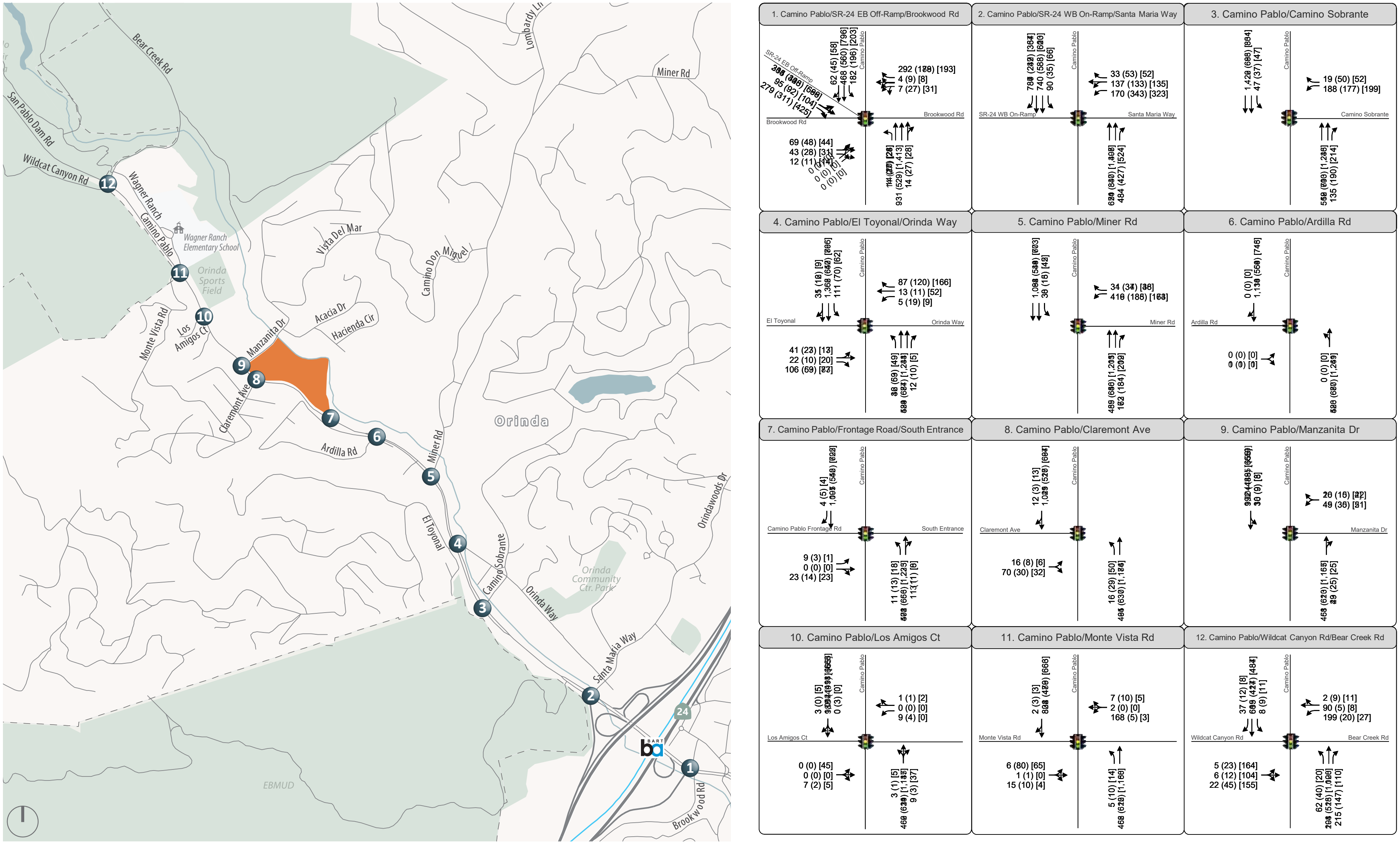
Table 13: Project Vehicle (Worker and Truck) Percentage Along Study Roadways

Segments	ADT	Project Trips	% vehicle increase with Project trips	Cumulative Plus Project Trips	% vehicle increase with EBMUD + Project trips
Camino Pablo s/o Bear Creek Road	17,211	83	0.5%	220	1.3%
Bear Creek Road e/o Camino Pablo	2,618	0	0.0%	0	0.0%
Manzanita Drive e/o Camino Pablo	1,022	190	18.6%	190	18.6%
Camino Pablo s/o Manzanita Drive	20,364	107	0.5%	253	1.2%

Camino Pablo b/t Santa Maria @ SR-24 Ramps	30,911	162	0.5%	247	0.8%
SR-24 at Camino Pablo	188,000	136	0.1%	214	0.1%
I-80 between San Pablo Avenue & Hilltop Drive	214,200	83	0.0%	229	0.1%

Notes

1. SR-24 and I-80 Truck Percentages are based on Caltrans Traffic Census Program, Truck Traffic: AADT, 2018



XX (YY) [ZZ] AM (Midday) [PM] Peak Hour Traffic Volumes

🚦 Signalized Intersection

🟧 Project Site

▭ City Limits

● # Study Intersection

Figure 9

Cumulative with Project Conditions Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Controls

WC19-3569_9_Volumes

Chapter 5. Access and Assessments

This chapter discusses the potential transportation and circulation effects during the construction phase. The duration of Project impacts is limited to the construction period, as trip generation characteristics after construction would be limited to occasional maintenance activities similar to existing conditions.

The proposed project would not increase the number of travel lanes or number of trips to the Project site after construction is completed. Therefore, the project is unlikely to induce vehicle travel, and thus the Project's effect to VMT is insubstantial, if not zero.

Vehicle Miles Traveled

The evaluation of CEQA transportation impacts resulting from the implementation of projects is primarily guided by the policies outlined in the CEQA guidelines. The CEQA Guidelines were updated in late 2018 to implement changes to CEQA transportation analysis as required by Senate Bill 743 (SB 743). SB 743 removes congestion-related metrics such as Level of Service (LOS) from CEQA consideration (i.e. LOS impacts are less-than-significant for CEQA purposes) and installs vehicle miles traveled (VMT) as the preferred/recommended CEQA metric for the environmental evaluation of transportation and/or land use projects.

The proposed project would not increase the number of travel lanes or number of trips to the Project site after construction is completed. Therefore, the project is unlikely to induce vehicle travel, and thus the Project's effect to vehicle-miles traveled (VMT) is insubstantial, if not zero.

Roadway Closures During Construction

Project construction takes place within the Orinda WTP so partial or full existing roadway closures should not be required during construction.

Pavement Assessment

It is estimated that about 20 large semi-trailer one-way truck trips would be expected daily along Camino Pablo to haul material to and from the Project site. Camino Pablo is a public roadway and should be designed to withstand axial loads from large semi-trailer trucks. Although the estimated large truck traffic would be greater during Project construction compared to a typical day along this corridor, this level of heavy truck activity would not be expected to cause significant pavement deterioration beyond normal wear and tear on the roadway.

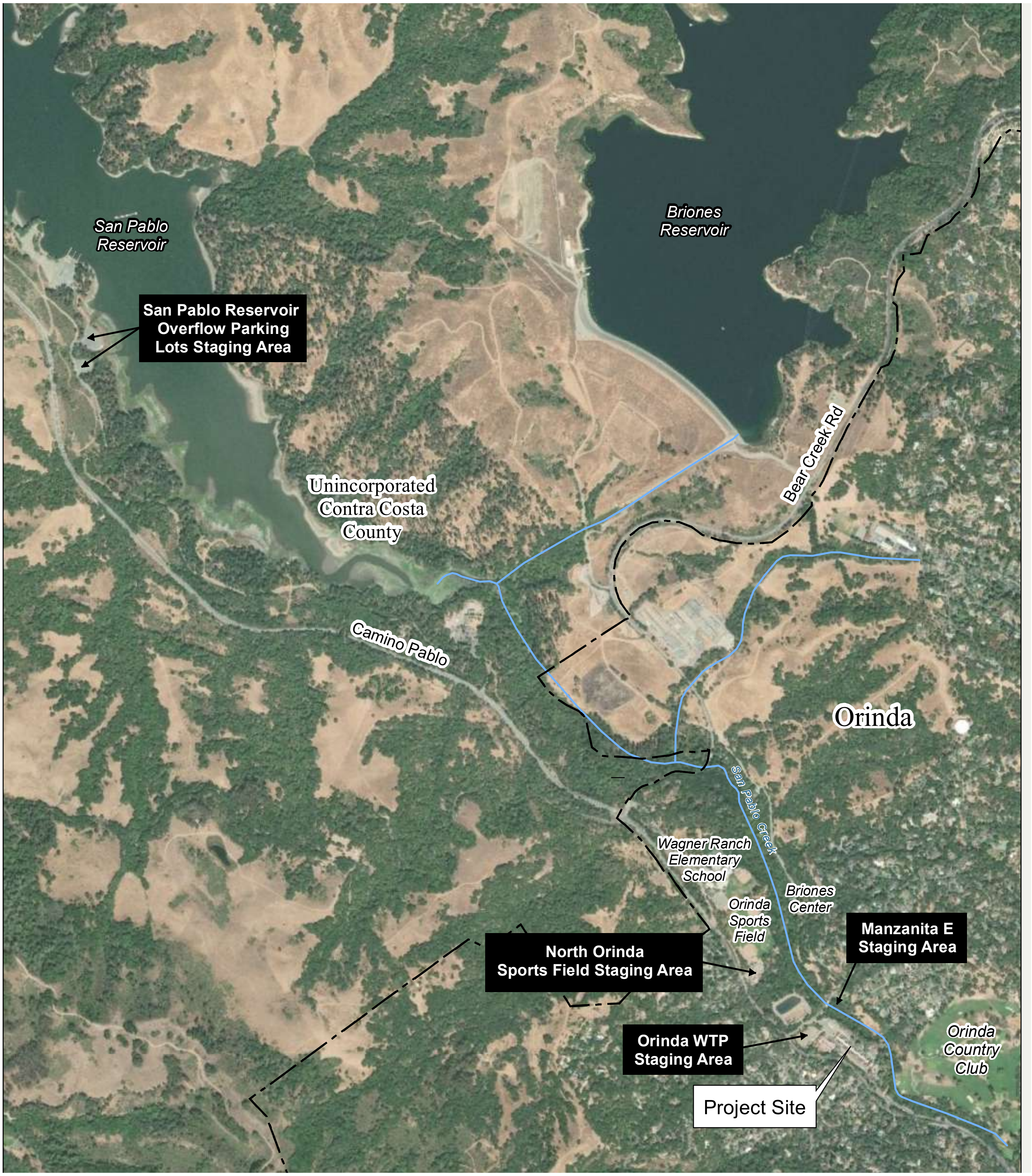


Image Source: ESA, 2019.

Figure 10

Construction Staging Areas

WC19-3659_10_ConStageArea

Chapter 6. References

Caltrans, *Truck Networks on California State Highways,* available online at http://www.dot.ca.gov/hq/traffops/trucks/truckmap/truckmap-d04.pdf

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HCM 2000: Highway Capacity Manual. Washington, DC. Transportation Research Board, 2000.

HCM 2010: Highway Capacity Manual. Washington, DC. Transportation Research Board, 2010.

Appendix A:
Traffic Count Data

Prepared by National Data & Surveying Services

Hwy 24 EB Off-Ramp & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-001
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS		COUNT PERIODS	
AM	07:30 AM - 08:30 AM	AM	07:00 AM - 09:00 AM
NOON	02:00 PM - 03:00 PM	NOON	11:00 AM - 03:00 PM
PM	05:00 PM - 06:00 PM	PM	04:00 PM - 06:00 PM

Hwy 24 EB Off-Ramp
SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	292	4	7	0	239
NOON	178	9	27	0	248
PM	193	8	31	0	246
	1	0.5	0.5	0	

Camino Pablo
EASTBOUND

		AM	NOON	PM
⇦		1292	758	942
↷	0	0	3	3
↱	1	182	193	200
→	2	468	560	796
↴	0	62	45	58

Camino Pablo
WESTBOUND

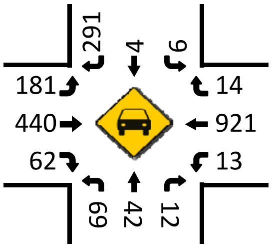
		PM	NOON	AM
↰	0	15	27	14
←	3	702	529	931
↲	1	14	10	13
↶	0	0	0	1
⇨		841	598	488

CONTROL			
Signalized			
TEV	2098	1668	2109
	AM	NOON	PM
PHF	0.93	0.87	0.94

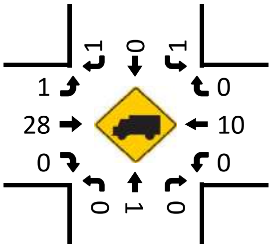
NORTHBOUND
Hwy 24 EB Off-Ramp

	⇩	↶	↰	↑	↱
		0	1.3	0.3	0.3
PM	80	0	44	31	14
NOON	64	0	48	28	11
AM	79	0	69	43	12

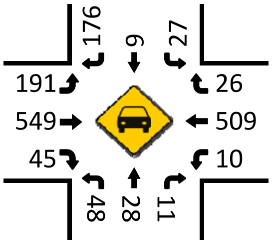
Cars (AM)



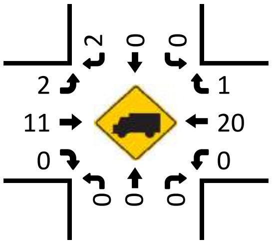
HT (AM)



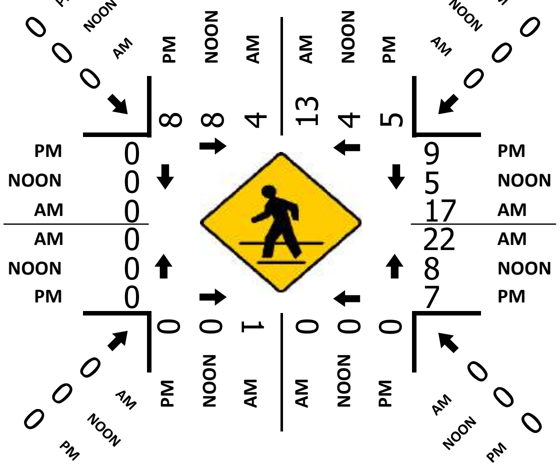
Cars (NOON)



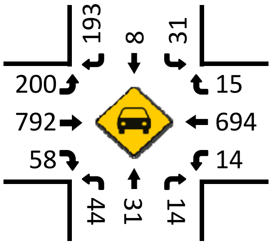
HT (NOON)



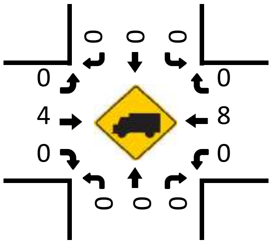
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Santa Maria Way/Hwy 24 WB On-Ramp & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-002
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS	
AM	08:00 AM - 09:00 AM
NOON	02:00 PM - 03:00 PM
PM	04:00 PM - 05:00 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	11:00 AM - 03:00 PM
PM	04:00 PM - 06:00 PM

Santa Maria Way/Hwy 24 WB On-Ramp
SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	32	137	170	0	558
NOON	53	133	343	0	461
PM	43	135	323	0	590
	1	0.5	1.5	0	

Camino Pablo
WESTBOUND

		PM	NOON	AM
1	↰	524	427	484
2	←	1397	830	628
0	↲	0	0	0
0	↶	0	0	0
	⇨	923	910	850

Camino Pablo
EASTBOUND

AM	NOON	PM		
660	883	1440	⇦	
0	0	0	↷	0
74	34	66	↱	1
680	567	600	→	2
740	230	337	↳	1

CONTROL

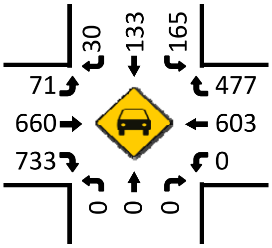
Signalized

	AM	NOON	PM
TEV	2945	2617	3425
PHF	0.89	0.89	0.91

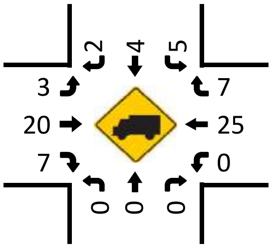
NORTHBOUND
Santa Maria Way/Hwy 24 WB On-Ramp

	⇩	↶	↰	↑	↱
		0	0	0	0
PM	472	0	0	0	0
NOON	363	0	0	0	0
AM	877	0	0	0	0

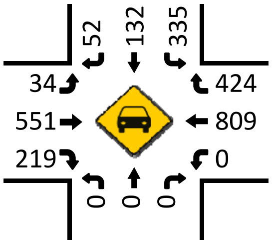
Cars (AM)



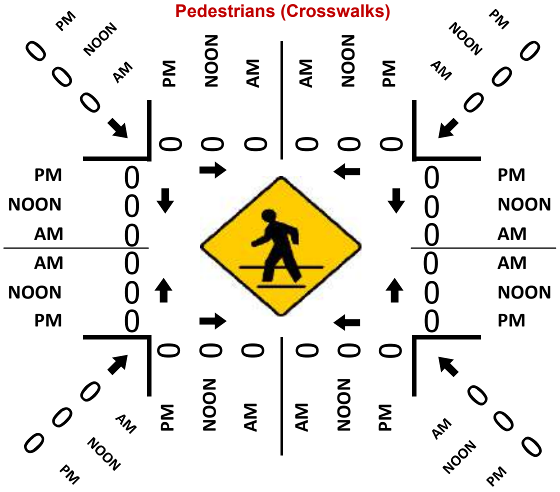
HT (AM)



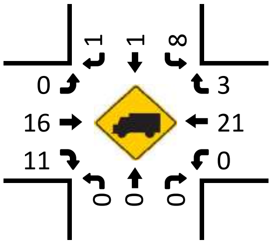
Cars (NOON)



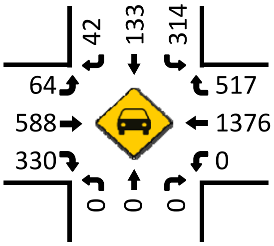
Pedestrians (Crosswalks)



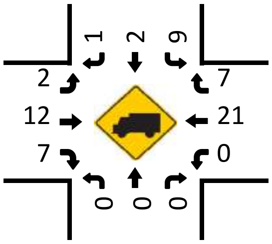
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Camino Sobrante & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-003
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS	
	07:15 AM - 08:15 AM
	02:00 PM - 03:00 PM
	04:00 PM - 05:00 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	11:00 AM - 03:00 PM
PM	04:00 PM - 06:00 PM

Camino Sobrante
SOUTHBOUND

AM	19	0	188	0	182	AM
NOON	50	0	177	0	227	NOON
PM	52	0	199	0	260	PM
	0.5	0.5	0	0		

Camino Pablo
EASTBOUND

AM	NOON	PM	
527	743	1288	
0	0	1	0
47	37	46	1
1398	677	796	2
0	0	0	0

CONTROL
Signalized

TEV	2295	1824	2543
	AM	NOON	PM
PHF	0.97	0.90	0.93

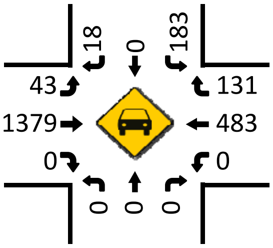
Camino Pablo
WESTBOUND

	PM	NOON	AM
1	214	190	135
2	1235	693	508
0	0	0	0
0	0	0	0
	995	854	1586

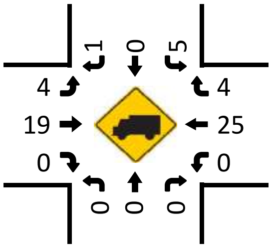
NORTHBOUND
Camino Sobrante

		0	0	0	0	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

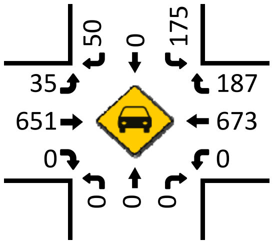
Cars (AM)



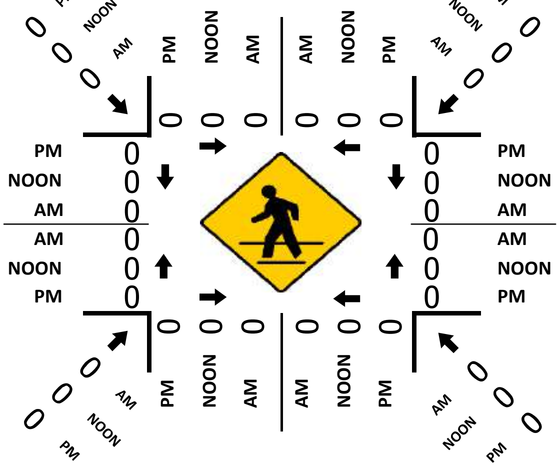
HT (AM)



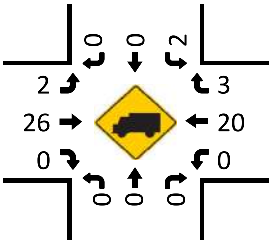
Cars (NOON)



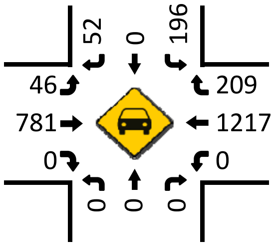
Pedestrians (Crosswalks)



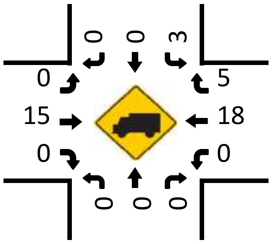
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Orinda Way/ El Toyonal & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-004
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
02:00 PM - 03:00 PM	11:00 AM - 03:00 PM
04:00 PM - 05:00 PM	04:00 PM - 06:00 PM

Orinda Way/ El Toyonal
SOUTHBOUND

	↲	↓	↳	U	⇧
AM	87	13	5	0	144
NOON	120	11	19	0	90
PM	166	52	9	0	87
	0.5	0.5	0	0	

Camino Pablo
EASTBOUND

	AM	NOON	PM	
⇦	606	814	1411	
U	0	0	0	0
↱	111	70	62	1
→	1327	628	754	2
↴	31	11	9	0

Camino Pablo
WESTBOUND

		PM	NOON	AM
1	↰	5	10	11
2	←	1232	671	478
1	↲	48	59	34
0	U	1	0	2
	⇨	841	706	1440

CONTROL

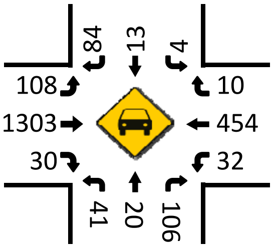
Signalized

	AM	NOON	PM
TEV	2268	1691	2448
PHF	0.91	0.92	0.92

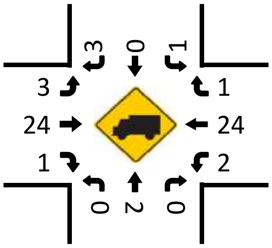
NORTHBOUND
Orinda Way/ El Toyonal

	⇩	U	↰	↑	↱
		0	0.5	0.5	1
PM	109	0	13	20	77
NOON	81	0	23	10	59
AM	78	0	41	22	106

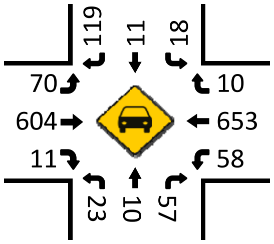
Cars (AM)



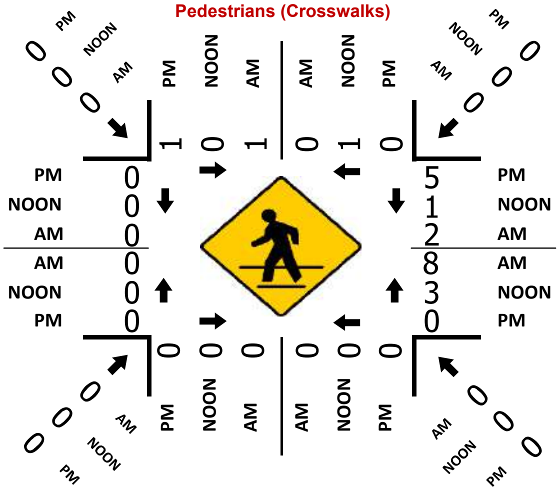
HT (AM)



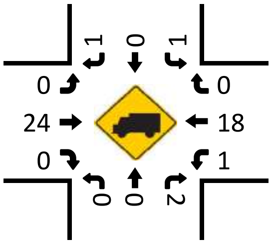
Cars (NOON)



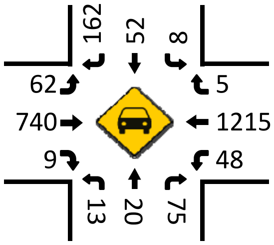
Pedestrians (Crosswalks)



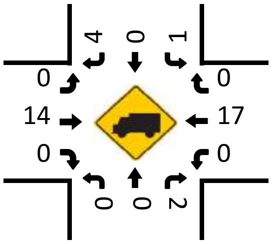
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

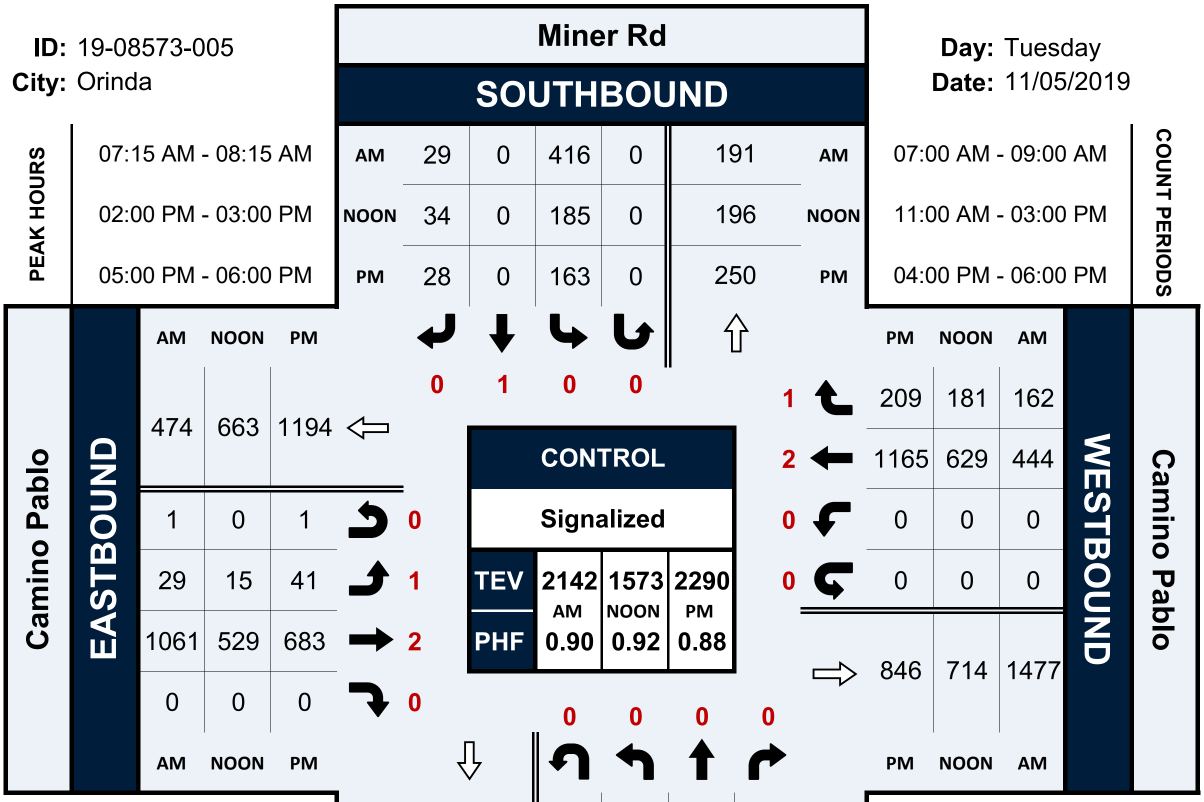
Miner Rd & Camino Pablo

Peak Hour Turning Movement Count

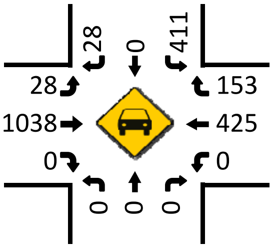
ID: 19-08573-005
City: Orinda

Day: Tuesday
Date: 11/05/2019

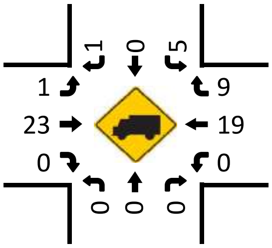
PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
02:00 PM - 03:00 PM	11:00 AM - 03:00 PM
05:00 PM - 06:00 PM	04:00 PM - 06:00 PM



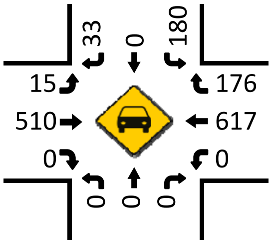
Cars (AM)



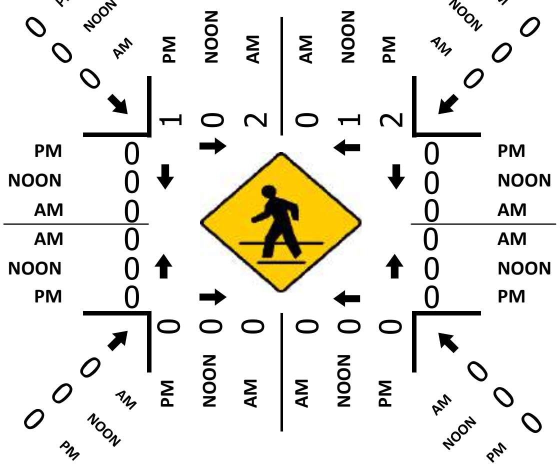
HT (AM)



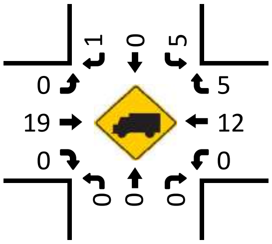
Cars (NOON)



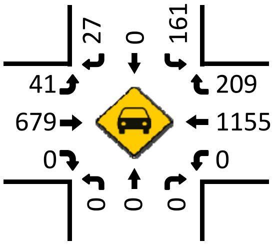
Pedestrians (Crosswalks)



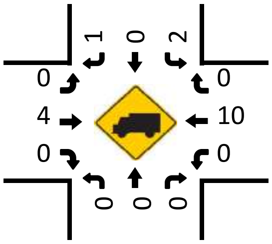
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Ardilla Rd & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-006
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
02:00 PM - 03:00 PM	11:00 AM - 03:00 PM
04:00 PM - 05:00 PM	04:00 PM - 06:00 PM

Ardilla Rd

SOUTHBOUND

	↲	↓	↳	⮌	⇧
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
	0	0	0	0	

Camino Pablo

EASTBOUND

	AM	NOON	PM	
⇦	477	662	1241	
U-turn	0	0	0	0
↰	0	0	0	0
→	1107	550	699	1
↴	0	0	0	0

CONTROL

Signalized

	AM	NOON	PM
TEV	1584	1214	1941
PHF	0.91	0.94	0.98

Camino Pablo

WESTBOUND

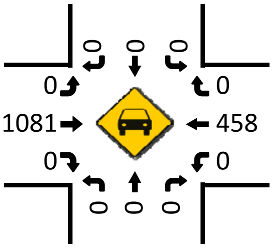
		PM	NOON	AM
⮤	0	0	0	0
←	1	1241	662	477
↲	0	1	1	0
U-turn	0	0	0	0
⇨		699	551	1107

NORTHBOUND

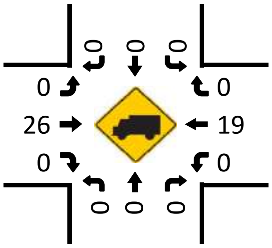
Ardilla Rd

	⇩	U-turn	↰	↑	↱
		0	0	1	0
PM	1	0	0	0	0
NOON	1	0	0	0	1
AM	0	0	0	0	0

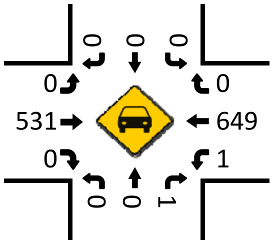
Cars (AM)



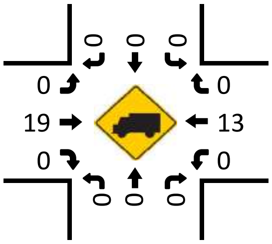
HT (AM)



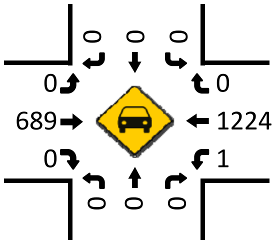
Cars (NOON)



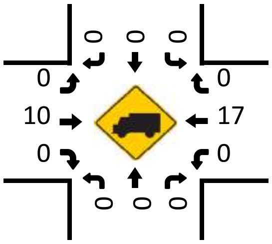
HT (NOON)



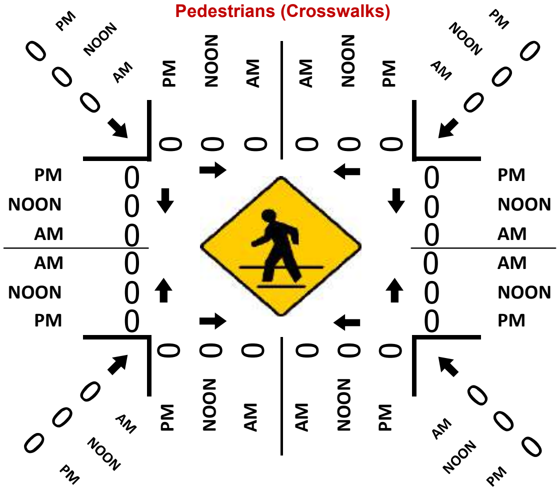
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Unnamed Rd Across from the ORWTP S Gate Entrance & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-007
City: Orinda

Day: Tuesday
Date: 11/05/2019

	PEAK HOURS	COUNT PERIODS
AM	07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NOON	02:00 PM - 03:00 PM	11:00 AM - 03:00 PM
PM	04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Unnamed Rd Across from the ORWTP S Gate Entrance

SOUTHBOUND

	↲	↓	↳	U	⇧
AM	0	0	0	0	3
NOON	0	0	0	0	1
PM	0	0	0	0	0
	0	0	0	0	

Camino Pablo

EASTBOUND

	AM	NOON	PM	
⇦	474	640	1167	
U	0	0	0	0
↰	0	0	0	0
→	1091	533	723	0.5
↱	4	5	4	0.5

Camino Pablo

WESTBOUND

		PM	NOON	AM
0	↰	0	1	3
1	←	1166	637	465
1	↲	18	13	11
0	U	0	0	0
	⇨	746	547	1114

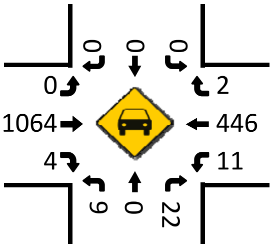
CONTROL			
Signalized			
	AM	NOON	PM
TEV	1606	1206	1935
PHF	0.89	0.95	0.93

NORTHBOUND

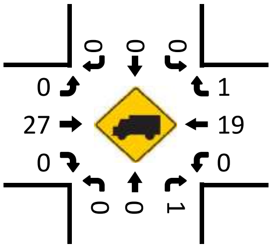
Rd Across from the ORWTP S Gate

	⇩	U	↰	↑	↱
		0	1	0	1
PM	22	0	1	0	23
NOON	18	0	3	0	14
AM	15	0	9	0	23

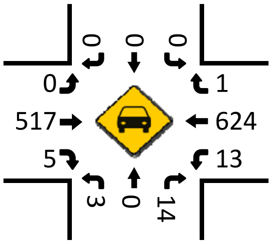
Cars (AM)



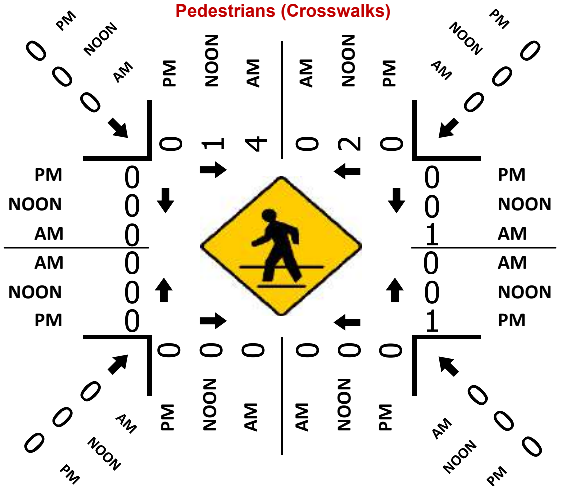
HT (AM)



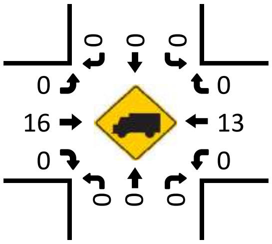
Cars (NOON)



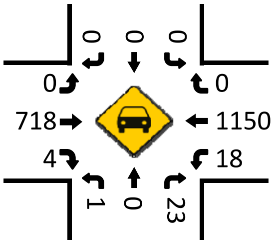
Pedestrians (Crosswalks)



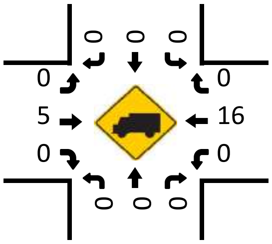
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Manzanita Dr & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-008
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
02:00 PM - 03:00 PM	11:00 AM - 03:00 PM
04:45 PM - 05:45 PM	04:00 PM - 06:00 PM

Manzanita Dr

SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	16	0	41	0	39
NOON	10	0	30	0	28
PM	4	0	21	0	33
	0	1	0	0	

Camino Pablo

EASTBOUND

	AM	NOON	PM	
⇦	467	613	1099	
↶	0	0	0	0
↰	16	9	8	0
→	992	482	683	1
↳	0	0	0	0

CONTROL

Signalized

	AM	NOON	PM
TEV	1539	1153	1836
PHF	0.88	0.91	0.93

WESTBOUND

Camino Pablo

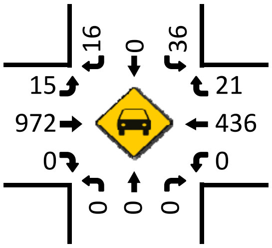
		PM	NOON	AM
0	↰	25	19	23
1	←	1095	603	451
0	↱	0	0	0
0	↶	0	0	0
	⇨	704	512	1033

	⇩	↶	↰	↑	↱
		0	0	0	0
PM	0	0	0	0	0
NOON	0	0	0	0	0
AM	0	0	0	0	0

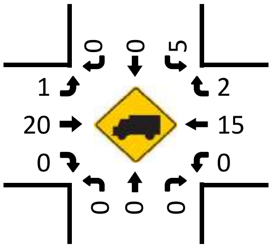
NORTHBOUND

Manzanita Dr

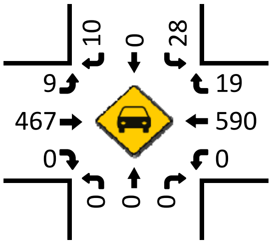
Cars (AM)



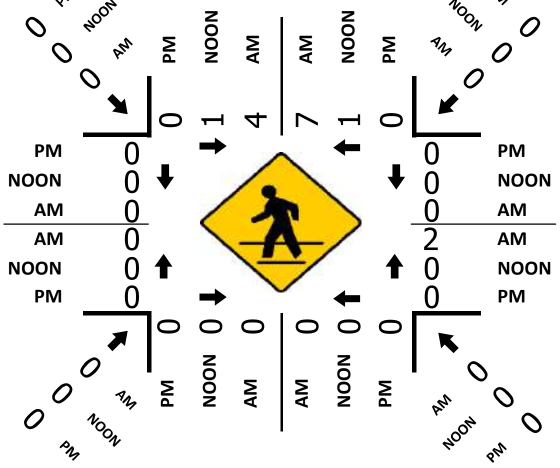
HT (AM)



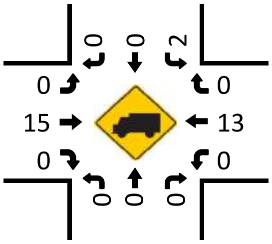
Cars (NOON)



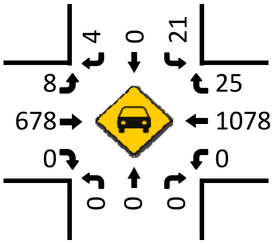
Pedestrians (Crosswalks)



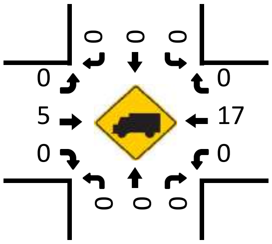
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

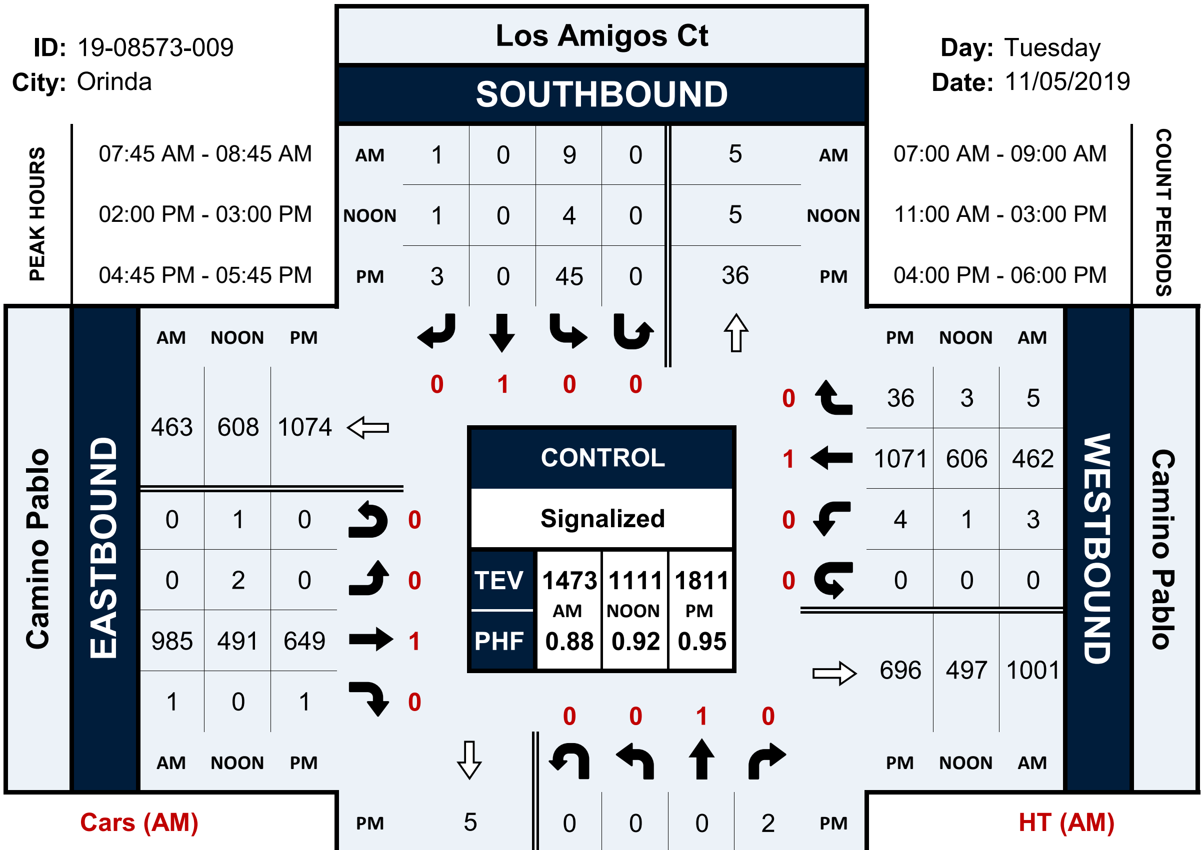
Los Amigos Ct & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-009
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS		COUNT PERIODS
07:45 AM - 08:45 AM	AM	07:00 AM - 09:00 AM
02:00 PM - 03:00 PM	NOON	11:00 AM - 03:00 PM
04:45 PM - 05:45 PM	PM	04:00 PM - 06:00 PM



Los Amigos Ct — SOUTHBOUND

	↲	↓	↳	U	⇧
AM	1	0	9	0	5
NOON	1	0	4	0	5
PM	3	0	45	0	36
	0	1	0	0	

Camino Pablo — EASTBOUND

	AM	NOON	PM	
⇦	463	608	1074	
U	0	1	0	0
↱	0	2	0	0
→	985	491	649	1
↴	1	0	1	0

Camino Pablo — WESTBOUND

		PM	NOON	AM
↰	0	36	3	5
←	1	1071	606	462
↲	0	4	1	3
U	0	0	0	0
⇨		696	497	1001

Los Amigos Ct — NORTHBOUND

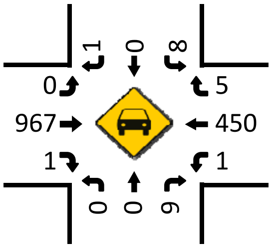
	⇩	U	↰	↑	↱
		0	0	1	0
PM	5	0	0	0	2
NOON	1	0	0	0	2
AM	4	0	0	0	7

CONTROL

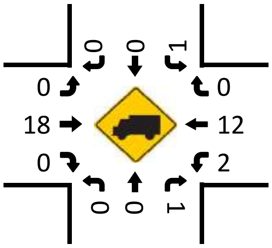
Signalized

	AM	NOON	PM
TEV	1473	1111	1811
PHF	0.88	0.92	0.95

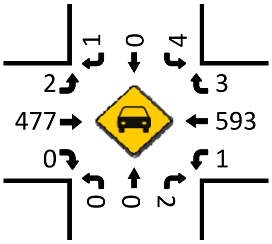
Cars (AM)



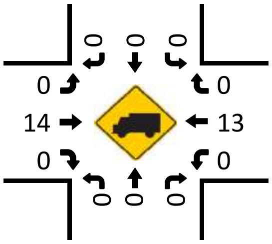
HT (AM)



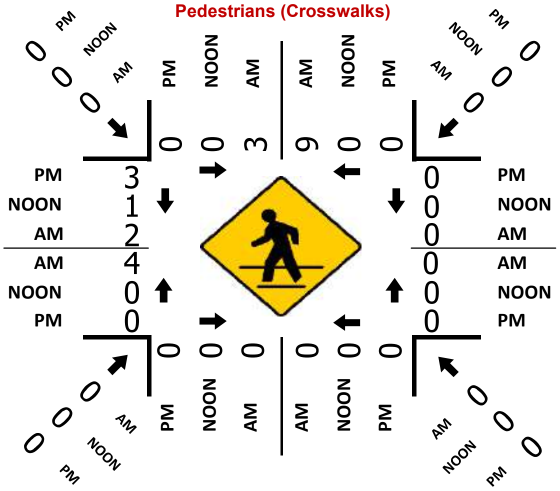
Cars (NOON)



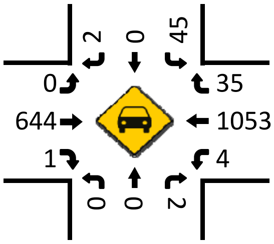
HT (NOON)



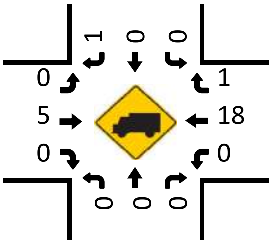
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Monte Vista Rd & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-010
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS	
AM	07:45 AM - 08:45 AM
NOON	02:00 PM - 03:00 PM
PM	04:15 PM - 05:15 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	11:00 AM - 03:00 PM
PM	04:00 PM - 06:00 PM

Monte Vista Rd

SOUTHBOUND

	↲	↓	↳	U	⇧
AM	7	2	168	0	1
NOON	8	1	80	0	0
PM	4	3	65	0	0
Lanes	0	1	0	0	

Camino Pablo

EASTBOUND

	AM	NOON	PM	Lanes
⇦	470	610	1128	
U	0	0	0	0
↰	0	0	0	0
→	808	411	567	1
↴	2	3	3	0

CONTROL

Signalized

	AM	NOON	PM
TEV	1471	1124	1785
PHF	0.89	0.89	0.99

WESTBOUND

Camino Pablo

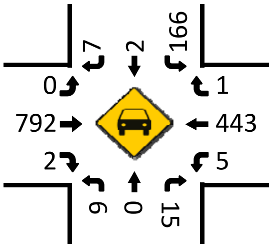
Lanes		PM	NOON	AM
0	↰	0	0	1
1	←	1121	599	457
1	↲	14	9	5
0	U	0	0	0
	⇨	637	501	991

NORTHBOUND

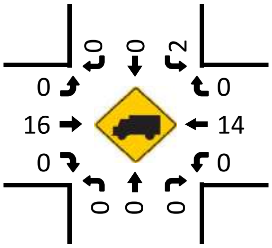
Monte Vista Rd

	⇩	U	↰	↑	↱
Lanes		0	0	1	0
PM	20	0	3	0	5
NOON	13	0	3	0	10
AM	9	0	6	0	15

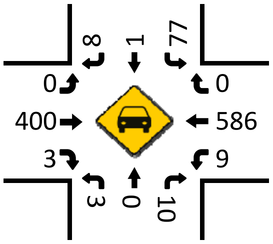
Cars (AM)



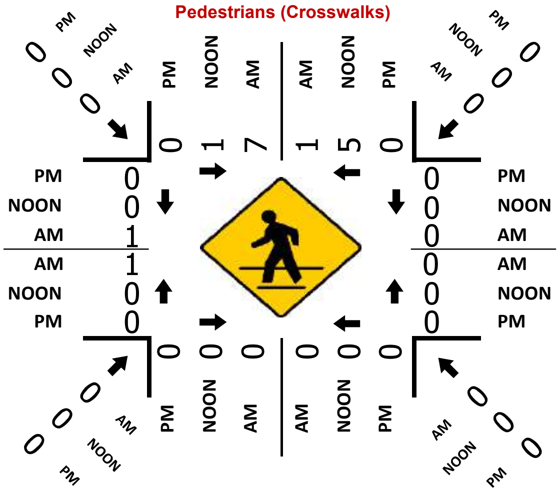
HT (AM)



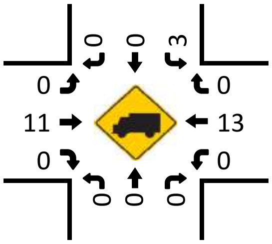
Cars (NOON)



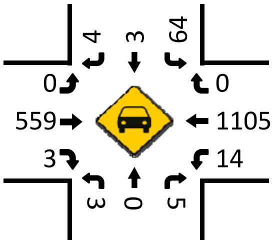
Pedestrians (Crosswalks)



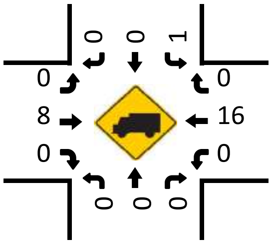
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Claremont Ave & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-011
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS
07:45 AM - 08:45 AM
02:00 PM - 03:00 PM
04:45 PM - 05:45 PM

COUNT PERIODS
AM 07:00 AM - 09:00 AM
NOON 11:00 AM - 03:00 PM
PM 04:00 PM - 06:00 PM

Claremont Ave
SOUTHBOUND

	↲	↓	↳	↶	⇧
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	0	0	0
	0	0	0	0	

Camino Pablo
EASTBOUND

	AM	NOON	PM	
⇦	481	622	1120	
↶	0	0	0	0
↰	0	0	0	0
→	1025	509	684	1
↴	12	3	13	0

CONTROL
Signalized

	AM	NOON	PM
TEV	1585	1191	1893
PHF	0.89	0.93	0.93

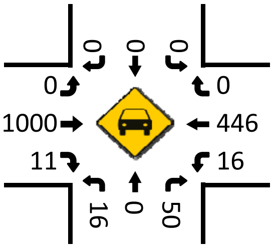
Camino Pablo
WESTBOUND

		PM	NOON	AM
0	↱	0	0	0
1	←	1114	614	465
1	↙	44	27	16
0	↶	0	0	0
	⇨	716	539	1076

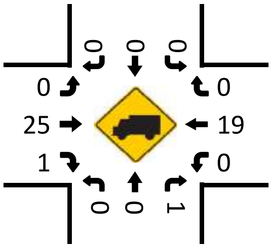
NORTHBOUND
Claremont Ave

		0	0	1	0
	⇩	↶	↰	↑	↱
PM	57	0	6	0	32
NOON	30	0	8	0	30
AM	28	0	16	0	51

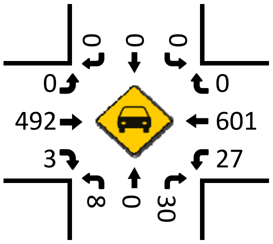
Cars (AM)



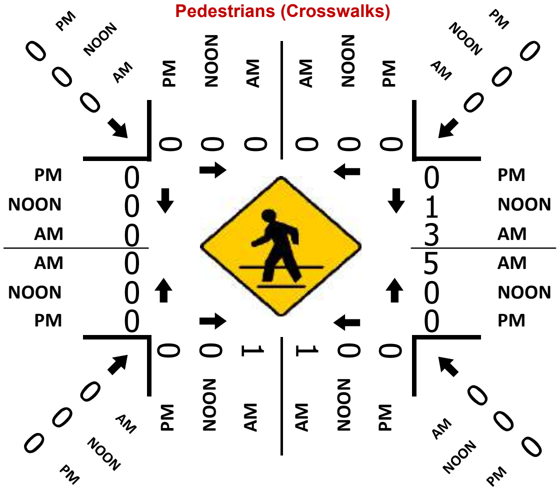
HT (AM)



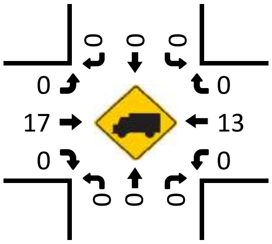
Cars (NOON)



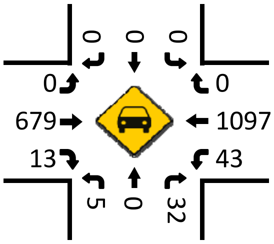
Pedestrians (Crosswalks)



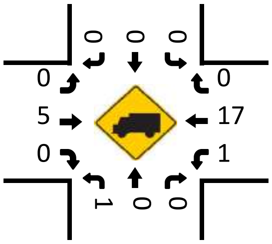
HT (NOON)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Wildcat Canyon Rd & Camino Pablo

Peak Hour Turning Movement Count

ID: 19-08573-012
City: Orinda

Day: Tuesday
Date: 11/05/2019

PEAK HOURS	
AM	07:45 AM - 08:45 AM
NOON	02:00 PM - 03:00 PM
PM	04:15 PM - 05:15 PM

COUNT PERIODS	
AM	07:00 AM - 09:00 AM
NOON	11:00 AM - 03:00 PM
PM	04:00 PM - 06:00 PM

Wildcat Canyon Rd

SOUTHBOUND

	↲	↓	↳	U		⇧
AM	2	90	199	0		229
NOON	9	5	18	0		148
PM	11	8	22	0		213
	0.5	0.5	1	0		

Camino Pablo

EASTBOUND

	AM	NOON	PM		
⇦	198	472	1186		
U	0	0	0		0
↱	8	9	11		1
→	585	363	395		1
↴	37	12	8		0

CONTROL

Signalized

	AM	NOON	PM
TEV	1422	1089	1993
PHF	0.85	0.87	0.98

Camino Pablo

WESTBOUND

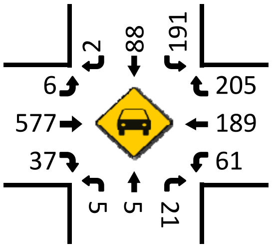
		PM	NOON	AM
1	↰	98	127	215
1	←	1011	440	191
1	↲	12	29	62
0	U	0	0	0
	⇨	566	423	806

NORTHBOUND

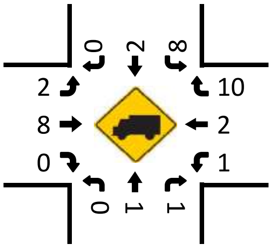
Wildcat Canyon Rd

	⇩	U	↰	↑	↱
		0	0	1	0
PM	28	0	164	104	149
NOON	46	0	23	12	42
AM	189	0	5	6	22

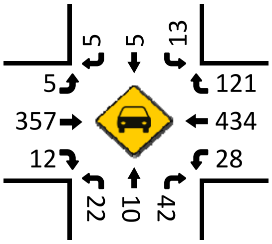
Cars (AM)



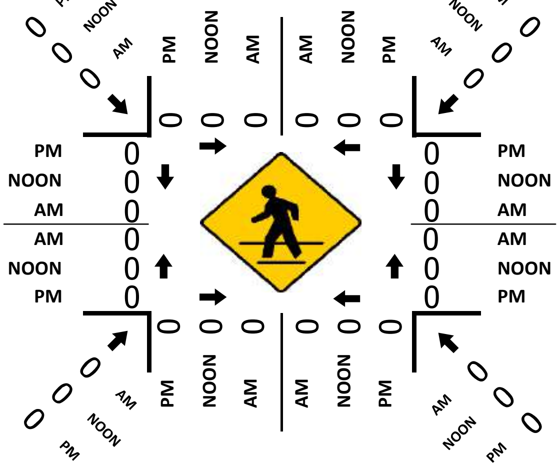
HT (AM)



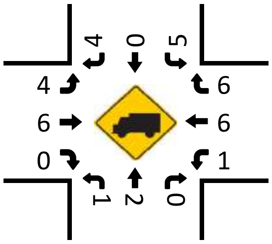
Cars (NOON)



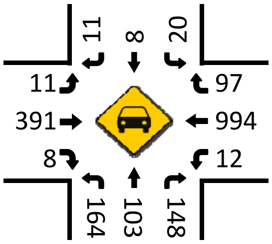
Pedestrians (Crosswalks)



HT (NOON)



Cars (PM)



HT (PM)

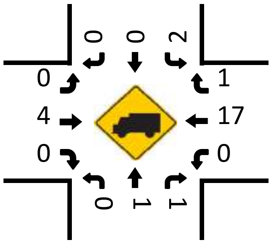


Table: Streetlight Data 2019

Zone Nam	Day Type	Day Part	Average Daily Segment Traffic (StL Volume)	Avg Segment Speed (mph)	Avg All Segment Speed (mph)	Segment Duration (sec)	Segment Duration (sec)	Free Flow Factor
Camino Pablo, Orinda	0: All Days (M-Su)	0: All Day (12am-12am)	13751	29	28	57	65	0.733
	1: Weekday (Tu-Th)	0: All Day (12am-12am)	15099	27	27	60	67	0.694
	2: Weekend Day (Sa-Su)	0: All Day (12am-12am)	11147	32	32	50	58	0.829

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF ORINDA
CAMINO PABLO S/O BEAR CREEK RD.

camino1
Site Code: 1s

Start	14-May-19	SB		Hour Totals		NB		Hour Totals		Both Dir.	15-May-19	SB		Hour Totals		NB		Hour Totals		Both Dir.
Time	Tue	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total	Wed	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total
12:00		3	91			15	95			204		5	93			10	63			171
12:15		1	85			15	76			177		0	90			4	70			164
12:30		1	101			7	91			200		3	102			8	103			216
12:45		1	73	6	350	3	98	40	360	175		3	81	11	366	6	83	28	319	173
01:00		4	69			8	90			171		1	107			3	110			221
01:15		3	103			2	92			200		1	94			2	127			224
01:30		0	87			5	108			200		2	95			7	106			210
01:45		1	103	8	362	4	120	19	410	228		0	92	4	388	4	139	16	482	235
02:00		3	81			4	119			207		0	94			4	123			221
02:15		7	120			3	133			263		1	96			1	128			226
02:30		4	115			2	158			279		1	112			1	165			279
02:45		4	106	18	422	0	192	9	602	302		4	97	6	399	2	189	8	605	292
03:00		1	136			4	205			346		4	105			5	196			310
03:15		8	118			1	210			337		6	128			2	198			334
03:30		10	144			1	248			403		14	115			3	233			365
03:45		11	155	30	553	2	288	8	951	456		10	147	34	495	3	267	13	894	427
04:00		12	128			3	266			409		12	118			2	264			396
04:15		16	156			1	292			465		14	133			4	255			406
04:30		14	***192***			8	278			492		15	116			4	***296***			431
04:45		31	***147***	73	623	6	279	18	1115	463		26	***154***	67	521	5	***272***	15	1087	457
05:00		44	***146***			2	256			448		40	***165***			10	***273***			488
05:15		59	***160***			10	258			487		51	***143***			8	***278***			480
05:30		85	174			11	***262***			532		85	***155***			11	259			510
05:45		118	137	306	617	23	***289***	46	1065	567		95	138	271	601	23	224	52	1034	480
06:00		190	135			38	***297***			***660***		122	153			43	213			531
06:15		260	108			58	***300***			***726***		192	121			65	217			***595***
06:30		***351***	99			48	215			***713***		***276***	92			73	174			***615***
06:45		***321***	70	1122	412	52	171	196	983	***614***		***276***	69	866	435	62	174	243	778	***581***
07:00		***306***	45			55	112			518		***268***	62			71	131			***532***
07:15		***265***	58			***101***	102			526		***254***	45			***79***	107			485
07:30		232	46			***143***	98			519		246	35			***136***	67			484
07:45		147	33	950	182	***209***	81	508	393	470		144	30	912	172	***224***	76	510	381	474
08:00		155	24			***104***	71			354		154	24			***126***	78			382
08:15		279	21			69	65			434		222	25			78	61			386
08:30		271	26			109	48			454		250	27			117	53			447
08:45		241	15	946	86	99	63	381	247	418		226	23	852	99	99	47	420	239	395
09:00		216	23			88	55			382		268	15			74	47			404
09:15		166	22			92	61			341		239	21			87	51			398
09:30		154	20			77	44			295		210	19			96	60			385
09:45		152	16	688	81	83	53	340	213	304		196	20	913	75	88	36	345	194	340
10:00		123	25			42	32			222		162	16			77	45			300
10:15		118	15			69	23			225		153	14			78	30			275
10:30		124	14			59	27			224		171	10			86	20			287
10:45		86	12	451	66	64	21	234	103	183		130	7	616	47	76	20	317	115	233
11:00		87	8			77	16			188		101	10			55	21			187
11:15		94	5			87	18			204		97	8			81	15			201
11:30		100	5			75	14			194		107	3			75	22			207
11:45		92	4	373	22	77	18	316	66	191		105	3	410	24	86	17	297	75	211
Total		4971	3776			2115	6508			17370		4962	3622			2264	6203			17051
Day Total		8747				8623						8584				8467				
Percent	0.0%	56.8 %	43.2 %			24.5 %	75.5 %					57.8 %	42.2 %			26.7 %	73.3 %			
Peak		06:30	04:30			07:15	05:30			06:00		06:30	04:45			07:15	04:30			06:15
Vol.		1243	645			557	1148			2713		1074	617			565	1119			2323
P.H.F.		0.885	0.840			0.666	0.957			0.934		0.973	0.935			0.631	0.945			0.944

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF ORINDA
BEAR CREEK RD. E/O CAMINO PABLO

bear creek2
Site Code: 2w

Start	14-May-19	WB		Hour Totals		EB		Hour Totals		Both Dir.	15-May-19	WB		Hour Totals		EB		Hour Totals		Both Dir.
Time	Tue	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total	Wed	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total
12:00		1	***21***			0	19			41		0	***14***			1	17			32
12:15		1	***17***			1	14			33		1	***19***			0	11			31
12:30		0	***10***			0	11			21		0	***20***			0	17			37
12:45		1	***15***	3	63	0	14	1	58	30		0	***11***	1	64	0	11	1	56	22
01:00		0	17			0	21			38		0	9			0	22			31
01:15		2	14			0	21			37		0	15			0	15			30
01:30		0	9			0	21			30		0	9			0	24			33
01:45		0	13	2	53	0	35	0	98	48		0	10	0	43	0	38	0	99	48
02:00		0	7			0	24			31		0	19			0	26			45
02:15		0	5			0	33			38		0	9			1	29			39
02:30		0	11			0	45			56		0	9			0	48			57
02:45		0	18	0	41	0	49	0	151	67		0	12	0	49	0	50	1	153	62
03:00		0	18			0	48			66		0	5			0	29			34
03:15		0	8			0	32			40		0	26			0	33			59
03:30		0	9			0	***42***			51		0	10			0	37			47
03:45		0	12	0	47	0	***64***	0	186	76		0	9	0	50	0	***46***	0	145	55
04:00		0	7			0	***58***			65		0	10			0	***53***			63
04:15		1	16			0	***60***			77		1	11			0	***38***			50
04:30		3	15			0	41			59		2	5			0	***49***			56
04:45		2	15	6	53	0	52	0	211	69		1	11	4	37	0	40	0	180	52
05:00		1	5			0	49			55		2	3			0	38			43
05:15		0	8			0	62			70		1	9			1	34			45
05:30		5	7			2	50			64		3	8			1	38			50
05:45		4	11	10	31	2	36	4	197	53		3	3	9	23	4	12	6	122	22
06:00		5	8			9	34			56		4	8			9	11			32
06:15		5	13			10	19			47		5	5			8	9			27
06:30		10	8			6	22			46		12	3			7	9			31
06:45		20	5	40	34	6	11	31	86	42		28	2	49	18	10	7	34	36	47
07:00		23	5			15	13			56		44	8			11	6			69
07:15		61	10			***34***	8			***113***		48	3			***21***	3			75
07:30		39	6			***58***	10			***113***		97	0			***50***	1			***148***
07:45		***77***	3	200	24	***126***	7	233	38	***213***		48	4	237	15	***147***	3	229	13	***202***
08:00		***65***	3			***29***	6			***103***		***81***	5			***28***	1			***115***
08:15		***48***	2			15	1			66		***101***	0			16	0			***117***
08:30		***62***	5			65	2			134		***76***	0			52	3			131
08:45		30	2	205	12	28	1	137	10	61		***74***	1	332	6	27	3	123	7	105
09:00		9	6			18	2			35		45	4			11	4			64
09:15		27	1			17	4			49		31	2			11	2			46
09:30		13	3			16	2			34		20	1			9	2			32
09:45		10	5	59	15	16	2	67	10	33		14	3	110	10	20	2	51	10	39
10:00		14	2			13	1			30		14	3			8	1			26
10:15		20	10			15	2			47		13	0			16	2			31
10:30		8	0			16	0			24		15	2			18	1			36
10:45		8	1	50	13	13	1	57	4	23		13	5	55	10	6	2	48	6	26
11:00		21	0			12	0			33		16	2			11	3			32
11:15		16	2			18	1			37		13	1			8	0			22
11:30		13	0			23	1			37		10	0			20	0			30
11:45		21	0	71	2	19	2	72	4	42		8	1	47	4	12	0	51	3	21
Total		646	388			602	1053			2689		844	329			544	830			2547
Day Total		1034				1655						1173				1374				
Percent	0.0%	62.5 %	37.5 %			36.4 %	63.6 %					72.0 %	28.0 %			39.6 %	60.4 %			
Peak		07:45	12:00			07:15	03:30			07:15		08:00	12:00			07:15	03:45			07:30
Vol.		252	63			247	224			542		332	64			246	186			582
P.H.F.		0.818	0.750			0.490	0.875			0.636		0.822	0.800			0.418	0.877			0.720

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF ORINDA
MANZANITA DR. E/O CAMINO PABLO

manzanita3
Site Code: 3w

Start	14-May-19	WB		Hour Totals		EB		Hour Totals		Both Dir.	15-May-19	WB		Hour Totals		EB		Hour Totals		Both Dir.
Time	Tue	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total	Wed	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total
12:00		0	11			0	12			23		1	6			0	4			11
12:15		0	12			1	2			15		0	10			0	4			14
12:30		0	8			1	8			17		0	10			0	8			18
12:45		1	6	1	37	0	***13***	2	35	20		0	10	1	36	0	8	0	24	18
01:00		0	12			0	***17***			29		0	6			0	5			11
01:15		0	16			0	***5***			21		0	3			0	14			17
01:30		0	12			0	***14***			26		0	7			0	6			13
01:45		0	8	0	48	0	6	0	42	14		0	7	0	23	0	8	0	33	15
02:00		0	8			1	9			18		0	4			0	7			11
02:15		0	8			0	12			20		0	9			0	4			13
02:30		0	11			0	11			22		0	7			0	11			18
02:45		0	13	0	40	0	10	1	42	23		0	***16***	0	36	0	5	0	27	21
03:00		0	16			0	15			31		0	***10***			0	***15***			25
03:15		0	7			0	7			14		0	***12***			0	***9***			21
03:30		0	13			0	7			20		0	***10***			0	***13***			23
03:45		0	***11***	0	47	0	9	0	38	20		0	11	0	43	1	***7***	1	44	19
04:00		0	***21***			0	5			26		0	12			0	11			23
04:15		0	***12***			0	8			20		0	10			0	8			18
04:30		0	***15***			0	10			25		1	6			0	6			13
04:45		2	11	2	59	0	12	0	35	25		1	6	2	34	0	8	0	33	15
05:00		0	5			0	3			8		2	8			0	7			17
05:15		2	3			1	9			15		1	5			1	8			15
05:30		2	5			2	7			16		3	8			2	9			22
05:45		6	7	10	20	0	6	3	25	19		4	5	10	26	0	10	3	34	19
06:00		1	8			0	7			16		3	7			1	10			21
06:15		2	6			6	11			25		6	7			5	10			28
06:30		7	5			4	9			25		3	15			5	6			29
06:45		3	2	13	21	2	9	12	36	16		3	5	15	34	2	5	13	31	15
07:00		***11***	4			3	8			***26***		7	7			2	12			28
07:15		***14***	5			7	8			***34***		***11***	6			8	9			***34***
07:30		***19***	3			3	4			***29***		***16***	5			4	5			***30***
07:45		***22***	5	66	17	12	7	25	27	***46***		***31***	3	65	21	7	2	21	28	***43***
08:00		9	3			5	6			23		***14***	5			11	3			***33***
08:15		6	2			9	2			19		5	1			4	6			16
08:30		8	2			9	5			24		9	1			9	5			24
08:45		6	2	29	9	7	4	30	17	19		12	5	40	12	7	4	31	18	28
09:00		12	3			4	7			26		7	5			3	2			17
09:15		10	4			7	1			22		10	0			5	1			16
09:30		17	1			4	4			26		7	2			9	2			20
09:45		11	0	50	8	5	1	20	13	17		12	1	36	8	12	5	29	10	30
10:00		14	0			9	0			23		12	0			3	2			17
10:15		8	1			2	3			14		11	1			6	3			21
10:30		11	3			9	2			25		12	0			7	0			19
10:45		13	3	46	7	7	1	27	6	24		10	2	45	3	***7***	0	23	5	19
11:00		9	1			***18***	0			28		14	0			***12***	0			26
11:15		23	0			***9***	1			33		9	0			***4***	0			13
11:30		11	1			***10***	1			23		10	0			***10***	1			21
11:45		9	0	52	2	***8***	1	45	3	18		12	0	45	0	3	2	29	3	17
Total		269	315			165	319			1068		259	276			150	290			975
Day Total		584				484						535				440				
Percent	0.0%	46.1%	53.9%			34.1%	65.9%					48.4%	51.6%			34.1%	65.9%			
Peak		07:00	03:45			11:00	00:45			07:00		07:15	02:45			10:45	03:00			07:15
Vol.		66	59			45	49			135		72	48			33	44			140
P.H.F.		0.750	0.702			0.625	0.721			0.734		0.581	0.750			0.688	0.733			0.814

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF ORINDA
CAMINO PABLO S/O MANZANITA DR.
NORTHBOUND

camino4-n
Site Code: 4n

Start	Tue	14-May-19	Hourly Totals		Wed	15-May-19	Hourly Totals			Total	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.
12:00	13	98			12	71				25	169
12:15	16	99			3	76				19	175
12:30	9	92			8	119				17	211
12:45	3	128	41	417	6	91	29	357		9	219
01:00	8	106			3	131				11	237
01:15	2	100			2	128				4	228
01:30	5	123			7	131				12	254
01:45	4	133	19	462	5	145	17	535		9	278
02:00	6	138			4	130				10	268
02:15	3	149			2	139				5	288
02:30	2	161			1	190				3	351
02:45	0	215	11	663	3	215	10	674		3	430
03:00	5	195			3	178				8	373
03:15	1	228			2	212				3	440
03:30	2	285			3	274				5	559
03:45	2	307	10	1015	6	285	14	949		8	592
04:00	2	**305**			5	309				7	**614**
04:15	1	**317**			3	280				4	**597**
04:30	9	**297**			6	**308**				15	**605**
04:45	6	**318**	**18**	**1237**	3	**303**	**17**	**1200**		9	**621**
05:00	3	270			12	**295**				15	565
05:15	10	296			8	**302**				18	598
05:30	12	261			13	270				25	531
05:45	26	338	51	1165	24	246	57	1113		50	584
06:00	41	298			44	227				85	525
06:15	59	322			73	231				132	553
06:30	51	211			81	176				132	387
06:45	58	182	209	1013	69	177	267	811		127	359
07:00	55	117			76	142				131	259
07:15	**115**	122			**104**	112				**219**	234
07:30	**147**	103			**140**	75				**287**	178
07:45	**212**	90	529	432	**214**	91	534	420		**426**	181
08:00	**87**	78			**106**	82				**193**	160
08:15	89	72			88	66				177	138
08:30	118	50			125	59				243	109
08:45	96	76	390	276	86	54	405	261		182	130
09:00	96	62			82	58				178	120
09:15	104	62			97	63				201	125
09:30	81	55			108	57				189	112
09:45	93	52	374	231	111	42	398	220		204	94
10:00	68	33			76	47				144	80
10:15	65	28			91	29				156	57
10:30	64	34			95	23				159	57
10:45	82	21	279	116	91	22	353	121		173	43
11:00	97	15			67	22				164	37
11:15	93	19			83	15				176	34
11:30	92	16			81	25				173	41
11:45	97	19	379	69	102	21	333	83		199	40
Total	2310	7096	2310	7096	2434	6744	2434	6744		4744	13840
Day Total	9406				9178					18584	
Percent	24.6%	75.4%	24.6%	75.4%	26.5%	73.5%	26.5%	73.5%		25.5%	74.5%
Peak	07:15	04:00	04:00	04:00	07:15	04:30	04:30	04:30	04:30	07:15	04:00
Vol.	561	1237	1237	1237	564	1208	1208	1208	1208	1125	2437
P.H.F.	0.662	0.972	0.972	0.972	0.659	0.981	0.981	0.981	0.981	0.660	0.981

TRAFFIC COUNTS PLUS

mietekm@comcast.net
925.305.4358

CITY OF ORINDA
CAMINO PABLO S/O MANZANITA DR.
SOUTHBOUND

camino4-s
Site Code: 4s

Start	Tue	14-May-19	Hourly Totals		Wed	15-May-19	Hourly Totals			Total	
Time	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.
12:00	2	126			7	116				9	242
12:15	2	118			0	124				2	242
12:30	2	130			3	133				5	263
12:45	2	81	8	455	3	99	13	472		5	180
01:00	4	106			1	125				5	231
01:15	3	140			1	116				4	256
01:30	0	116			1	117				1	233
01:45	1	130	8	492	1	119	4	477		2	249
02:00	2	140			0	138				2	278
02:15	8	146			1	114				9	260
02:30	4	144			2	135				6	279
02:45	4	161	18	591	4	145	7	532		8	306
03:00	1	**260**			4	219				5	479
03:15	9	**171**			6	167				15	338
03:30	10	**177**			14	154				24	331
03:45	12	**205**	**32**	**813**	10	183	34	723		22	388
04:00	11	183			14	180				25	363
04:15	16	194			14	158				30	352
04:30	14	230			15	150				29	380
04:45	31	184	72	791	27	**189**	**70**	**677**		58	**373**
05:00	45	176			42	**229**				87	**405**
05:15	61	193			54	**190**				115	**383**
05:30	90	224			90	**197**				180	**421**
05:45	121	179	317	772	111	165	297	781		232	344
06:00	203	168			128	173				331	341
06:15	286	142			208	138				494	280
06:30	**385**	121			296	109				681	230
06:45	**353**	93	1227	524	307	77	939	497		660	170
07:00	**354**	69			296	82				650	151
07:15	**338**	70			307	49				645	119
07:30	337	62			298	40				635	102
07:45	307	43	1336	244	316	34	1217	205		623	77
08:00	357	38			**311**	34				**668**	72
08:15	340	24			**328**	34				**668**	58
08:30	350	30			**313**	28				**663**	58
08:45	338	20	1385	112	**327**	25	1279	121		**665**	45
09:00	256	29			306	20				562	49
09:15	200	42			285	21				485	63
09:30	210	22			237	24				447	46
09:45	180	17	846	110	235	18	1063	83		415	35
10:00	160	26			188	18				348	44
10:15	153	15			197	13				350	28
10:30	140	17			196	10				336	27
10:45	120	14	573	72	175	8	756	49		295	22
11:00	114	9			123	12				237	21
11:15	134	5			110	9				244	14
11:30	127	7			136	3				263	10
11:45	120	6	495	27	131	4	500	28		251	10
Total	6317	5003	6317	5003	6179	4645	6179	4645		12496	9648
Day Total	11320				10824					22144	
Percent	55.8%	44.2%	55.8%	44.2%	57.1%	42.9%	57.1%	42.9%		56.4%	43.6%
Peak	06:30	03:00	03:00	03:00	08:00	04:45	04:45	04:45	04:45	08:00	04:45
Vol.	1430	813	813	813	1279	805	805	805	805	2664	1582
P.H.F.	0.929	0.782	0.782	0.782	0.975	0.879	0.879	0.879	0.879	0.997	0.939

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF ORINDA
CAMINO PABLO btwn SANTA MARIA &
SR 24 WB RAMPS

camino5
Site Code: 5n

Start	14-May-19	NB		Hour Totals		SB		Hour Totals		Both Dir.	15-May-19	NB		Hour Totals		SB		Hour Totals		Both Dir.
Time	Tue	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total	Wed	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	Total
12:00		18	255			7	240			520		16	230			9	230			485
12:15		24	272			6	188			490		13	250			3	177			443
12:30		13	296			4	192			505		10	276			3	174			463
12:45		6	309	61	1132	5	198	22	818	518		6	279	45	1035	3	193	18	774	481
01:00		12	305			5	177			499		8	315			2	196			521
01:15		7	284			2	206			499		11	282			3	216			512
01:30		9	312			3	210			534		10	292			2	238			542
01:45		5	299	33	1200	3	224	13	817	531		7	309	36	1198	2	225	9	875	543
02:00		9	309			4	206			528		8	311			0	229			548
02:15		4	298			6	211			519		4	296			2	201			503
02:30		10	336			6	***254***			606		2	327			3	244			576
02:45		6	354	29	1297	4	***229***	20	900	593		6	341	20	1275	5	202	10	876	554
03:00		6	352			2	***263***			623		8	353			3	***272***			636
03:15		8	406			4	***228***			646		8	397			5	***225***			635
03:30		7	468			7	210			692		10	***466***			4	***229***			709
03:45		7	461	28	1687	8	215	21	916	691		14	***472***	40	1688	12	***233***	24	959	731
04:00		23	443			12	236			714		19	***451***			9	205			684
04:15		10	441			16	226			693		14	***462***			18	217			711
04:30		17	***455***			12	255			739		22	460			9	199			690
04:45		28	***476***	78	1815	16	238	56	955	758		21	418	76	1791	22	246	58	867	707
05:00		30	***483***			43	236			792		32	407			41	255			735
05:15		39	***485***			52	223			799		45	460			47	216			768
05:30		41	435			69	224			769		57	408			58	204			727
05:45		72	455	182	1858	83	245	247	928	***855***		85	409	219	1684	82	218	228	893	794
06:00		80	429			89	216			***814***		119	428			81	225			***853***
06:15		126	428			119	199			***872***		148	367			124	195			***834***
06:30		114	343			160	184			***801***		185	292			168	194			***839***
06:45		162	284	482	1484	175	147	543	746	768		159	349	611	1436	217	153	590	767	***878***
07:00		161	220			217	120			718		162	276			211	120			769
07:15		239	225			***273***	109			846		194	237			199	113			743
07:30		252	188			***250***	125			815		214	174			234	108			730
07:45		312	183	964	816	***249***	79	989	433	823		246	190	816	877	***261***	74	905	415	771
08:00		256	144			***237***	77			714		252	179			***309***	75			815
08:15		262	143			267	66			738		233	140			***254***	58			685
08:30		267	120			231	47			665		***267***	149			***235***	91			742
08:45		***316***	155	1101	562	218	61	953	251	750		***278***	138	1030	606	223	102	1021	326	741
09:00		***282***	125			235	63			705		***287***	102			275	59			723
09:15		***276***	135			205	58			674		***262***	113			226	71			672
09:30		***270***	109			211	53			643		249	114			207	39			609
09:45		274	100	1102	469	223	37	874	211	634		264	88	1062	417	191	28	899	197	571
10:00		236	86			175	54			551		238	80			173	29			520
10:15		235	60			180	25			500		222	79			175	22			498
10:30		211	72			188	16			487		229	45			200	22			496
10:45		276	38	958	256	179	23	722	118	516		249	47	938	251	192	14	740	87	502
11:00		280	34			194	19			527		230	38			191	15			474
11:15		291	32			198	10			531		246	33			150	12			441
11:30		252	36			209	13			510		244	39			183	9			475
11:45		294	18	1117	120	214	7	815	49	533		275	35	995	145	178	7	702	43	495
Total		6135	12696			5275	7142			31248		5888	12403			5204	7079			30574
Day Total		18831				12417						18291				12283				
Percent	0.0%	32.6%	67.4%			42.5%	57.5%					32.2%	67.8%			42.4%	57.6%			
Peak		08:45	04:30			07:15	02:30			05:45		08:30	03:30			07:45	03:00			06:00
Vol.		1144	1899			1009	974			3342		1094	1851			1059	959			3404
P.H.F.		0.905	0.979			0.924	0.926			0.958		0.953	0.980			0.857	0.881			0.969

Appendix B:
Level of Service Worksheets

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	69	43	12	7	4	292	14	931	14	182	468	62
Future Volume (vph)	69	43	12	7	4	292	14	931	14	182	468	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.5	3.5		3.0	3.5	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.92		1.00	0.99	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	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.97	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1807	1460		1803	1562	1770	5067		1770	3466	
Flt Permitted		0.81	1.00		0.86	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1515	1460		1606	1562	1770	5067		1770	3466	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	74	46	13	8	4	314	15	1001	15	196	503	67
RTOR Reduction (vph)	0	0	0	0	0	265	0	1	0	0	0	0
Lane Group Flow (vph)	0	120	13	0	12	49	15	1015	0	196	570	0
Confl. Peds. (#/hr)			39						17			2
Confl. Bikes (#/hr)						1			9			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		20.5	20.5		20.5	20.5	2.5	36.7		19.9	53.6	
Effective Green, g (s)		21.5	21.5		21.5	21.5	3.5	37.7		20.9	54.6	
Actuated g/C Ratio		0.16	0.16		0.16	0.16	0.03	0.27		0.15	0.40	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		236	228		251	244	45	1389		269	1376	
v/s Ratio Prot							0.01	c0.20		c0.11	0.16	
v/s Ratio Perm		c0.08	0.01		0.01	0.03						
v/c Ratio		0.51	0.06		0.05	0.20	0.33	0.73		0.73	0.41	
Uniform Delay, d1		53.2	49.4		49.3	50.5	65.9	45.3		55.6	29.9	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0		0.0	0.1	1.6	1.7		8.1	0.3	
Delay (s)		53.8	49.4		49.3	50.7	67.4	47.0		63.7	30.2	
Level of Service		D	D		D	D	E	D		E	C	
Approach Delay (s)		53.4			50.6			47.3			38.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	137.5	Sum of lost time (s)	12.5
Intersection Capacity Utilization	78.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	284	95	263	16
Future Volume (vph)	284	95	263	16
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.90		
Flt Protected	0.95	0.98		
Satd. Flow (prot)	1681	1562		
Flt Permitted	0.95	0.98		
Satd. Flow (perm)	1681	1562		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93
Adj. Flow (vph)	305	102	283	17
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	274	433	0	0
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	44.4	44.4		
Effective Green, g (s)	45.4	45.4		
Actuated g/C Ratio	0.33	0.33		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	555	515		
v/s Ratio Prot	0.16	c0.28		
v/s Ratio Perm				
v/c Ratio	0.49	0.84		
Uniform Delay, d1	36.9	42.7		
Progression Factor	1.00	1.00		
Incremental Delay, d2	0.7	11.8		
Delay (s)	37.5	54.5		
Level of Service	D	D		
Approach Delay (s)		47.9		
Approach LOS		D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	170	137	33	0	620	484	90	740	780
Future Volume (veh/h)	0	0	0	170	137	33	0	620	484	90	740	780
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				172	180	21	0	697	440	101	831	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				771	810	818	0	1095	1178	155	1604	717
Arrive On Green				0.43	0.43	0.43	0.00	0.31	0.31	0.09	0.45	0.00
Sat Flow, veh/h				1774	1863	1562	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				172	180	21	0	697	440	101	831	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1562	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				4.3	4.3	0.5	0.0	12.1	7.0	3.9	12.0	0.0
Cycle Q Clear(g_c), s				4.3	4.3	0.5	0.0	12.1	7.0	3.9	12.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				771	810	818	0	1095	1178	155	1604	717
V/C Ratio(X)				0.22	0.22	0.03	0.00	0.64	0.37	0.65	0.52	0.00
Avail Cap(c_a), veh/h				771	810	818	0	3028	2043	398	4020	1798
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				12.6	12.6	8.3	0.0	21.2	3.2	31.5	13.9	0.0
Incr Delay (d2), s/veh				0.7	0.6	0.1	0.0	0.6	0.2	4.5	0.3	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.2	2.3	0.2	0.0	6.0	8.3	2.1	5.8	0.0
LnGrp Delay(d),s/veh				13.3	13.2	8.3	0.0	21.8	3.4	36.0	14.2	0.0
LnGrp LOS				B	B	A		C	A	D	B	
Approach Vol, veh/h					373			1137			932	
Approach Delay, s/veh					13.0			14.7			16.6	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.2	26.1				36.3		35.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		30.0
Max Q Clear Time (g_c+I1), s	5.9	14.1				14.0		6.3
Green Ext Time (p_c), s	0.1	7.0				6.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Camino Pablo & Camino Sobrante

Existing AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	188	19	518	135	47	1422
Future Volume (veh/h)	188	19	518	135	47	1422
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	194	8	534	79	48	1466
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	264	339	1973	883	117	2464
Arrive On Green	0.15	0.15	0.56	0.56	0.07	0.70
Sat Flow, veh/h	1757	1568	3597	1568	1757	3597
Grp Volume(v), veh/h	194	8	534	79	48	1466
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1568	1757	1752
Q Serve(g_s), s	5.7	0.2	4.3	1.3	1.4	11.6
Cycle Q Clear(g_c), s	5.7	0.2	4.3	1.3	1.4	11.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	264	339	1973	883	117	2464
V/C Ratio(X)	0.74	0.02	0.27	0.09	0.41	0.60
Avail Cap(c_a), veh/h	1066	1055	3112	1392	1033	3112
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	16.8	6.1	5.5	24.4	4.1
Incr Delay (d2), s/veh	3.0	0.0	0.2	0.1	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.1	2.0	0.6	0.7	5.7
LnGrp Delay(d),s/veh	25.1	16.8	6.3	5.6	25.2	4.6
LnGrp LOS	C	B	A	A	C	A
Approach Vol, veh/h	202		613			1514
Approach Delay, s/veh	24.7		6.2			5.3
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.6	34.6				42.2		12.2
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	3.4	6.3				13.6		7.7
Green Ext Time (p_c), s	0.0	7.9				22.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	41	22	106	5	13	87	36	489	12	111	1358	31
Future Volume (veh/h)	41	22	106	5	13	87	36	489	12	111	1358	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	45	24	18	5	14	28	40	537	8	122	1492	33
Adj No. of Lanes	0	1	1	1	1	1	1	2	1	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	204	92	217	245	265	361	106	2122	947	160	2196	49
Arrive On Green	0.15	0.14	0.14	0.15	0.14	0.14	0.06	0.61	0.61	0.09	0.63	0.61
Sat Flow, veh/h	867	636	1509	1326	1845	1518	1757	3505	1564	1757	3504	77
Grp Volume(v), veh/h	69	0	18	5	14	28	40	537	8	122	745	780
Grp Sat Flow(s),veh/h/ln	1503	0	1509	1326	1845	1518	1757	1752	1564	1757	1752	1829
Q Serve(g_s), s	1.8	0.0	0.8	0.3	0.5	1.1	1.6	5.4	0.2	5.1	20.7	20.9
Cycle Q Clear(g_c), s	2.9	0.0	0.8	3.1	0.5	1.1	1.6	5.4	0.2	5.1	20.7	20.9
Prop In Lane	0.65		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	306	0	217	245	265	361	106	2122	947	160	1098	1146
V/C Ratio(X)	0.23	0.00	0.08	0.02	0.05	0.08	0.38	0.25	0.01	0.76	0.68	0.68
Avail Cap(c_a), veh/h	876	0	804	584	737	749	889	2675	1194	866	1314	1372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	0.0	27.8	29.7	27.7	22.4	33.9	6.9	5.9	33.3	9.1	9.1
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.0	0.0	0.0	2.2	0.1	0.0	7.4	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.3	0.1	0.3	0.5	0.9	2.6	0.1	2.8	10.5	11.0
LnGrp Delay(d),s/veh	28.9	0.0	28.0	29.7	27.8	22.4	36.1	7.0	5.9	40.8	10.9	10.9
LnGrp LOS	C		C	C	C	C	D	A	A	D	B	B
Approach Vol, veh/h		87			47			585			1647	
Approach Delay, s/veh		28.7			24.8			9.0			13.1	
Approach LOS		C			C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	49.5		14.8	8.5	51.7		14.8				
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0				
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0				
Max Q Clear Time (g_c+I1), s	7.1	7.4		4.9	3.6	22.9		5.1				
Green Ext Time (p_c), s	0.3	7.5		0.4	0.1	22.6		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			12.9									
HCM 2010 LOS			B									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	416	31	455	162	30	1084
Future Volume (veh/h)	416	31	455	162	30	1084
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	462	28	506	83	33	1204
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	515	534	1713	764	83	2078
Arrive On Green	0.29	0.29	0.49	0.49	0.05	0.59
Sat Flow, veh/h	1757	1568	3597	1563	1757	3597
Grp Volume(v), veh/h	462	28	506	83	33	1204
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1563	1757	1752
Q Serve(g_s), s	17.7	0.8	6.1	2.0	1.3	15.0
Cycle Q Clear(g_c), s	17.7	0.8	6.1	2.0	1.3	15.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	515	534	1713	764	83	2078
V/C Ratio(X)	0.90	0.05	0.30	0.11	0.40	0.58
Avail Cap(c_a), veh/h	724	721	3344	1491	550	3344
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.8	15.6	10.7	9.7	32.5	8.9
Incr Delay (d2), s/veh	9.8	0.0	0.2	0.1	1.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	0.4	2.9	0.9	0.6	7.3
LnGrp Delay(d),s/veh	33.6	15.6	10.9	9.8	33.7	9.4
LnGrp LOS	C	B	B	A	C	A
Approach Vol, veh/h	490		589			1237
Approach Delay, s/veh	32.6		10.8			10.1
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.3	38.4				45.7		24.6
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.0		29.0
Max Q Clear Time (g_c+I1), s	3.3	8.1				17.0		19.7
Green Ext Time (p_c), s	0.0	8.4				23.6		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Volume (veh/h)	0	1	0	486	1114	0
Future Volume (veh/h)	0	1	0	486	1114	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	0	0	534	1224	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	0	0	1678	1678	0
Arrive On Green	0.00	0.00	0.00	0.91	1.00	0.00
Sat Flow, veh/h	0	0	0	1845	1845	0
Grp Volume(v), veh/h	0	0	0	534	1224	0
Grp Sat Flow(s),veh/h/ln	0	0	0	1845	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	3.3	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.3	0.0	0.0
Prop In Lane	0.00	0.00	0.00			0.00
Lane Grp Cap(c), veh/h	0	0	0	1678	1678	0
V/C Ratio(X)	0.00	0.00	0.00	0.32	0.73	0.00
Avail Cap(c_a), veh/h	0	0	0	1678	1678	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.53	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.5	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	1.9	0.7	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	1.0	1.5	0.0
LnGrp LOS				A	A	
Approach Vol, veh/h	1			534	1224	
Approach Delay, s/veh	65.2			1.0	1.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		85.9		4.1		85.9		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 57		24.3		* 57		
Max Q Clear Time (g_c+I1), s		5.3		2.0		2.0		
Green Ext Time (p_c), s		11.2		0.0		40.9		

Intersection Summary			
HCM 2010 Ctrl Delay			1.4
HCM 2010 LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
7: Camino Pablo & Camino Pablo Frontage Road/South Entrance

Existing AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱					↰	↱			↑	↱
Traffic Volume (veh/h)	9	0	23	0	0	0	11	472	3	0	1091	4
Future Volume (veh/h)	9	0	23	0	0	0	11	472	3	0	1091	4
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900				1845	1845	1900	0	1845	1845
Adj Flow Rate, veh/h	10	0	2				12	530	3	0	1226	3
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3				3	3	3	0	3	3
Cap, veh/h	48	0	42				30	1619	9	0	1516	1320
Arrive On Green	0.03	0.00	0.03				0.03	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	1757	0	1521				1757	1832	10	0	1845	1568
Grp Volume(v), veh/h	10	0	2				12	0	533	0	1226	3
Grp Sat Flow(s),veh/h/ln	1757	0	1521				1757	0	1843	0	1845	1568
Q Serve(g_s), s	0.5	0.0	0.1				0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.1				0.6	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00				1.00		0.01	0.00		1.00
Lane Grp Cap(c), veh/h	48	0	42				30	0	1628	0	1516	1320
V/C Ratio(X)	0.21	0.00	0.05				0.40	0.00	0.33	0.00	0.81	0.00
Avail Cap(c_a), veh/h	390	0	338				117	0	1628	0	1516	1320
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00				0.96	0.00	0.96	0.00	0.21	0.21
Uniform Delay (d), s/veh	42.8	0.0	42.4				43.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.2				3.0	0.0	0.5	0.0	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.1				0.3	0.0	0.2	0.0	0.4	0.0
LnGrp Delay(d),s/veh	43.6	0.0	42.5				45.9	0.0	0.5	0.0	1.0	0.0
LnGrp LOS	D		D				D		A		A	A
Approach Vol, veh/h		12						545			1229	
Approach Delay, s/veh		43.4						1.5			1.0	
Approach LOS		D						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		83.5		6.5	5.6	78.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 61		20.0	6.0	* 51		
Max Q Clear Time (g_c+I1), s		2.0		2.5	2.6	2.0		
Green Ext Time (p_c), s		8.6		0.0	0.0	34.0		

Intersection Summary	
HCM 2010 Ctrl Delay	1.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	ᛉ		↰	↑	↳	
Traffic Volume (veh/h)	16	70	16	465	1025	12
Future Volume (veh/h)	16	70	16	465	1025	12
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.94	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	18	16	18	522	1152	13
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	166	148	42	1312	1170	13
Arrive On Green	0.20	0.20	0.03	0.95	1.00	1.00
Sat Flow, veh/h	832	739	1757	1845	1820	21
Grp Volume(v), veh/h	35	0	18	522	0	1165
Grp Sat Flow(s),veh/h/ln	1617	0	1757	1845	0	1841
Q Serve(g_s), s	1.6	0.0	0.9	2.2	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.9	2.2	0.0	0.0
Prop In Lane	0.51	0.46	1.00			0.01
Lane Grp Cap(c), veh/h	323	0	42	1312	0	1183
V/C Ratio(X)	0.11	0.00	0.42	0.40	0.00	0.98
Avail Cap(c_a), veh/h	323	0	117	1312	0	1183
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.96	0.96	0.00	0.09
Uniform Delay (d), s/veh	29.4	0.0	42.9	0.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.4	0.9	0.0	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	1.2	0.0	1.7
LnGrp Delay(d),s/veh	30.1	0.0	45.3	1.6	0.0	5.1
LnGrp LOS	C		D	A		A
Approach Vol, veh/h	35			540	1165	
Approach Delay, s/veh	30.1			3.1	5.1	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		68.0		22.0	6.2	61.8		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 63		18.0	6.0	* 53		
Max Q Clear Time (g_c+I1), s		4.2		3.6	2.9	2.0		
Green Ext Time (p_c), s		8.4		0.0	0.0	31.9		

Intersection Summary	
HCM 2010 Ctrl Delay	5.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Volume (veh/h)	45	16	458	23	16	992
Future Volume (veh/h)	45	16	458	23	16	992
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.97		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1553
Adj Flow Rate, veh/h	51	4	520	24	18	1127
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	387	30	1166	54	48	1020
Arrive On Green	0.24	0.24	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1584	124	1749	81	11	1530
Grp Volume(v), veh/h	56	0	0	544	1145	0
Grp Sat Flow(s),veh/h/ln	1739	0	0	1830	1541	0
Q Serve(g_s), s	2.3	0.0	0.0	0.0	26.6	0.0
Cycle Q Clear(g_c), s	2.3	0.0	0.0	0.0	59.8	0.0
Prop In Lane	0.91	0.07		0.04	0.02	
Lane Grp Cap(c), veh/h	425	0	0	1220	1064	0
V/C Ratio(X)	0.13	0.00	0.00	0.45	1.08	0.00
Avail Cap(c_a), veh/h	425	0	0	1220	1064	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.93	0.09	0.00
Uniform Delay (d), s/veh	26.5	0.0	0.0	0.0	1.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	1.1	36.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	0.4	22.2	0.0
LnGrp Delay(d),s/veh	27.2	0.0	0.0	1.1	37.1	0.0
LnGrp LOS	C			A	F	
Approach Vol, veh/h	56		544			1145
Approach Delay, s/veh	27.2		1.1			37.1
Approach LOS	C		A			D

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		64.0				64.0		26.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 59				* 59		22.0
Max Q Clear Time (g_c+I1), s		2.0				61.8		4.3
Green Ext Time (p_c), s		6.3				0.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
10: Camino Pablo & Los Amigos

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱			✥			✥	
Traffic Volume (veh/h)	0	0	7	9	0	1	3	462	9	0	988	3
Future Volume (veh/h)	0	0	7	9	0	1	3	462	9	0	988	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	0.99		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1373	1900
Adj Flow Rate, veh/h	0	0	2	10	0	0	3	525	9	0	1123	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	322	372	393	0	40	1030	18	0	958	3
Arrive On Green	0.00	0.00	0.21	0.21	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	0	0	1527	1389	1863	0	0	1472	25	0	1368	4
Grp Volume(v), veh/h	0	0	2	10	0	0	537	0	0	0	0	1126
Grp Sat Flow(s),veh/h/ln	0	0	1527	1389	1863	0	1497	0	0	0	0	1372
Q Serve(g_s), s	0.0	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.0
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.6	0.0	0.0	62.8	0.0	0.0	0.0	0.0	63.0
Prop In Lane	0.00		1.00	1.00		0.00	0.01		0.02	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	322	372	393	0	1085	0	0	0	0	960
V/C Ratio(X)	0.00	0.00	0.01	0.03	0.00	0.00	0.49	0.00	0.00	0.00	0.00	1.17
Avail Cap(c_a), veh/h	0	0	322	372	393	0	1085	0	0	0	0	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.89	0.00	0.00	0.00	0.00	0.09
Uniform Delay (d), s/veh	0.0	0.0	28.0	28.3	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	1.4	0.0	0.0	0.0	0.0	78.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	2.8	0.0	0.0	0.0	0.0	21.0
LnGrp Delay(d),s/veh	0.0	0.0	28.1	28.4	0.0	0.0	6.1	0.0	0.0	0.0	0.0	78.8
LnGrp LOS			C	C			A					F
Approach Vol, veh/h		2			10			537			1126	
Approach Delay, s/veh		28.1			28.4			6.1			78.8	
Approach LOS		C			C			A			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		67.0		23.0		67.0		23.0
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 62		19.0		* 62		19.0
Max Q Clear Time (g_c+I1), s		64.8		2.1		65.0		2.6
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	55.2
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	6	1	15	168	2	7	5	458	0	0	808	2
Future Volume (veh/h)	6	1	15	168	2	7	5	458	0	0	808	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1373	1900
Adj Flow Rate, veh/h	7	1	4	187	2	6	6	509	0	0	898	2
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	271	48	127	393	5	10	118	1263	0	0	776	2
Arrive On Green	0.24	0.23	0.24	0.24	0.23	0.23	0.13	1.00	0.00	0.00	0.57	0.56
Sat Flow, veh/h	888	204	546	1350	22	44	1774	1863	0	0	1369	3
Grp Volume(v), veh/h	12	0	0	195	0	0	6	509	0	0	0	900
Grp Sat Flow(s),veh/h/ln	1638	0	0	1415	0	0	1774	1863	0	0	0	1372
Q Serve(g_s), s	0.0	0.0	0.0	10.4	0.0	0.0	0.3	0.0	0.0	0.0	0.0	51.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	10.9	0.0	0.0	0.3	0.0	0.0	0.0	0.0	51.0
Prop In Lane	0.58		0.33	0.96		0.03	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	455	0	0	416	0	0	118	1263	0	0	0	777
V/C Ratio(X)	0.03	0.00	0.00	0.47	0.00	0.00	0.05	0.40	0.00	0.00	0.00	1.16
Avail Cap(c_a), veh/h	455	0	0	416	0	0	118	1263	0	0	0	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.91	0.91	0.00	0.00	0.00	0.09
Uniform Delay (d), s/veh	26.5	0.0	0.0	30.4	0.0	0.0	36.5	0.0	0.0	0.0	0.0	19.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.7	0.0	0.0	0.7	0.9	0.0	0.0	0.0	72.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	4.7	0.0	0.0	0.2	0.3	0.0	0.0	0.0	34.6
LnGrp Delay(d),s/veh	26.6	0.0	0.0	34.1	0.0	0.0	37.3	0.9	0.0	0.0	0.0	91.9
LnGrp LOS	C			C			D	A				F
Approach Vol, veh/h		12			195			515			900	
Approach Delay, s/veh		26.6			34.1			1.3			91.9	
Approach LOS		C			C			A			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		65.0		25.0	10.0	55.0		25.0
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0
Max Green Setting (Gmax), s		* 60		21.0	6.0	* 50		21.0
Max Q Clear Time (g_c+I1), s		2.0		2.5	2.3	53.0		12.9
Green Ext Time (p_c), s		8.0		0.0	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	55.7
HCM 2010 LOS	E

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣		↰	↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	5	6	22	199	90	2	62	194	215	8	589	37
Future Volume (veh/h)	5	6	22	199	90	2	62	194	215	8	589	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1863	1863	1373	1863
Adj Flow Rate, veh/h	6	7	6	234	106	2	73	228	173	9	693	31
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	189	162	182	589	11	167	989	822	167	729	840
Arrive On Green	0.00	0.20	0.20	0.10	0.32	0.32	0.09	0.53	0.53	0.09	0.53	0.53
Sat Flow, veh/h	0	927	795	1774	1821	34	1774	1863	1549	1774	1373	1583
Grp Volume(v), veh/h	0	0	13	234	0	108	73	228	173	9	693	31
Grp Sat Flow(s),veh/h/ln	0	0	1722	1774	0	1856	1774	1863	1549	1774	1373	1583
Q Serve(g_s), s	0.0	0.0	1.4	24.0	0.0	9.8	9.1	15.3	13.8	1.1	111.8	2.2
Cycle Q Clear(g_c), s	0.0	0.0	1.4	24.0	0.0	9.8	9.1	15.3	13.8	1.1	111.8	2.2
Prop In Lane	0.00		0.46	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	351	182	0	601	167	989	822	167	729	840
V/C Ratio(X)	0.00	0.00	0.04	1.28	0.00	0.18	0.44	0.23	0.21	0.05	0.95	0.04
Avail Cap(c_a), veh/h	0	0	351	182	0	601	167	1531	1274	167	1128	1301
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	74.7	104.8	0.0	56.7	99.9	29.3	28.9	96.3	51.9	26.2
Incr Delay (d2), s/veh	0.0	0.0	0.2	162.8	0.0	0.7	8.1	0.2	0.2	0.6	13.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	20.0	0.0	5.1	4.8	7.9	5.9	0.6	45.1	1.0
LnGrp Delay(d),s/veh	0.0	0.0	74.9	267.5	0.0	57.4	108.0	29.5	29.1	96.9	65.7	26.3
LnGrp LOS			E	F		E	F	C	C	F	E	C
Approach Vol, veh/h		13			342			474			733	
Approach Delay, s/veh		74.9			201.2			41.4			64.4	
Approach LOS		E			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	128.0	28.0	51.6	26.0	128.0	0.0	79.6
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0
Max Q Clear Time (g_c+I1), s	3.1	17.3	26.0	3.4	11.1	113.8	0.0	11.8
Green Ext Time (p_c), s	0.0	3.2	0.0	0.0	0.1	8.2	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	87.5
HCM 2010 LOS	F

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Existing Midday

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	48	28	11	27	9	178	10	529	27	196	560	45
Future Volume (vph)	48	28	11	27	9	178	10	529	27	196	560	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.98	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	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1533		1795	1558	1770	5033		1770	3493	
Flt Permitted		0.78	1.00		0.76	1.00	0.39	1.00		0.95	1.00	
Satd. Flow (perm)		1460	1533		1412	1558	721	5033		1770	3493	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	55	32	13	31	10	205	11	608	31	225	644	52
RTOR Reduction (vph)	0	0	11	0	0	181	0	3	0	0	0	0
Lane Group Flow (vph)	0	87	2	0	41	24	11	636	0	225	696	0
Confl. Peds. (#/hr)			13						12			
Confl. Bikes (#/hr)						2						6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4	2					
Actuated Green, G (s)		14.5	14.5		14.5	14.5	26.5	24.6		23.3	45.5	
Effective Green, g (s)		14.5	14.5		14.5	14.5	27.5	25.1		23.3	46.0	
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.22	0.20		0.19	0.37	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		169	177		163	180	178	1009		329	1283	
v/s Ratio Prot							0.00	c0.13		c0.13	0.20	
v/s Ratio Perm		c0.06	0.00		0.03	0.02	0.01					
v/c Ratio		0.51	0.01		0.25	0.13	0.06	0.63		0.68	0.54	
Uniform Delay, d1		52.0	49.0		50.4	49.7	38.4	45.8		47.5	31.3	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.0		0.3	0.1	0.1	0.9		4.6	0.6	
Delay (s)		53.1	49.0		50.7	49.8	38.4	46.8		52.1	31.9	
Level of Service		D	D		D	D	D	D		D	C	
Approach Delay (s)		52.6			50.0			46.6			36.8	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	125.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	328	92	295	16
Future Volume (vph)	328	92	295	16
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.89		
Flt Protected	0.95	0.99		
Satd. Flow (prot)	1681	1558		
Flt Permitted	0.95	0.99		
Satd. Flow (perm)	1681	1558		
Peak-hour factor, PHF	0.87	0.87	0.87	0.87
Adj. Flow (vph)	377	106	339	18
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	339	501	0	0
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	46.8	46.8		
Effective Green, g (s)	46.3	46.3		
Actuated g/C Ratio	0.37	0.37		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	621	576		
v/s Ratio Prot	0.20	c0.32		
v/s Ratio Perm				
v/c Ratio	0.55	0.87		
Uniform Delay, d1	31.1	36.6		
Progression Factor	1.00	1.00		
Incremental Delay, d2	1.0	13.2		
Delay (s)	32.1	49.9		
Level of Service	C	D		
Approach Delay (s)		42.7		
Approach LOS		D		

Intersection Summary

HCM 2010 Signalized Intersection Summary
2: Camino Pablo & SR-24 WB On-Ramp/Santa Maria Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	343	133	53	0	830	427	35	588	237
Future Volume (veh/h)	0	0	0	343	133	53	0	830	427	35	588	237
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				267	314	42	0	933	355	39	661	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				666	699	680	0	1385	1214	107	1803	806
Arrive On Green				0.38	0.38	0.38	0.00	0.39	0.39	0.06	0.51	0.00
Sat Flow, veh/h				1774	1863	1560	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				267	314	42	0	933	355	39	661	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1560	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				7.7	8.8	1.1	0.0	15.1	4.7	1.5	7.8	0.0
Cycle Q Clear(g_c), s				7.7	8.8	1.1	0.0	15.1	4.7	1.5	7.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				666	699	680	0	1385	1214	107	1803	806
V/C Ratio(X)				0.40	0.45	0.06	0.00	0.67	0.29	0.37	0.37	0.00
Avail Cap(c_a), veh/h				666	699	680	0	3116	1988	410	4137	1851
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				15.9	16.3	11.4	0.0	17.4	2.4	31.3	10.3	0.0
Incr Delay (d2), s/veh				1.8	2.1	0.2	0.0	0.6	0.1	2.1	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.0	4.9	0.5	0.0	7.4	5.4	0.8	3.8	0.0
LnGrp Delay(d),s/veh				17.7	18.3	11.5	0.0	18.0	2.6	33.4	10.4	0.0
LnGrp LOS				B	B	B		B	A	C	B	
Approach Vol, veh/h					623			1288			700	
Approach Delay, s/veh					17.6			13.7			11.7	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.2	31.1				39.3		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		25.0
Max Q Clear Time (g_c+I1), s	3.5	17.1				9.8		10.8
Green Ext Time (p_c), s	0.0	9.0				4.7		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	14.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Camino Pablo & Camino Sobrante

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	177	50	693	190	37	683
Future Volume (veh/h)	177	50	693	190	37	683
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	197	33	770	95	41	759
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	739	743	1309	585	93	1672
Arrive On Green	0.42	0.42	0.37	0.37	0.05	0.48
Sat Flow, veh/h	1757	1568	3597	1568	1757	3597
Grp Volume(v), veh/h	197	33	770	95	41	759
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1568	1757	1752
Q Serve(g_s), s	5.7	0.9	13.8	3.2	1.8	11.3
Cycle Q Clear(g_c), s	5.7	0.9	13.8	3.2	1.8	11.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	739	743	1309	585	93	1672
V/C Ratio(X)	0.27	0.04	0.59	0.16	0.44	0.45
Avail Cap(c_a), veh/h	739	743	2159	966	717	2159
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.8	11.1	19.7	16.4	36.0	13.7
Incr Delay (d2), s/veh	0.9	0.1	0.9	0.3	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.4	6.8	1.4	0.9	5.6
LnGrp Delay(d),s/veh	15.7	11.2	20.6	16.7	37.3	14.1
LnGrp LOS	B	B	C	B	D	B
Approach Vol, veh/h	230		865			800
Approach Delay, s/veh	15.0		20.2			15.3
Approach LOS	B		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.1	33.3				41.4		37.0
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	3.8	15.8				13.3		7.7
Green Ext Time (p_c), s	0.0	11.1				10.4		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			17.5
HCM 2010 LOS			B

HCM 2010 Signalized Intersection Summary
4: Camino Pablo & El Toyonal/Orinda Way

Existing Midday

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	23	10	59	19	11	120	59	674	10	70	642	12
Future Volume (veh/h)	23	10	59	19	11	120	59	674	10	70	642	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	25	11	28	21	12	91	64	733	4	76	698	12
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	394	161	700	382	204	808	126	1198	520	118	1160	20
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.07	0.34	0.34	0.07	0.33	0.31
Sat Flow, veh/h	714	355	1540	694	449	1547	1757	3505	1520	1757	3524	61
Grp Volume(v), veh/h	36	0	28	33	0	91	64	733	4	76	347	363
Grp Sat Flow(s),veh/h/ln	1069	0	1540	1143	0	1547	1757	1752	1520	1757	1752	1832
Q Serve(g_s), s	0.4	0.0	0.9	0.2	0.0	2.6	3.1	15.3	0.2	3.7	14.6	14.6
Cycle Q Clear(g_c), s	11.1	0.0	0.9	11.0	0.0	2.6	3.1	15.3	0.2	3.7	14.6	14.6
Prop In Lane	0.69		1.00	0.64		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	555	0	700	587	0	808	126	1198	520	118	577	603
V/C Ratio(X)	0.06	0.00	0.04	0.06	0.00	0.11	0.51	0.61	0.01	0.64	0.60	0.60
Avail Cap(c_a), veh/h	555	0	700	587	0	808	759	2282	990	739	1121	1172
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	13.3	13.9	0.0	10.7	39.3	24.1	19.1	40.0	24.7	24.7
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.2	0.0	0.3	3.1	1.1	0.0	5.8	2.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4	0.5	0.0	1.2	1.6	7.6	0.1	2.0	7.4	7.7
LnGrp Delay(d),s/veh	14.6	0.0	13.4	14.1	0.0	11.0	42.5	25.2	19.1	45.8	26.8	26.8
LnGrp LOS	B		B	B		B	D	C	B	D	C	C
Approach Vol, veh/h		64			124			801			786	
Approach Delay, s/veh		14.1			11.8			26.5			28.6	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	34.1		44.0	10.3	33.7		44.0
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0
Max Q Clear Time (g_c+I1), s	5.7	17.3		13.1	5.1	16.6		13.0
Green Ext Time (p_c), s	0.2	10.5		0.2	0.1	9.3		0.2

Intersection Summary			
HCM 2010 Ctrl Delay			26.0
HCM 2010 LOS			C

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	185	34	636	181	15	539
Future Volume (veh/h)	185	34	636	181	15	539
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	201	24	691	111	16	586
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	747	709	1303	579	47	1603
Arrive On Green	0.43	0.43	0.37	0.37	0.03	0.46
Sat Flow, veh/h	1757	1568	3597	1557	1757	3597
Grp Volume(v), veh/h	201	24	691	111	16	586
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1557	1757	1752
Q Serve(g_s), s	5.1	0.6	10.5	3.3	0.6	7.4
Cycle Q Clear(g_c), s	5.1	0.6	10.5	3.3	0.6	7.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	747	709	1303	579	47	1603
V/C Ratio(X)	0.27	0.03	0.53	0.19	0.34	0.37
Avail Cap(c_a), veh/h	747	709	3449	1533	567	3480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	10.4	16.8	14.5	32.6	12.1
Incr Delay (d2), s/veh	0.9	0.1	0.7	0.3	1.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.3	5.2	1.5	0.3	3.6
LnGrp Delay(d),s/veh	13.6	10.5	17.5	14.8	34.2	12.4
LnGrp LOS	B	B	B	B	C	B
Approach Vol, veh/h	225		802			602
Approach Delay, s/veh	13.3		17.1			12.9
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.8	29.4				35.2		33.0
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.6		29.0
Max Q Clear Time (g_c+I1), s	2.6	12.5				9.4		7.1
Green Ext Time (p_c), s	0.0	11.7				8.5		0.5

Intersection Summary						
HCM 2010 Ctrl Delay			15.0			
HCM 2010 LOS			B			

HCM 2010 Signalized Intersection Summary
6: Camino Pablo & Ardilla Rd

Existing Midday

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	⋎			↰	↱	
Traffic Volume (veh/h)	0	1	0	670	554	0
Future Volume (veh/h)	0	1	0	670	554	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	1	0	713	589	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.92	0.94	0.94	0.92
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	3	0	1404	1404	0
Arrive On Green	0.00	0.00	0.00	0.76	0.76	0.00
Sat Flow, veh/h	0	873	0	1845	1845	0
Grp Volume(v), veh/h	0	2	0	713	589	0
Grp Sat Flow(s),veh/h/ln	0	1746	0	1845	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	5.1	3.8	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.1	3.8	0.0
Prop In Lane	0.00	0.50	0.00			0.00
Lane Grp Cap(c), veh/h	0	6	0	1404	1404	0
V/C Ratio(X)	0.00	0.35	0.00	0.51	0.42	0.00
Avail Cap(c_a), veh/h	0	1028	0	3621	3892	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	16.9	0.0	1.6	1.4	0.0
Incr Delay (d2), s/veh	0.0	12.8	0.0	1.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.8	2.1	0.0
LnGrp Delay(d),s/veh	0.0	29.7	0.0	2.6	2.1	0.0
LnGrp LOS		C		A	A	
Approach Vol, veh/h	2			713	589	
Approach Delay, s/veh	29.6			2.6	2.1	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		29.9		4.1		29.9		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 66		20.0		* 71		
Max Q Clear Time (g_c+I1), s		7.1		2.0		5.8		
Green Ext Time (p_c), s		18.1		0.0		13.6		

Intersection Summary		
HCM 2010 Ctrl Delay		2.4
HCM 2010 LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱					↰	↱			↑	↱
Traffic Volume (veh/h)	3	0	14	0	0	0	13	656	1	0	540	5
Future Volume (veh/h)	3	0	14	0	0	0	13	656	1	0	540	5
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900				1863	1863	1900	0	1863	1863
Adj Flow Rate, veh/h	3	0	4				14	691	1	0	568	4
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				2	2	2	0	2	2
Cap, veh/h	591	0	516				37	992	1	0	831	1215
Arrive On Green	0.33	0.00	0.33				0.02	0.53	0.52	0.00	0.45	0.43
Sat Flow, veh/h	1774	0	1548				1774	1859	3	0	1863	1583
Grp Volume(v), veh/h	3	0	4				14	0	692	0	568	4
Grp Sat Flow(s),veh/h/ln	1774	0	1548				1774	0	1862	0	1863	1583
Q Serve(g_s), s	0.1	0.0	0.1				0.5	0.0	16.6	0.0	14.6	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.1				0.5	0.0	16.6	0.0	14.6	0.0
Prop In Lane	1.00		1.00				1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	591	0	516				37	0	993	0	831	1215
V/C Ratio(X)	0.01	0.00	0.01				0.38	0.00	0.70	0.00	0.68	0.00
Avail Cap(c_a), veh/h	591	0	516				177	0	993	0	831	1215
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.92	0.00	0.92	0.00	0.81	0.81
Uniform Delay (d), s/veh	13.4	0.0	13.4				29.0	0.0	10.4	0.0	13.3	1.6
Incr Delay (d2), s/veh	0.0	0.0	0.0				2.2	0.0	3.7	0.0	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0				0.3	0.0	9.3	0.0	8.3	0.0
LnGrp Delay(d),s/veh	13.4	0.0	13.4				31.2	0.0	14.1	0.0	16.9	1.6
LnGrp LOS	B		B				C		B		B	A
Approach Vol, veh/h		7						706			572	
Approach Delay, s/veh		13.4						14.5			16.8	
Approach LOS		B						B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6						
Phs Duration (G+Y+Rc), s		36.0		24.0	5.2	30.8						
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7						
Max Green Setting (Gmax), s		* 31		20.0	6.0	* 21						
Max Q Clear Time (g_c+I1), s		18.6		2.1	2.5	16.6						
Green Ext Time (p_c), s		6.4		0.0	0.0	2.4						
Intersection Summary												
HCM 2010 Ctrl Delay			15.5									
HCM 2010 LOS			B									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
8: Camino Pablo & Claremont Ave

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	8	30	29	630	515	3
Future Volume (veh/h)	8	30	29	630	515	3
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	9	7	31	677	554	3
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	242	188	70	1107	914	5
Arrive On Green	0.28	0.28	0.04	0.60	1.00	0.98
Sat Flow, veh/h	873	679	1757	1845	1833	10
Grp Volume(v), veh/h	17	0	31	677	0	557
Grp Sat Flow(s),veh/h/ln	1649	0	1757	1845	0	1843
Q Serve(g_s), s	0.5	0.0	1.1	15.1	0.0	0.1
Cycle Q Clear(g_c), s	0.5	0.0	1.1	15.1	0.0	0.1
Prop In Lane	0.53	0.41	1.00			0.01
Lane Grp Cap(c), veh/h	457	0	70	1107	0	919
V/C Ratio(X)	0.04	0.00	0.45	0.61	0.00	0.61
Avail Cap(c_a), veh/h	457	0	162	1107	0	919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.66	0.66	0.00	0.84
Uniform Delay (d), s/veh	17.2	0.0	30.5	8.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	1.1	1.7	0.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.6	8.0	0.0	0.7
LnGrp Delay(d),s/veh	17.3	0.0	31.6	9.9	0.0	2.5
LnGrp LOS	B		C	A		A
Approach Vol, veh/h	17			708	557	
Approach Delay, s/veh	17.3			10.8	2.5	
Approach LOS	B			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		43.0		22.0	6.6	36.4		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 38		18.0	6.0	* 28		
Max Q Clear Time (g_c+I1), s		17.1		2.5	3.1	2.1		
Green Ext Time (p_c), s		8.6		0.0	0.0	7.5		

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

Existing Midday

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	10	613	25	9	488
Future Volume (veh/h)	30	10	613	25	9	488
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.97		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1845
Adj Flow Rate, veh/h	33	4	674	25	10	536
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	509	62	952	35	62	979
Arrive On Green	0.34	0.34	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1503	182	1767	66	11	1818
Grp Volume(v), veh/h	38	0	0	699	546	0
Grp Sat Flow(s),veh/h/ln	1731	0	0	1833	1829	0
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.87	0.11		0.04	0.02	
Lane Grp Cap(c), veh/h	586	0	0	987	1041	0
V/C Ratio(X)	0.06	0.00	0.00	0.71	0.52	0.00
Avail Cap(c_a), veh/h	586	0	0	987	1041	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.79	0.86	0.00
Uniform Delay (d), s/veh	14.5	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	3.4	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.9	0.5	0.0
LnGrp Delay(d),s/veh	14.8	0.0	0.0	3.4	1.6	0.0
LnGrp LOS	B			A	A	
Approach Vol, veh/h	38		699			546
Approach Delay, s/veh	14.8		3.4			1.6
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		39.0				39.0		26.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 34				* 34		22.0
Max Q Clear Time (g_c+I1), s		2.0				2.0		3.0
Green Ext Time (p_c), s		8.3				5.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	3.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
10: Camino Pablo & Los Amigos

Existing Midday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	0	0	2	4	0	1	1	619	3	3	491	0
Future Volume (veh/h)	0	0	2	4	0	1	1	619	3	3	491	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	0	1	4	0	0	1	673	3	3	534	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	447	522	0	0	56	1083	5	57	1086	0
Arrive On Green	0.00	0.00	0.29	0.29	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Sat Flow, veh/h	0	0	1529	1406	0	0	0	1852	8	2	1858	0
Grp Volume(v), veh/h	0	0	1	4	0	0	677	0	0	537	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1529	1406	0	0	1861	0	0	1860	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	0.00		0.00	0.01		0.00
Lane Grp Cap(c), veh/h	0	0	447	522	0	0	1143	0	0	1143	0	0
V/C Ratio(X)	0.00	0.00	0.00	0.01	0.00	0.00	0.59	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	0	0	447	522	0	0	1143	0	0	1143	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.64	0.00	0.00	0.86	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	16.3	16.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	16.3	16.4	0.0	0.0	1.4	0.0	0.0	1.2	0.0	0.0
LnGrp LOS			B	B			A			A		
Approach Vol, veh/h		1			4			677			537	
Approach Delay, s/veh		16.3			16.4			1.4			1.2	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		23.0		42.0		23.0
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 37		19.0		* 37		19.0
Max Q Clear Time (g_c+I1), s		2.0		2.0		2.0		2.2
Green Ext Time (p_c), s		8.1		0.0		5.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	1.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
11: Camino Pablo & Monte Vista Rd

	↰	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	80	1	10	5	0	10	10	610	0	0	479	3
Future Volume (veh/h)	80	1	10	5	0	10	10	610	0	0	479	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	90	1	2	6	0	0	11	685	0	0	538	3
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	219	1	2	246	0	0	164	1485	0	0	1191	7
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.00	0.12	1.00	0.00	0.00	0.64	0.64
Sat Flow, veh/h	1385	15	31	1701	0	0	1774	1863	0	0	1851	10
Grp Volume(v), veh/h	93	0	0	6	0	0	11	685	0	0	0	541
Grp Sat Flow(s),veh/h/ln	1431	0	0	1701	0	0	1774	1863	0	0	0	1861
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	9.5
Cycle Q Clear(g_c), s	4.1	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0	0.0	0.0	9.5
Prop In Lane	0.97		0.02	1.00		0.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	223	0	0	246	0	0	164	1485	0	0	0	1197
V/C Ratio(X)	0.42	0.00	0.00	0.02	0.00	0.00	0.07	0.46	0.00	0.00	0.00	0.45
Avail Cap(c_a), veh/h	568	0	0	589	0	0	164	1485	0	0	0	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.74	0.74	0.00	0.00	0.00	0.71
Uniform Delay (d), s/veh	29.4	0.0	0.0	27.6	0.0	0.0	26.0	0.0	0.0	0.0	0.0	5.8
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.0	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.1	0.0	0.0	0.2	0.3	0.0	0.0	0.0	5.1
LnGrp Delay(d),s/veh	29.9	0.0	0.0	27.6	0.0	0.0	26.6	0.8	0.0	0.0	0.0	6.7
LnGrp LOS	C			C			C	A				A
Approach Vol, veh/h		93			6			696			541	
Approach Delay, s/veh		29.9			27.6			1.2			6.7	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		55.8		9.2	10.0	45.8		9.2
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0
Max Green Setting (Gmax), s		* 35		21.0	6.0	* 25		21.0
Max Q Clear Time (g_c+I1), s		2.0		6.1	2.4	11.5		2.2
Green Ext Time (p_c), s		10.8		0.2	0.0	5.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	5.5
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
12: Camino Pablo & Wildcat Canyon Rd/Bear Creek Rd

Existing Midday

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣		↰	↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	23	12	45	20	5	9	40	513	147	9	417	12
Future Volume (veh/h)	23	12	45	20	5	9	40	513	147	9	417	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	26	14	42	23	6	5	46	590	138	10	479	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	37	110	39	190	158	55	943	780	10	896	744
Arrive On Green	0.00	0.09	0.09	0.02	0.21	0.21	0.03	0.51	0.51	0.01	0.49	0.49
Sat Flow, veh/h	0	396	1187	1757	915	762	1757	1845	1528	1757	1845	1532
Grp Volume(v), veh/h	0	0	56	23	0	11	46	590	138	10	479	5
Grp Sat Flow(s),veh/h/ln	0	0	1583	1757	0	1677	1757	1845	1528	1757	1845	1532
Q Serve(g_s), s	0.0	0.0	1.4	0.6	0.0	0.2	1.1	10.0	2.1	0.2	7.8	0.1
Cycle Q Clear(g_c), s	0.0	0.0	1.4	0.6	0.0	0.2	1.1	10.0	2.1	0.2	7.8	0.1
Prop In Lane	0.00		0.75	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	147	39	0	347	55	943	780	10	896	744
V/C Ratio(X)	0.00	0.00	0.38	0.59	0.00	0.03	0.84	0.63	0.18	0.97	0.53	0.01
Avail Cap(c_a), veh/h	0	0	1732	970	0	1835	889	8144	6744	889	8144	6763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.5	21.1	0.0	13.8	21.0	7.6	5.7	21.6	7.8	5.8
Incr Delay (d2), s/veh	0.0	0.0	0.6	5.1	0.0	0.0	12.1	1.0	0.2	70.8	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.6	0.3	0.0	0.1	0.7	5.2	0.9	0.3	4.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	19.1	26.2	0.0	13.8	33.1	8.6	5.9	92.4	8.5	5.8
LnGrp LOS			B	C		B	C	A	A	F	A	A
Approach Vol, veh/h		56			34			774			494	
Approach Delay, s/veh		19.1			22.1			9.6			10.1	
Approach LOS		B			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.3	26.2	5.0	8.0	5.4	25.1	0.0	13.0
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0
Max Q Clear Time (g_c+I1), s	2.2	12.0	2.6	3.4	3.1	9.8	0.0	2.2
Green Ext Time (p_c), s	0.0	8.2	0.0	0.2	0.0	4.7	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.5
HCM 2010 LOS	B

1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	44	31	14	31	8	193	24	1413	28	203	796	58
Future Volume (vph)	44	31	14	31	8	193	24	1413	28	203	796	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.5	3.5		3.0	3.5	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.95		1.00	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	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1810	1507		1792	1583	1770	5062		1770	3496	
Flt Permitted		0.81	1.00		0.68	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1503	1507		1268	1583	1770	5062		1770	3496	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	47	33	15	33	9	205	26	1503	30	216	847	62
RTOR Reduction (vph)	0	0	0	0	0	184	0	1	0	0	0	0
Lane Group Flow (vph)	0	80	15	0	42	21	26	1532	0	216	909	0
Confl. Peds. (#/hr)			17						13			
Confl. Bikes (#/hr)									4			7
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		17.2	17.2		17.2	17.2	4.7	41.5		24.3	60.6	
Effective Green, g (s)		18.2	18.2		18.2	18.2	5.7	42.5		25.3	61.6	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.03	0.24		0.14	0.35	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		156	156		131	164	57	1227		255	1229	
v/s Ratio Prot							0.01	c0.30		c0.12	0.26	
v/s Ratio Perm		c0.05	0.01		0.03	0.01						
v/c Ratio		0.51	0.10		0.32	0.13	0.46	1.25		0.85	0.74	
Uniform Delay, d1		74.3	71.1		72.8	71.3	83.2	66.3		73.1	49.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.1		0.5	0.1	2.1	118.9		21.3	2.5	
Delay (s)		75.5	71.2		73.3	71.4	85.3	185.2		94.3	52.3	
Level of Service		E	E		E	E	F	F		F	D	
Approach Delay (s)		74.8			71.8			183.6			60.4	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	105.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	175.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	588	104	411	14
Future Volume (vph)	588	104	411	14
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.89		
Flt Protected	0.95	0.99		
Satd. Flow (prot)	1681	1556		
Flt Permitted	0.95	0.99		
Satd. Flow (perm)	1681	1556		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94
Adj. Flow (vph)	626	111	437	15
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	563	626	0	0
Confl. Peds. (#/hr)		17		
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	76.2	76.2		
Effective Green, g (s)	77.2	77.2		
Actuated g/C Ratio	0.44	0.44		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	740	685		
v/s Ratio Prot	0.33	c0.40		
v/s Ratio Perm				
v/c Ratio	0.76	0.91		
Uniform Delay, d1	41.2	45.9		
Progression Factor	1.00	1.00		
Incremental Delay, d2	4.6	16.7		
Delay (s)	45.9	62.6		
Level of Service	D	E		
Approach Delay (s)		54.7		
Approach LOS		D		

Intersection Summary

HCM 2010 Signalized Intersection Summary

2: Camino Pablo & SR-24 WB On-Ramp/Santa Maria Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	323	135	52	0	1397	524	66	600	337
Future Volume (veh/h)	0	0	0	323	135	52	0	1397	524	66	600	337
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				252	293	57	0	1535	433	73	659	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				422	443	603	0	1792	1178	260	2439	1091
Arrive On Green				0.24	0.24	0.24	0.00	0.51	0.51	0.15	0.69	0.00
Sat Flow, veh/h				1774	1863	1563	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				252	293	57	0	1535	433	73	659	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1563	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				13.8	15.6	2.6	0.0	41.4	10.5	4.0	7.8	0.0
Cycle Q Clear(g_c), s				13.8	15.6	2.6	0.0	41.4	10.5	4.0	7.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				422	443	603	0	1792	1178	260	2439	1091
V/C Ratio(X)				0.60	0.66	0.09	0.00	0.86	0.37	0.28	0.27	0.00
Avail Cap(c_a), veh/h				422	443	603	0	1974	1259	260	2621	1173
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				37.0	37.7	21.5	0.0	23.5	4.9	41.6	6.5	0.0
Incr Delay (d2), s/veh				6.1	7.6	0.3	0.0	3.7	0.2	2.7	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.5	8.9	1.2	0.0	21.0	8.8	2.2	3.8	0.0
LnGrp Delay(d),s/veh				43.2	45.3	21.8	0.0	27.2	5.1	44.3	6.6	0.0
LnGrp LOS				D	D	C		C	A	D	A	
Approach Vol, veh/h					602			1968			732	
Approach Delay, s/veh					42.2			22.4			10.3	
Approach LOS					D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.0	59.4				79.4		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		25.0
Max Q Clear Time (g_c+I1), s	6.0	43.4				9.8		17.6
Green Ext Time (p_c), s	0.1	11.0				4.7		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	23.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	199	52	1235	214	47	804
Future Volume (veh/h)	199	52	1235	214	47	804
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1456	1845	1845	1845
Adj Flow Rate, veh/h	214	51	1328	156	51	865
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	463	813	1067	604	449	2358
Arrive On Green	0.26	0.26	0.39	0.39	0.26	0.67
Sat Flow, veh/h	1757	1568	2840	1568	1757	3597
Grp Volume(v), veh/h	214	51	1328	156	51	865
Grp Sat Flow(s),veh/h/ln	1757	1568	1383	1568	1757	1752
Q Serve(g_s), s	12.8	2.0	48.3	8.5	2.8	13.4
Cycle Q Clear(g_c), s	12.8	2.0	48.3	8.5	2.8	13.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	463	813	1067	604	449	2358
V/C Ratio(X)	0.46	0.06	1.25	0.26	0.11	0.37
Avail Cap(c_a), veh/h	463	813	1067	604	449	2358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	15.0	38.5	26.3	35.8	8.9
Incr Delay (d2), s/veh	3.3	0.1	118.3	0.5	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.9	35.9	3.8	1.4	6.6
LnGrp Delay(d),s/veh	42.0	15.1	156.8	26.8	36.3	9.1
LnGrp LOS	D	B	F	C	D	A
Approach Vol, veh/h	265		1484			916
Approach Delay, s/veh	36.8		143.1			10.6
Approach LOS	D		F			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	36.0	52.3				88.3		37.0
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	4.8	50.3				15.4		14.8
Green Ext Time (p_c), s	0.0	0.0				11.8		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			87.0
HCM 2010 LOS			F

HCM 2010 Signalized Intersection Summary
4: Camino Pablo & El Toyonal/Orinda Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	13	20	77	9	52	166	49	1233	5	62	765	9
Future Volume (veh/h)	13	20	77	9	52	166	49	1233	5	62	765	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1900	1845	1845	1845	1553	1845	1845	1845	1900
Adj Flow Rate, veh/h	14	22	23	10	57	168	53	1340	2	67	832	9
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	176	263	418	80	432	817	456	1156	600	444	1349	15
Arrive On Green	0.28	0.27	0.27	0.28	0.27	0.27	0.26	0.39	0.39	0.25	0.38	0.37
Sat Flow, veh/h	520	961	1528	190	1582	1539	1757	2951	1533	1757	3551	38
Grp Volume(v), veh/h	36	0	23	67	0	168	53	1340	2	67	411	430
Grp Sat Flow(s),veh/h/ln	1481	0	1528	1771	0	1539	1757	1476	1533	1757	1752	1837
Q Serve(g_s), s	0.0	0.0	1.6	0.0	0.0	8.5	3.4	57.3	0.1	4.3	27.8	27.8
Cycle Q Clear(g_c), s	4.0	0.0	1.6	4.0	0.0	8.5	3.4	57.3	0.1	4.3	27.8	27.8
Prop In Lane	0.39		1.00	0.15		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	444	0	418	519	0	817	456	1156	600	444	666	698
V/C Ratio(X)	0.08	0.00	0.06	0.13	0.00	0.21	0.12	1.16	0.00	0.15	0.62	0.62
Avail Cap(c_a), veh/h	444	0	418	519	0	817	456	1156	600	444	674	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	39.2	40.0	0.0	18.4	41.3	44.5	27.1	42.4	36.7	36.7
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.5	0.0	0.6	0.5	81.6	0.0	0.7	2.5	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.7	2.1	0.0	3.7	1.7	36.4	0.1	2.2	13.9	14.6
LnGrp Delay(d),s/veh	39.7	0.0	39.5	40.6	0.0	19.0	41.8	126.1	27.1	43.2	39.2	39.1
LnGrp LOS	D		D	D		B	D	F	C	D	D	D
Approach Vol, veh/h		59			235			1395			908	
Approach Delay, s/veh		39.6			25.1			122.8			39.4	
Approach LOS		D			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	41.0	61.3		44.0	42.0	60.3		44.0
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0
Max Q Clear Time (g_c+I1), s	6.3	59.3		6.0	5.4	29.8		10.5
Green Ext Time (p_c), s	0.1	0.0		0.3	0.1	9.8		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	82.9
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
5: Camino Pablo & Miner Rd

Existing PM

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	163	38	1203	209	42	673
Future Volume (veh/h)	163	38	1203	209	42	673
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1359	1845	1845	1845
Adj Flow Rate, veh/h	183	24	1352	195	47	756
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	392	615	1332	806	297	2508
Arrive On Green	0.22	0.22	0.52	0.52	0.17	0.72
Sat Flow, veh/h	1757	1568	2650	1563	1757	3597
Grp Volume(v), veh/h	183	24	1352	195	47	756
Grp Sat Flow(s),veh/h/ln	1757	1568	1291	1563	1757	1752
Q Serve(g_s), s	11.8	1.2	67.1	9.0	3.0	10.2
Cycle Q Clear(g_c), s	11.8	1.2	67.1	9.0	3.0	10.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	392	615	1332	806	297	2508
V/C Ratio(X)	0.47	0.04	1.02	0.24	0.16	0.30
Avail Cap(c_a), veh/h	392	615	1332	806	297	2508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	24.4	31.5	17.4	46.1	6.7
Incr Delay (d2), s/veh	4.0	0.1	28.5	0.3	1.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.6	29.1	3.9	1.5	5.0
LnGrp Delay(d),s/veh	47.8	24.5	60.0	17.8	47.3	6.9
LnGrp LOS	D	C	F	B	D	A
Approach Vol, veh/h	207		1547			803
Approach Delay, s/veh	45.1		54.6			9.2
Approach LOS	D		D			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	26.0	71.1				97.1		33.0
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.0		29.0
Max Q Clear Time (g_c+I1), s	5.0	69.1				12.2		13.8
Green Ext Time (p_c), s	0.0	0.0				12.6		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	39.6
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: Camino Pablo & Ardilla Rd

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Volume (veh/h)	0	1	0	1241	715	0
Future Volume (veh/h)	0	1	0	1241	715	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	1	0	1266	730	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	3	0	1691	1691	0
Arrive On Green	0.00	0.00	0.00	0.92	1.00	0.00
Sat Flow, veh/h	0	851	0	1845	1845	0
Grp Volume(v), veh/h	0	2	0	1266	730	0
Grp Sat Flow(s),veh/h/ln	0	1703	0	1845	1845	0
Q Serve(g_s), s	0.0	0.1	0.0	18.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.1	0.0	18.2	0.0	0.0
Prop In Lane	0.00	0.50	0.00			0.00
Lane Grp Cap(c), veh/h	0	6	0	1691	1691	0
V/C Ratio(X)	0.00	0.36	0.00	0.75	0.43	0.00
Avail Cap(c_a), veh/h	0	431	0	1691	1691	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.71	0.00
Uniform Delay (d), s/veh	0.0	49.7	0.0	1.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	14.2	0.0	3.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	9.9	0.3	0.0
LnGrp Delay(d),s/veh	0.0	63.9	0.0	4.2	0.6	0.0
LnGrp LOS		E		A	A	
Approach Vol, veh/h	2			1266	730	
Approach Delay, s/veh	63.9			4.2	0.6	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		95.7		4.3		95.7		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 66		25.3		* 66		
Max Q Clear Time (g_c+I1), s		20.2		2.1		2.0		
Green Ext Time (p_c), s		38.3		0.0		17.5		

Intersection Summary	
HCM 2010 Ctrl Delay	2.9
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱					↰	↱			↑	↱
Traffic Volume (veh/h)	1	0	23	0	0	0	18	1223	0	0	692	4
Future Volume (veh/h)	1	0	23	0	0	0	18	1223	0	0	692	4
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900				1845	1845	1900	0	1845	1845
Adj Flow Rate, veh/h	1	0	3				19	1315	0	0	744	3
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				3	3	3	0	3	3
Cap, veh/h	351	0	313				105	1328	0	0	1144	1275
Arrive On Green	0.20	0.00	0.20				0.08	0.96	0.00	0.00	1.00	1.00
Sat Flow, veh/h	1757	0	1564				1757	1845	0	0	1845	1568
Grp Volume(v), veh/h	1	0	3				19	1315	0	0	744	3
Grp Sat Flow(s),veh/h/ln	1757	0	1564				1757	1845	0	0	1845	1568
Q Serve(g_s), s	0.0	0.0	0.2				1.0	58.3	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.2				1.0	58.3	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00				1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	351	0	313				105	1328	0	0	1144	1275
V/C Ratio(X)	0.00	0.00	0.01				0.18	0.99	0.00	0.00	0.65	0.00
Avail Cap(c_a), veh/h	351	0	313				105	1328	0	0	1144	1275
HCM Platoon Ratio	1.00	1.00	1.00				1.33	1.33	1.33	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00				0.64	0.64	0.00	0.00	0.73	0.73
Uniform Delay (d), s/veh	32.0	0.0	31.9				43.7	1.8	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1				2.4	17.6	0.0	0.0	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1				0.6	27.0	0.0	0.0	0.7	0.0
LnGrp Delay(d),s/veh	32.0	0.0	31.9				46.1	19.4	0.0	0.0	2.1	0.0
LnGrp LOS	C		C				D	B			A	A
Approach Vol, veh/h		4						1334			747	
Approach Delay, s/veh		31.9						19.8			2.1	
Approach LOS		C						B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		76.0		24.0	10.0	66.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 71		20.0	6.0	* 61		
Max Q Clear Time (g_c+I1), s		60.3		2.2	3.0	2.0		
Green Ext Time (p_c), s		10.1		0.0	0.0	14.6		

Intersection Summary	
HCM 2010 Ctrl Delay	13.5
HCM 2010 LOS	B

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	6	32	50	1174	664	13
Future Volume (veh/h)	6	32	50	1174	664	13
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1699	1845	1900
Adj Flow Rate, veh/h	6	6	54	1262	714	13
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	136	136	141	1257	1120	20
Arrive On Green	0.18	0.18	0.11	0.98	1.00	1.00
Sat Flow, veh/h	754	754	1757	1699	1806	33
Grp Volume(v), veh/h	13	0	54	1262	0	727
Grp Sat Flow(s),veh/h/ln	1634	0	1757	1699	0	1839
Q Serve(g_s), s	0.7	0.0	2.9	74.0	0.0	0.0
Cycle Q Clear(g_c), s	0.7	0.0	2.9	74.0	0.0	0.0
Prop In Lane	0.46	0.46	1.00			0.02
Lane Grp Cap(c), veh/h	294	0	141	1257	0	1140
V/C Ratio(X)	0.04	0.00	0.38	1.00	0.00	0.64
Avail Cap(c_a), veh/h	294	0	141	1257	0	1140
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.12	0.12	0.00	0.09
Uniform Delay (d), s/veh	33.9	0.0	42.4	0.8	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.9	9.5	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.4	9.0	0.0	0.1
LnGrp Delay(d),s/veh	34.2	0.0	43.3	10.3	0.0	0.2
LnGrp LOS	C		D	F		A
Approach Vol, veh/h	13			1316	727	
Approach Delay, s/veh	34.2			11.7	0.2	
Approach LOS	C			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		78.0		22.0	12.0	66.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 73		18.0	8.0	* 61		
Max Q Clear Time (g_c+I1), s		76.0		2.7	4.9	2.0		
Green Ext Time (p_c), s		0.0		0.0	0.0	14.0		

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

	↙	↖	↑	↗	↘	↓
Movement	**WBL**	**WBR**	**NBT**	**NBR**	**SBL**	**SBT**
Lane Configurations	Y		↱			↰
Traffic Volume (veh/h)	21	4	1155	25	8	656
Future Volume (veh/h)	21	4	1155	25	8	656
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1262
Adj Flow Rate, veh/h	22	1	1229	26	9	698
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	417	19	1188	25	36	552
Arrive On Green	0.26	0.26	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1604	73	1800	38	0	836
Grp Volume(v), veh/h	24	0	0	1255	707	0
Grp Sat Flow(s),veh/h/ln	1749	0	0	1838	836	0
Q Serve(g_s), s	1.0	0.0	0.0	66.0	0.0	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	66.0	65.8	0.0
Prop In Lane	0.92	0.04		0.02	0.01	
Lane Grp Cap(c), veh/h	455	0	0	1213	586	0
V/C Ratio(X)	0.05	0.00	0.00	1.03	1.21	0.00
Avail Cap(c_a), veh/h	455	0	0	1213	586	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.14	0.65	0.00
Uniform Delay (d), s/veh	27.8	0.0	0.0	0.0	19.1	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.0	20.5	103.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	6.9	31.4	0.0
LnGrp Delay(d),s/veh	28.0	0.0	0.0	20.5	122.2	0.0
LnGrp LOS	C			F	F	
Approach Vol, veh/h	24		1255			707
Approach Delay, s/veh	28.0		20.5			122.2
Approach LOS	C		C			F

Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		70.0				70.0		30.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 65				* 65		26.0
Max Q Clear Time (g_c+I1), s		68.0				67.8		3.0
Green Ext Time (p_c), s		0.0				0.0		0.0

Intersection Summary

HCM 2010 Ctrl Delay	56.8
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱			✥			✥	
Traffic Volume (veh/h)	45	0	5	0	0	2	5	1117	37	0	665	5
Future Volume (veh/h)	45	0	5	0	0	2	5	1117	37	0	665	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1275	1900	1900	1176	1900
Adj Flow Rate, veh/h	47	0	0	0	0	0	5	1176	38	0	700	5
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	0	0	72	81	0	37	1073	35	0	1022	7
Arrive On Green	0.05	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	1339	0	0	1412	1863	0	1	1225	39	0	1167	8
Grp Volume(v), veh/h	47	0	0	0	0	0	1219	0	0	0	0	705
Grp Sat Flow(s),veh/h/ln	1339	0	0	1412	1863	0	1266	0	0	0	0	1175
Q Serve(g_s), s	3.5	0.0	0.0	0.0	0.0	0.0	21.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	0.0	0.0	87.4	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.03	0.00		0.01
Lane Grp Cap(c), veh/h	137	0	0	72	81	0	1143	0	0	0	0	1030
V/C Ratio(X)	0.34	0.00	0.00	0.00	0.00	0.00	1.07	0.00	0.00	0.00	0.00	0.68
Avail Cap(c_a), veh/h	306	0	0	250	317	0	1143	0	0	0	0	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.23
Uniform Delay (d), s/veh	47.1	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	32.2	0.0	0.0	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.0	0.0	0.0	29.8	0.0	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh	47.7	0.0	0.0	0.0	0.0	0.0	33.5	0.0	0.0	0.0	0.0	0.9
LnGrp LOS	D						F					A
Approach Vol, veh/h		47			0			1219			705	
Approach Delay, s/veh		47.7			0.0			33.5			0.9	
Approach LOS		D						C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		91.6		8.4		91.6		8.4				
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0				
Max Green Setting (Gmax), s		* 74		17.0		* 74		17.0				
Max Q Clear Time (g_c+I1), s		89.4		5.5		2.0		0.0				
Green Ext Time (p_c), s		0.0		0.1		9.5		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			22.2									
HCM 2010 LOS			C									
Notes												

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
11: Camino Pablo & Monte Vista Rd

Existing PM

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	65	0	4	3	0	5	14	1150	0	0	663	3
Future Volume (veh/h)	65	0	4	3	0	5	14	1150	0	0	663	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1618	0	0	1176	1900
Adj Flow Rate, veh/h	66	0	0	3	0	0	14	1162	0	0	670	3
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	369	0	0	382	0	0	106	1149	0	0	714	3
Arrive On Green	0.22	0.00	0.00	0.22	0.00	0.00	0.06	0.71	0.00	0.00	0.61	0.60
Sat Flow, veh/h	1414	0	0	1476	0	0	1774	1618	0	0	1170	5
Grp Volume(v), veh/h	66	0	0	3	0	0	14	1162	0	0	0	673
Grp Sat Flow(s),veh/h/ln	1414	0	0	1476	0	0	1774	1618	0	0	0	1175
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	0.0	0.7	71.0	0.0	0.0	0.0	52.2
Cycle Q Clear(g_c), s	3.8	0.0	0.0	0.1	0.0	0.0	0.7	71.0	0.0	0.0	0.0	52.2
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	376	0	0	389	0	0	106	1149	0	0	0	717
V/C Ratio(X)	0.18	0.00	0.00	0.01	0.00	0.00	0.13	1.01	0.00	0.00	0.00	0.94
Avail Cap(c_a), veh/h	376	0	0	389	0	0	106	1149	0	0	0	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.09	0.00	0.00	0.00	0.93
Uniform Delay (d), s/veh	32.5	0.0	0.0	31.1	0.0	0.0	44.5	14.5	0.0	0.0	0.0	17.8
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.0	0.0	0.2	11.1	0.0	0.0	0.0	20.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.1	0.0	0.0	0.4	34.5	0.0	0.0	0.0	20.7
LnGrp Delay(d),s/veh	33.5	0.0	0.0	31.1	0.0	0.0	44.8	25.6	0.0	0.0	0.0	38.3
LnGrp LOS	C			C			D	F				D
Approach Vol, veh/h		66			3			1176			673	
Approach Delay, s/veh		33.5			31.1			25.8			38.3	
Approach LOS		C			C			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		75.0		25.0	10.0	65.0		25.0				
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0				
Max Green Setting (Gmax), s		* 70		21.0	6.0	* 60		21.0				
Max Q Clear Time (g_c+I1), s		73.0		5.8	2.7	54.2		2.1				
Green Ext Time (p_c), s		0.0		0.1	0.0	3.4		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			30.5									
HCM 2010 LOS			C									
Notes												

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
12: Camino Pablo & Wildcat Canyon Rd/Bear Creek Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱		↰	↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	164	104	155	27	8	11	20	1090	110	11	484	8
Future Volume (veh/h)	164	104	155	27	8	11	20	1090	110	11	484	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	167	106	153	28	8	2	20	1112	101	11	494	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	129	186	170	433	108	26	1196	993	13	1183	985
Arrive On Green	0.00	0.19	0.19	0.10	0.30	0.30	0.01	0.64	0.64	0.01	0.63	0.63
Sat Flow, veh/h	0	677	978	1774	1431	358	1774	1863	1547	1774	1863	1551
Grp Volume(v), veh/h	0	0	259	28	0	10	20	1112	101	11	494	5
Grp Sat Flow(s),veh/h/ln	0	0	1655	1774	0	1789	1774	1863	1547	1774	1863	1551
Q Serve(g_s), s	0.0	0.0	37.5	3.6	0.0	1.0	2.8	132.6	6.3	1.5	32.9	0.3
Cycle Q Clear(g_c), s	0.0	0.0	37.5	3.6	0.0	1.0	2.8	132.6	6.3	1.5	32.9	0.3
Prop In Lane	0.00		0.59	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	315	170	0	541	26	1196	993	13	1183	985
V/C Ratio(X)	0.00	0.00	0.82	0.16	0.00	0.02	0.78	0.93	0.10	0.82	0.42	0.01
Avail Cap(c_a), veh/h	0	0	315	170	0	541	156	1431	1189	156	1431	1192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	97.2	103.7	0.0	61.2	122.7	39.8	17.1	123.8	22.7	16.7
Incr Delay (d2), s/veh	0.0	0.0	20.9	2.1	0.0	0.1	17.0	10.4	0.1	34.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	19.0	1.9	0.0	0.5	1.5	71.4	2.7	0.9	17.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	118.1	105.8	0.0	61.2	139.7	50.2	17.2	157.8	23.0	16.7
LnGrp LOS			F	F		E	F	D	B	F	C	B
Approach Vol, veh/h		259			38			1233			510	
Approach Delay, s/veh		118.1			94.1			48.9			25.8	
Approach LOS		F			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	164.4	28.0	51.6	7.6	162.6	0.0	79.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6				
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0				
Max Q Clear Time (g_c+I1), s	3.5	134.6	5.6	39.5	4.8	34.9	0.0	3.0				
Green Ext Time (p_c), s	0.0	23.8	0.0	0.6	0.0	4.9	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			52.8									
HCM 2010 LOS			D									

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Existing PP AM

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	69	43	12	7	4	292	14	931	14	182	468	62
Future Volume (vph)	69	43	12	7	4	292	14	931	14	182	468	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.5	3.5		3.0	3.5	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.92		1.00	0.99	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	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.97	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1807	1460		1803	1562	1770	5067		1770	3466	
Flt Permitted		0.81	1.00		0.86	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1515	1460		1606	1562	1770	5067		1770	3466	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	74	46	13	8	4	314	15	1001	15	196	503	67
RTOR Reduction (vph)	0	0	0	0	0	265	0	1	0	0	0	0
Lane Group Flow (vph)	0	120	13	0	12	49	15	1015	0	196	570	0
Confl. Peds. (#/hr)			39						17			2
Confl. Bikes (#/hr)						1			9			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		20.5	20.5		20.5	20.5	2.5	36.7		19.9	53.6	
Effective Green, g (s)		21.5	21.5		21.5	21.5	3.5	37.7		20.9	54.6	
Actuated g/C Ratio		0.16	0.16		0.16	0.16	0.03	0.27		0.15	0.40	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		236	227		250	243	44	1387		268	1374	
v/s Ratio Prot							0.01	c0.20		c0.11	0.16	
v/s Ratio Perm		c0.08	0.01		0.01	0.03						
v/c Ratio		0.51	0.06		0.05	0.20	0.34	0.73		0.73	0.41	
Uniform Delay, d1		53.3	49.5		49.4	50.6	66.0	45.4		55.7	30.0	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0		0.0	0.1	1.7	1.7		8.5	0.3	
Delay (s)		53.9	49.5		49.4	50.8	67.6	47.2		64.3	30.3	
Level of Service		D	D		D	D	E	D		E	C	
Approach Delay (s)		53.5			50.7			47.5			39.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	137.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	305	95	263	16
Future Volume (vph)	305	95	263	16
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.90		
Flt Protected	0.95	0.98		
Satd. Flow (prot)	1681	1562		
Flt Permitted	0.95	0.98		
Satd. Flow (perm)	1681	1562		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93
Adj. Flow (vph)	328	102	283	17
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	295	435	0	0
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	44.6	44.6		
Effective Green, g (s)	45.6	45.6		
Actuated g/C Ratio	0.33	0.33		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	556	517		
v/s Ratio Prot	0.18	c0.28		
v/s Ratio Perm				
v/c Ratio	0.53	0.84		
Uniform Delay, d1	37.4	42.7		
Progression Factor	1.00	1.00		
Incremental Delay, d2	1.0	11.8		
Delay (s)	38.3	54.5		
Level of Service	D	D		
Approach Delay (s)		48.0		
Approach LOS		D		

Intersection Summary

HCM 2010 Signalized Intersection Summary
2: Camino Pablo & SR-24 WB On-Ramp/Santa Maria Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	170	137	33	0	654	484	90	740	784
Future Volume (veh/h)	0	0	0	170	137	33	0	654	484	90	740	784
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				172	180	21	0	735	441	101	831	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				757	795	804	0	1136	1184	155	1639	733
Arrive On Green				0.43	0.43	0.43	0.00	0.32	0.32	0.09	0.46	0.00
Sat Flow, veh/h				1774	1863	1562	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				172	180	21	0	735	441	101	831	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1562	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				4.5	4.5	0.5	0.0	12.9	7.1	4.0	12.0	0.0
Cycle Q Clear(g_c), s				4.5	4.5	0.5	0.0	12.9	7.1	4.0	12.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				757	795	804	0	1136	1184	155	1639	733
V/C Ratio(X)				0.23	0.23	0.03	0.00	0.65	0.37	0.65	0.51	0.00
Avail Cap(c_a), veh/h				757	795	804	0	2972	2005	391	3946	1765
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				13.2	13.2	8.7	0.0	21.1	3.2	32.1	13.7	0.0
Incr Delay (d2), s/veh				0.7	0.7	0.1	0.0	0.6	0.2	4.6	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.3	2.4	0.2	0.0	6.4	8.4	2.2	5.8	0.0
LnGrp Delay(d),s/veh				13.9	13.9	8.8	0.0	21.8	3.4	36.7	13.9	0.0
LnGrp LOS				B	B	A		C	A	D	B	
Approach Vol, veh/h					373			1176			932	
Approach Delay, s/veh					13.6			14.9			16.4	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.3	27.3				37.7		35.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		30.0
Max Q Clear Time (g_c+I1), s	6.0	14.9				14.0		6.5
Green Ext Time (p_c), s	0.1	7.4				6.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
	↙	↖	↑	↗	↘	↓
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	188	19	552	135	47	1426
Future Volume (veh/h)	188	19	552	135	47	1426
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	194	8	569	79	48	1470
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	263	339	1975	884	117	2465
Arrive On Green	0.15	0.15	0.56	0.56	0.07	0.70
Sat Flow, veh/h	1757	1568	3597	1568	1757	3597
Grp Volume(v), veh/h	194	8	569	79	48	1470
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1568	1757	1752
Q Serve(g_s), s	5.8	0.2	4.6	1.3	1.4	11.7
Cycle Q Clear(g_c), s	5.8	0.2	4.6	1.3	1.4	11.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	263	339	1975	884	117	2465
V/C Ratio(X)	0.74	0.02	0.29	0.09	0.41	0.60
Avail Cap(c_a), veh/h	1064	1053	3106	1389	1031	3106
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	16.8	6.2	5.5	24.4	4.1
Incr Delay (d2), s/veh	3.0	0.0	0.2	0.1	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.1	2.3	0.6	0.7	5.7
LnGrp Delay(d),s/veh	25.1	16.8	6.4	5.6	25.3	4.6
LnGrp LOS	C	B	A	A	C	A
Approach Vol, veh/h	202		648			1518
Approach Delay, s/veh	24.8		6.3			5.3
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.6	34.7				42.3		12.2
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	3.4	6.6				13.7		7.8
Green Ext Time (p_c), s	0.0	8.5				22.4		0.4

Intersection Summary			
HCM 2010 Ctrl Delay			7.2
HCM 2010 LOS			A

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	41	22	106	5	13	87	36	523	12	111	1362	31
Future Volume (veh/h)	41	22	106	5	13	87	36	523	12	111	1362	31
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	45	24	18	5	14	28	40	575	8	122	1497	33
Adj No. of Lanes	0	1	1	1	1	1	1	2	1	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	204	91	217	244	265	360	106	2124	948	159	2198	48
Arrive On Green	0.15	0.14	0.14	0.15	0.14	0.14	0.06	0.61	0.61	0.09	0.63	0.61
Sat Flow, veh/h	867	636	1509	1326	1845	1518	1757	3505	1564	1757	3504	77
Grp Volume(v), veh/h	69	0	18	5	14	28	40	575	8	122	748	782
Grp Sat Flow(s),veh/h/ln	1503	0	1509	1326	1845	1518	1757	1752	1564	1757	1752	1829
Q Serve(g_s), s	1.8	0.0	0.8	0.3	0.5	1.1	1.6	5.8	0.2	5.1	20.9	21.0
Cycle Q Clear(g_c), s	2.9	0.0	0.8	3.1	0.5	1.1	1.6	5.8	0.2	5.1	20.9	21.0
Prop In Lane	0.65		1.00	1.00		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	305	0	217	244	265	360	106	2124	948	159	1099	1147
V/C Ratio(X)	0.23	0.00	0.08	0.02	0.05	0.08	0.38	0.27	0.01	0.76	0.68	0.68
Avail Cap(c_a), veh/h	875	0	802	583	736	748	887	2669	1191	864	1311	1369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.6	0.0	27.9	29.8	27.8	22.5	34.0	7.0	5.9	33.4	9.1	9.2
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.0	0.0	0.0	2.2	0.1	0.0	7.4	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.3	0.1	0.3	0.5	0.9	2.8	0.1	2.8	10.5	11.0
LnGrp Delay(d),s/veh	29.0	0.0	28.1	29.8	27.8	22.5	36.2	7.1	5.9	40.8	11.0	11.0
LnGrp LOS	C		C	C	C	C	D	A	A	D	B	B
Approach Vol, veh/h		87			47			623			1652	
Approach Delay, s/veh		28.8			24.9			9.0			13.2	
Approach LOS		C			C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.8	49.6		14.8	8.5	51.9		14.8				
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0				
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0				
Max Q Clear Time (g_c+I1), s	7.1	7.8		4.9	3.6	23.0		5.1				
Green Ext Time (p_c), s	0.3	8.2		0.4	0.1	22.6		0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			12.9									
HCM 2010 LOS			B									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
5: Camino Pablo & Miner Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	416	31	489	162	30	1088
Future Volume (veh/h)	416	31	489	162	30	1088
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	462	28	543	90	33	1209
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	515	534	1716	766	83	2080
Arrive On Green	0.29	0.29	0.49	0.49	0.05	0.59
Sat Flow, veh/h	1757	1568	3597	1563	1757	3597
Grp Volume(v), veh/h	462	28	543	90	33	1209
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1563	1757	1752
Q Serve(g_s), s	17.8	0.8	6.6	2.2	1.3	15.1
Cycle Q Clear(g_c), s	17.8	0.8	6.6	2.2	1.3	15.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	515	534	1716	766	83	2080
V/C Ratio(X)	0.90	0.05	0.32	0.12	0.40	0.58
Avail Cap(c_a), veh/h	721	718	3328	1484	547	3328
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	15.6	10.9	9.8	32.7	8.9
Incr Delay (d2), s/veh	9.9	0.0	0.2	0.1	1.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	0.4	3.2	1.0	0.6	7.4
LnGrp Delay(d),s/veh	33.9	15.7	11.1	9.9	33.8	9.5
LnGrp LOS	C	B	B	A	C	A
Approach Vol, veh/h	490		633			1242
Approach Delay, s/veh	32.8		10.9			10.1
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.3	38.6				45.9		24.7
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.0		29.0
Max Q Clear Time (g_c+I1), s	3.3	8.6				17.1		19.8
Green Ext Time (p_c), s	0.0	9.2				23.7		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
6: Camino Pablo & Ardilla Rd

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	1	0	520	1118	0
Future Volume (veh/h)	0	1	0	520	1118	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	0	0	571	1229	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	0	0	1678	1678	0
Arrive On Green	0.00	0.00	0.00	0.91	1.00	0.00
Sat Flow, veh/h	0	0	0	1845	1845	0
Grp Volume(v), veh/h	0	0	0	571	1229	0
Grp Sat Flow(s),veh/h/ln	0	0	0	1845	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	3.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.7	0.0	0.0
Prop In Lane	0.00	0.00	0.00			0.00
Lane Grp Cap(c), veh/h	0	0	0	1678	1678	0
V/C Ratio(X)	0.00	0.00	0.00	0.34	0.73	0.00
Avail Cap(c_a), veh/h	0	0	0	1678	1678	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.53	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	1.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.0	0.7	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	1.1	1.5	0.0
LnGrp LOS				A	A	
Approach Vol, veh/h	1			571	1229	
Approach Delay, s/veh	65.2			1.1	1.5	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		85.9		4.1		85.9		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 57		24.3		* 57		
Max Q Clear Time (g_c+I1), s		5.7		2.0		2.0		
Green Ext Time (p_c), s		12.4		0.0		41.2		

Intersection Summary	
HCM 2010 Ctrl Delay	1.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

7: Camino Pablo & Camino Pablo Frontage Road/South Entrance

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱					↰	↱			↑	↱
Traffic Volume (veh/h)	9	0	23	0	0	0	11	498	11	0	1095	4
Future Volume (veh/h)	9	0	23	0	0	0	11	498	11	0	1095	4
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900				1845	1845	1900	0	1845	1845
Adj Flow Rate, veh/h	10	0	2				12	560	12	0	1230	3
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3				3	3	3	0	3	3
Cap, veh/h	48	0	42				30	1575	34	0	1502	1320
Arrive On Green	0.03	0.00	0.03				0.03	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	1757	0	1521				1757	1798	39	0	1845	1568
Grp Volume(v), veh/h	10	0	2				12	0	572	0	1230	3
Grp Sat Flow(s),veh/h/ln	1757	0	1521				1757	0	1837	0	1845	1568
Q Serve(g_s), s	0.5	0.0	0.1				0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.1				0.6	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00				1.00		0.02	0.00		1.00
Lane Grp Cap(c), veh/h	48	0	42				30	0	1609	0	1502	1320
V/C Ratio(X)	0.21	0.00	0.05				0.40	0.00	0.36	0.00	0.82	0.00
Avail Cap(c_a), veh/h	390	0	338				117	0	1609	0	1502	1320
HCM Platoon Ratio	1.00	1.00	1.00				2.00	2.00	2.00	1.00	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00				0.95	0.00	0.95	0.00	0.20	0.20
Uniform Delay (d), s/veh	42.8	0.0	42.4				43.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.2				2.9	0.0	0.6	0.0	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.1				0.3	0.0	0.3	0.0	0.4	0.0
LnGrp Delay(d),s/veh	43.6	0.0	42.5				45.9	0.0	0.6	0.0	1.1	0.0
LnGrp LOS	D		D				D		A		A	A
Approach Vol, veh/h		12						584			1233	
Approach Delay, s/veh		43.4						1.5			1.1	
Approach LOS		D						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		83.5		6.5	5.6	78.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 61		20.0	6.0	* 51		
Max Q Clear Time (g_c+I1), s		2.0		2.5	2.6	2.0		
Green Ext Time (p_c), s		9.6		0.0	0.0	34.2		

Intersection Summary			
HCM 2010 Ctrl Delay			1.5
HCM 2010 LOS			A

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
8: Camino Pablo & Claremont Ave

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	16	70	16	491	1029	12
Future Volume (veh/h)	16	70	16	491	1029	12
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.94	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	18	16	18	552	1156	13
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	166	148	42	1312	1170	13
Arrive On Green	0.20	0.20	0.03	0.95	1.00	1.00
Sat Flow, veh/h	832	739	1757	1845	1821	20
Grp Volume(v), veh/h	35	0	18	552	0	1169
Grp Sat Flow(s),veh/h/ln	1617	0	1757	1845	0	1841
Q Serve(g_s), s	1.6	0.0	0.9	2.4	0.0	0.0
Cycle Q Clear(g_c), s	1.6	0.0	0.9	2.4	0.0	0.0
Prop In Lane	0.51	0.46	1.00			0.01
Lane Grp Cap(c), veh/h	323	0	42	1312	0	1183
V/C Ratio(X)	0.11	0.00	0.42	0.42	0.00	0.99
Avail Cap(c_a), veh/h	323	0	117	1312	0	1183
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.95	0.95	0.00	0.09
Uniform Delay (d), s/veh	29.4	0.0	42.9	0.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.3	0.9	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	1.3	0.0	1.8
LnGrp Delay(d),s/veh	30.1	0.0	45.3	1.7	0.0	5.6
LnGrp LOS	C		D	A		A
Approach Vol, veh/h	35			570	1169	
Approach Delay, s/veh	30.1			3.1	5.6	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		68.0		22.0	6.2	61.8		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 63		18.0	6.0	* 53		
Max Q Clear Time (g_c+I1), s		4.4		3.6	2.9	2.0		
Green Ext Time (p_c), s		9.1		0.0	0.0	32.1		

Intersection Summary	
HCM 2010 Ctrl Delay	5.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

9: Camino Pablo & Manzanita Dr

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Volume (veh/h)	49	20	458	49	30	992
Future Volume (veh/h)	49	20	458	49	30	992
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.97		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1553
Adj Flow Rate, veh/h	56	6	520	51	34	1127
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	377	40	1102	108	58	998
Arrive On Green	0.24	0.24	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1540	165	1652	162	25	1497
Grp Volume(v), veh/h	63	0	0	571	1161	0
Grp Sat Flow(s),veh/h/ln	1733	0	0	1814	1522	0
Q Serve(g_s), s	2.6	0.0	0.0	0.0	34.5	0.0
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.0	59.8	0.0
Prop In Lane	0.89	0.10		0.09	0.03	
Lane Grp Cap(c), veh/h	424	0	0	1210	1053	0
V/C Ratio(X)	0.15	0.00	0.00	0.47	1.10	0.00
Avail Cap(c_a), veh/h	424	0	0	1210	1053	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.92	0.09	0.00
Uniform Delay (d), s/veh	26.7	0.0	0.0	0.0	0.9	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.2	48.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.4	24.6	0.0
LnGrp Delay(d),s/veh	27.4	0.0	0.0	1.2	48.9	0.0
LnGrp LOS	C			A	F	
Approach Vol, veh/h	63		571			1161
Approach Delay, s/veh	27.4		1.2			48.9
Approach LOS	C		A			D

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		64.0				64.0		26.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 59				* 59		22.0
Max Q Clear Time (g_c+I1), s		2.0				61.8		4.6
Green Ext Time (p_c), s		6.8				0.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	33.0
HCM 2010 LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱			✥			✥	
Traffic Volume (veh/h)	0	0	7	9	0	1	3	466	9	0	1002	3
Future Volume (veh/h)	0	0	7	9	0	1	3	466	9	0	1002	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	0.99		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1373	1900
Adj Flow Rate, veh/h	0	0	2	10	0	0	3	530	9	0	1139	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	322	372	393	0	40	1054	18	0	958	3
Arrive On Green	0.00	0.00	0.21	0.21	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	0	0	1527	1389	1863	0	0	1505	25	0	1368	4
Grp Volume(v), veh/h	0	0	2	10	0	0	542	0	0	0	0	1142
Grp Sat Flow(s),veh/h/ln	0	0	1527	1389	1863	0	1531	0	0	0	0	1372
Q Serve(g_s), s	0.0	0.0	0.1	0.5	0.0	0.0	1.2	0.0	0.0	0.0	0.0	61.6
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.6	0.0	0.0	62.8	0.0	0.0	0.0	0.0	61.6
Prop In Lane	0.00		1.00	1.00		0.00	0.01		0.02	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	322	372	393	0	1108	0	0	0	0	960
V/C Ratio(X)	0.00	0.00	0.01	0.03	0.00	0.00	0.49	0.00	0.00	0.00	0.00	1.19
Avail Cap(c_a), veh/h	0	0	322	372	393	0	1108	0	0	0	0	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.09
Uniform Delay (d), s/veh	0.0	0.0	28.0	28.3	0.0	0.0	3.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	1.4	0.0	0.0	0.0	0.0	86.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	2.8	0.0	0.0	0.0	0.0	23.0
LnGrp Delay(d),s/veh	0.0	0.0	28.1	28.4	0.0	0.0	4.6	0.0	0.0	0.0	0.0	86.2
LnGrp LOS			C	C			A					F
Approach Vol, veh/h		2			10			542			1142	
Approach Delay, s/veh		28.1			28.4			4.6			86.2	
Approach LOS		C			C			A			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		67.0		23.0		67.0		23.0
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 62		19.0		* 62		19.0
Max Q Clear Time (g_c+I1), s		64.8		2.1		63.6		2.6
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			59.7
HCM 2010 LOS			E

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
11: Camino Pablo & Monte Vista Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	6	1	15	168	2	7	5	462	0	0	822	2
Future Volume (veh/h)	6	1	15	168	2	7	5	462	0	0	822	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1373	1900
Adj Flow Rate, veh/h	7	1	4	187	2	6	6	513	0	0	913	2
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	271	48	127	393	5	10	118	1263	0	0	776	2
Arrive On Green	0.24	0.23	0.24	0.24	0.23	0.23	0.13	1.00	0.00	0.00	0.57	0.56
Sat Flow, veh/h	888	204	546	1350	22	44	1774	1863	0	0	1369	3
Grp Volume(v), veh/h	12	0	0	195	0	0	6	513	0	0	0	915
Grp Sat Flow(s),veh/h/ln	1638	0	0	1415	0	0	1774	1863	0	0	0	1372
Q Serve(g_s), s	0.0	0.0	0.0	10.4	0.0	0.0	0.3	0.0	0.0	0.0	0.0	51.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	10.9	0.0	0.0	0.3	0.0	0.0	0.0	0.0	51.0
Prop In Lane	0.58		0.33	0.96		0.03	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	455	0	0	416	0	0	118	1263	0	0	0	777
V/C Ratio(X)	0.03	0.00	0.00	0.47	0.00	0.00	0.05	0.41	0.00	0.00	0.00	1.18
Avail Cap(c_a), veh/h	455	0	0	416	0	0	118	1263	0	0	0	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.91	0.91	0.00	0.00	0.00	0.09
Uniform Delay (d), s/veh	26.5	0.0	0.0	30.4	0.0	0.0	36.5	0.0	0.0	0.0	0.0	19.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.7	0.0	0.0	0.7	0.9	0.0	0.0	0.0	81.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	4.7	0.0	0.0	0.2	0.3	0.0	0.0	0.0	36.5
LnGrp Delay(d),s/veh	26.6	0.0	0.0	34.1	0.0	0.0	37.3	0.9	0.0	0.0	0.0	100.5
LnGrp LOS	C			C			D	A				F
Approach Vol, veh/h		12			195			519			915	
Approach Delay, s/veh		26.6			34.1			1.3			100.5	
Approach LOS		C			C			A			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		65.0		25.0	10.0	55.0		25.0
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0
Max Green Setting (Gmax), s		* 60		21.0	6.0	* 50		21.0
Max Q Clear Time (g_c+I1), s		2.0		2.5	2.3	53.0		12.9
Green Ext Time (p_c), s		8.1		0.0	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	60.7
HCM 2010 LOS	E

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
12: Camino Pablo & Wildcat Canyon Rd/Bear Creek Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↑↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	5	6	22	199	90	2	62	198	215	8	603	37
Future Volume (veh/h)	5	6	22	199	90	2	62	198	215	8	603	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1863	1863	1373	1863
Adj Flow Rate, veh/h	6	7	4	234	106	2	73	233	175	9	709	31
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	222	127	178	576	11	163	1009	840	163	744	858
Arrive On Green	0.00	0.20	0.20	0.10	0.32	0.31	0.09	0.54	0.54	0.09	0.54	0.54
Sat Flow, veh/h	0	1114	637	1774	1821	34	1774	1863	1550	1774	1373	1583
Grp Volume(v), veh/h	0	0	11	234	0	108	73	233	175	9	709	31
Grp Sat Flow(s),veh/h/ln	0	0	1750	1774	0	1856	1774	1863	1550	1774	1373	1583
Q Serve(g_s), s	0.0	0.0	1.2	24.0	0.0	10.1	9.3	15.7	14.0	1.1	117.1	2.2
Cycle Q Clear(g_c), s	0.0	0.0	1.2	24.0	0.0	10.1	9.3	15.7	14.0	1.1	117.1	2.2
Prop In Lane	0.00		0.36	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	348	178	0	586	163	1009	840	163	744	858
V/C Ratio(X)	0.00	0.00	0.03	1.31	0.00	0.18	0.45	0.23	0.21	0.06	0.95	0.04
Avail Cap(c_a), veh/h	0	0	348	178	0	586	163	1495	1244	163	1102	1271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	77.3	107.6	0.0	59.4	102.9	28.7	28.3	99.1	51.9	25.6
Incr Delay (d2), s/veh	0.0	0.0	0.2	175.7	0.0	0.7	8.6	0.2	0.2	0.6	14.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.6	20.5	0.0	5.3	5.0	8.1	6.0	0.6	47.4	1.0
LnGrp Delay(d),s/veh	0.0	0.0	77.5	283.3	0.0	60.1	111.5	28.9	28.5	99.8	66.7	25.6
LnGrp LOS			E	F		E	F	C	C	F	E	C
Approach Vol, veh/h		11			342			481			749	
Approach Delay, s/veh		77.5			212.8			41.3			65.4	
Approach LOS		E			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	133.6	28.0	51.6	26.0	133.6	0.0	79.6
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0
Max Q Clear Time (g_c+I1), s	3.1	17.7	26.0	3.2	11.3	119.1	0.0	12.1
Green Ext Time (p_c), s	0.0	3.3	0.0	0.0	0.0	8.5	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	90.0
HCM 2010 LOS	F

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	48	28	11	27	9	178	10	529	27	196	560	45
Future Volume (vph)	48	28	11	27	9	178	10	529	27	196	560	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.98	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	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1533		1795	1558	1770	5033		1770	3493	
Flt Permitted		0.78	1.00		0.76	1.00	0.39	1.00		0.95	1.00	
Satd. Flow (perm)		1460	1533		1412	1558	721	5033		1770	3493	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	55	32	13	31	10	205	11	608	31	225	644	52
RTOR Reduction (vph)	0	0	11	0	0	181	0	3	0	0	0	0
Lane Group Flow (vph)	0	87	2	0	41	24	11	636	0	225	696	0
Confl. Peds. (#/hr)			13						12			
Confl. Bikes (#/hr)						2						6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4	2					
Actuated Green, G (s)		14.5	14.5		14.5	14.5	26.6	24.7		23.2	45.5	
Effective Green, g (s)		14.5	14.5		14.5	14.5	27.6	25.2		23.2	46.0	
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.22	0.20		0.18	0.37	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		168	177		163	180	178	1010		327	1280	
v/s Ratio Prot							0.00	c0.13		c0.13	0.20	
v/s Ratio Perm		c0.06	0.00		0.03	0.02	0.01					
v/c Ratio		0.52	0.01		0.25	0.13	0.06	0.63		0.69	0.54	
Uniform Delay, d1		52.2	49.1		50.6	49.8	38.4	45.9		47.8	31.4	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.0		0.3	0.1	0.1	0.9		4.7	0.6	
Delay (s)		53.3	49.1		50.9	50.0	38.5	46.8		52.5	32.0	
Level of Service		D	D		D	D	D	D		D	C	
Approach Delay (s)		52.8			50.1			46.6			37.0	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	125.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Existing Plus Project Midday

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	338	92	295	16
Future Volume (vph)	338	92	295	16
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.89		
Flt Protected	0.95	0.99		
Satd. Flow (prot)	1681	1558		
Flt Permitted	0.95	0.99		
Satd. Flow (perm)	1681	1558		
Peak-hour factor, PHF	0.87	0.87	0.87	0.87
Adj. Flow (vph)	389	106	339	18
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	350	502	0	0
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	47.1	47.1		
Effective Green, g (s)	46.6	46.6		
Actuated g/C Ratio	0.37	0.37		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	624	578		
v/s Ratio Prot	0.21	c0.32		
v/s Ratio Perm				
v/c Ratio	0.56	0.87		
Uniform Delay, d1	31.3	36.6		
Progression Factor	1.00	1.00		
Incremental Delay, d2	1.2	13.1		
Delay (s)	32.5	49.7		
Level of Service	C	D		
Approach Delay (s)		42.6		
Approach LOS		D		

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	343	133	53	0	840	427	35	588	242
Future Volume (veh/h)	0	0	0	343	133	53	0	840	427	35	588	242
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				267	314	42	0	944	356	39	661	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				662	695	677	0	1397	1216	106	1812	811
Arrive On Green				0.37	0.37	0.37	0.00	0.39	0.39	0.06	0.51	0.00
Sat Flow, veh/h				1774	1863	1560	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				267	314	42	0	944	356	39	661	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1560	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				7.7	8.9	1.1	0.0	15.3	4.7	1.5	7.8	0.0
Cycle Q Clear(g_c), s				7.7	8.9	1.1	0.0	15.3	4.7	1.5	7.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				662	695	677	0	1397	1216	106	1812	811
V/C Ratio(X)				0.40	0.45	0.06	0.00	0.68	0.29	0.37	0.36	0.00
Avail Cap(c_a), veh/h				662	695	677	0	3098	1977	407	4114	1841
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				16.1	16.5	11.5	0.0	17.4	2.4	31.5	10.2	0.0
Incr Delay (d2), s/veh				1.8	2.1	0.2	0.0	0.6	0.1	2.1	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.1	4.9	0.5	0.0	7.6	5.4	0.8	3.8	0.0
LnGrp Delay(d),s/veh				17.9	18.6	11.7	0.0	18.0	2.6	33.6	10.3	0.0
LnGrp LOS				B	B	B		B	A	C	B	
Approach Vol, veh/h					623			1300			700	
Approach Delay, s/veh					17.8			13.8			11.6	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.2	31.5				39.7		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		25.0
Max Q Clear Time (g_c+I1), s	3.5	17.3				9.8		10.9
Green Ext Time (p_c), s	0.0	9.2				4.7		2.6

Intersection Summary			
HCM 2010 Ctrl Delay			14.2
HCM 2010 LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Camino Pablo & Camino Sobrante

Existing Plus Project Midday

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	177	50	703	190	37	688
Future Volume (veh/h)	177	50	703	190	37	688
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	197	33	781	97	41	764
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	735	739	1320	590	92	1682
Arrive On Green	0.42	0.42	0.38	0.38	0.05	0.48
Sat Flow, veh/h	1757	1568	3597	1568	1757	3597
Grp Volume(v), veh/h	197	33	781	97	41	764
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1568	1757	1752
Q Serve(g_s), s	5.8	0.9	14.1	3.2	1.8	11.4
Cycle Q Clear(g_c), s	5.8	0.9	14.1	3.2	1.8	11.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	735	739	1320	590	92	1682
V/C Ratio(X)	0.27	0.04	0.59	0.16	0.44	0.45
Avail Cap(c_a), veh/h	735	739	2147	961	713	2147
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.0	11.3	19.7	16.3	36.2	13.6
Incr Delay (d2), s/veh	0.9	0.1	0.9	0.3	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.4	7.0	1.4	0.9	5.6
LnGrp Delay(d),s/veh	15.9	11.4	20.6	16.6	37.5	14.0
LnGrp LOS	B	B	C	B	D	B
Approach Vol, veh/h	230		878			805
Approach Delay, s/veh	15.2		20.2			15.2
Approach LOS	B		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.1	33.7				41.8		37.0
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	3.8	16.1				13.4		7.8
Green Ext Time (p_c), s	0.0	11.3				10.5		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			17.5
HCM 2010 LOS			B

HCM 2010 Signalized Intersection Summary
4: Camino Pablo & El Toyonal/Orinda Way

Existing Plus Project Midday

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	23	10	59	19	11	120	59	684	10	70	647	12
Future Volume (veh/h)	23	10	59	19	11	120	59	684	10	70	647	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	25	11	28	21	12	92	64	743	4	76	703	12
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	390	160	697	379	202	805	126	1209	524	118	1171	20
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.07	0.35	0.35	0.07	0.33	0.31
Sat Flow, veh/h	711	353	1540	691	448	1547	1757	3505	1520	1757	3525	60
Grp Volume(v), veh/h	36	0	28	33	0	92	64	743	4	76	349	366
Grp Sat Flow(s),veh/h/ln	1064	0	1540	1138	0	1547	1757	1752	1520	1757	1752	1832
Q Serve(g_s), s	0.4	0.0	0.9	0.2	0.0	2.7	3.1	15.6	0.2	3.7	14.7	14.7
Cycle Q Clear(g_c), s	11.2	0.0	0.9	11.2	0.0	2.7	3.1	15.6	0.2	3.7	14.7	14.7
Prop In Lane	0.69		1.00	0.64		1.00	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	550	0	697	582	0	805	126	1209	524	118	582	609
V/C Ratio(X)	0.07	0.00	0.04	0.06	0.00	0.11	0.51	0.61	0.01	0.65	0.60	0.60
Avail Cap(c_a), veh/h	550	0	697	582	0	805	755	2271	985	735	1116	1167
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	0.0	13.5	14.1	0.0	10.9	39.5	24.1	19.0	40.2	24.6	24.6
Incr Delay (d2), s/veh	0.2	0.0	0.1	0.2	0.0	0.3	3.1	1.1	0.0	5.8	2.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.4	0.5	0.0	1.2	1.6	7.7	0.1	2.0	7.4	7.8
LnGrp Delay(d),s/veh	14.8	0.0	13.6	14.2	0.0	11.2	42.7	25.2	19.0	46.1	26.7	26.7
LnGrp LOS	B		B	B		B	D	C	B	D	C	C
Approach Vol, veh/h		64			125			811			791	
Approach Delay, s/veh		14.3			12.0			26.5			28.6	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.9	34.5		44.0	10.3	34.1		44.0				
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0				
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0				
Max Q Clear Time (g_c+I1), s	5.7	17.6		13.2	5.1	16.7		13.2				
Green Ext Time (p_c), s	0.2	10.6		0.2	0.1	9.3		0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			26.0									
HCM 2010 LOS			C									
Notes												

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
5: Camino Pablo & Miner Rd

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	185	34	646	181	15	544
Future Volume (veh/h)	185	34	646	181	15	544
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	201	24	702	113	16	591
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	742	704	1318	586	47	1616
Arrive On Green	0.42	0.42	0.38	0.38	0.03	0.46
Sat Flow, veh/h	1757	1568	3597	1558	1757	3597
Grp Volume(v), veh/h	201	24	702	113	16	591
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1558	1757	1752
Q Serve(g_s), s	5.1	0.6	10.7	3.4	0.6	7.5
Cycle Q Clear(g_c), s	5.1	0.6	10.7	3.4	0.6	7.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	742	704	1318	586	47	1616
V/C Ratio(X)	0.27	0.03	0.53	0.19	0.34	0.37
Avail Cap(c_a), veh/h	742	704	3425	1522	563	3456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.9	10.6	16.7	14.4	32.8	12.0
Incr Delay (d2), s/veh	0.9	0.1	0.7	0.3	1.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.3	5.3	1.5	0.3	3.7
LnGrp Delay(d),s/veh	13.8	10.7	17.4	14.8	34.4	12.3
LnGrp LOS	B	B	B	B	C	B
Approach Vol, veh/h	225		815			607
Approach Delay, s/veh	13.5		17.1			12.9
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.8	29.8				35.7		33.0
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.6		29.0
Max Q Clear Time (g_c+I1), s	2.6	12.7				9.5		7.1
Green Ext Time (p_c), s	0.0	12.0				8.6		0.5

Intersection Summary		
HCM 2010 Ctrl Delay		15.0
HCM 2010 LOS		B

HCM 2010 Signalized Intersection Summary
6: Camino Pablo & Ardilla Rd

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Volume (veh/h)	0	1	0	680	559	0
Future Volume (veh/h)	0	1	0	680	559	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	1	0	723	595	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.92	0.94	0.94	0.92
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	3	0	1411	1411	0
Arrive On Green	0.00	0.00	0.00	0.76	0.76	0.00
Sat Flow, veh/h	0	873	0	1845	1845	0
Grp Volume(v), veh/h	0	2	0	723	595	0
Grp Sat Flow(s),veh/h/ln	0	1746	0	1845	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	5.2	3.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.2	3.9	0.0
Prop In Lane	0.00	0.50	0.00			0.00
Lane Grp Cap(c), veh/h	0	6	0	1411	1411	0
V/C Ratio(X)	0.00	0.35	0.00	0.51	0.42	0.00
Avail Cap(c_a), veh/h	0	1012	0	3565	3832	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	17.2	0.0	1.6	1.4	0.0
Incr Delay (d2), s/veh	0.0	12.8	0.0	1.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.8	2.1	0.0
LnGrp Delay(d),s/veh	0.0	29.9	0.0	2.6	2.1	0.0
LnGrp LOS		C		A	A	
Approach Vol, veh/h	2			723	595	
Approach Delay, s/veh	29.9			2.6	2.1	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		30.4		4.1		30.4		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 66		20.0		* 71		
Max Q Clear Time (g_c+I1), s		7.2		2.0		5.9		
Green Ext Time (p_c), s		18.5		0.0		13.8		

Intersection Summary		
HCM 2010 Ctrl Delay		2.4
HCM 2010 LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
7: Camino Pablo & Camino Pablo Frontage Road/South Entrance

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱					↰	↱			↑	↱
Traffic Volume (veh/h)	3	0	14	0	0	0	13	656	11	0	545	5
Future Volume (veh/h)	3	0	14	0	0	0	13	656	11	0	545	5
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900				1863	1863	1900	0	1863	1863
Adj Flow Rate, veh/h	3	0	4				14	691	11	0	574	4
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				2	2	2	0	2	2
Cap, veh/h	591	0	516				37	975	16	0	831	1215
Arrive On Green	0.33	0.00	0.33				0.02	0.53	0.52	0.00	0.45	0.43
Sat Flow, veh/h	1774	0	1548				1774	1828	29	0	1863	1583
Grp Volume(v), veh/h	3	0	4				14	0	702	0	574	4
Grp Sat Flow(s),veh/h/ln	1774	0	1548				1774	0	1857	0	1863	1583
Q Serve(g_s), s	0.1	0.0	0.1				0.5	0.0	17.0	0.0	14.8	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.1				0.5	0.0	17.0	0.0	14.8	0.0
Prop In Lane	1.00		1.00				1.00		0.02	0.00		1.00
Lane Grp Cap(c), veh/h	591	0	516				37	0	990	0	831	1215
V/C Ratio(X)	0.01	0.00	0.01				0.38	0.00	0.71	0.00	0.69	0.00
Avail Cap(c_a), veh/h	591	0	516				177	0	990	0	831	1215
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.91	0.00	0.91	0.00	0.80	0.80
Uniform Delay (d), s/veh	13.4	0.0	13.4				29.0	0.0	10.5	0.0	13.3	1.6
Incr Delay (d2), s/veh	0.0	0.0	0.0				2.2	0.0	3.9	0.0	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0				0.3	0.0	9.7	0.0	8.4	0.0
LnGrp Delay(d),s/veh	13.4	0.0	13.4				31.2	0.0	14.4	0.0	17.1	1.6
LnGrp LOS	B		B				C		B		B	A
Approach Vol, veh/h		7						716			578	
Approach Delay, s/veh		13.4						14.8			17.0	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		36.0		24.0	5.2	30.8		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 31		20.0	6.0	* 21		
Max Q Clear Time (g_c+I1), s		19.0		2.1	2.5	16.8		
Green Ext Time (p_c), s		6.3		0.0	0.0	2.3		

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	8	30	29	630	520	3
Future Volume (veh/h)	8	30	29	630	520	3
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	9	9	31	677	559	3
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	214	214	70	1107	915	5
Arrive On Green	0.28	0.28	0.04	0.60	1.00	0.98
Sat Flow, veh/h	773	773	1757	1845	1833	10
Grp Volume(v), veh/h	19	0	31	677	0	562
Grp Sat Flow(s),veh/h/ln	1633	0	1757	1845	0	1843
Q Serve(g_s), s	0.6	0.0	1.1	15.1	0.0	0.1
Cycle Q Clear(g_c), s	0.6	0.0	1.1	15.1	0.0	0.1
Prop In Lane	0.47	0.47	1.00			0.01
Lane Grp Cap(c), veh/h	452	0	70	1107	0	919
V/C Ratio(X)	0.04	0.00	0.45	0.61	0.00	0.61
Avail Cap(c_a), veh/h	452	0	162	1107	0	919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.64	0.64	0.00	0.85
Uniform Delay (d), s/veh	17.2	0.0	30.5	8.2	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	1.1	1.6	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	8.0	0.0	0.7
LnGrp Delay(d),s/veh	17.4	0.0	31.6	9.8	0.0	2.6
LnGrp LOS	B		C	A		A
Approach Vol, veh/h	19			708	562	
Approach Delay, s/veh	17.4			10.8	2.6	
Approach LOS	B			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		43.0		22.0	6.6	36.4		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 38		18.0	6.0	* 28		
Max Q Clear Time (g_c+I1), s		17.1		2.6	3.1	2.1		
Green Ext Time (p_c), s		8.6		0.0	0.0	7.5		

Intersection Summary			
HCM 2010 Ctrl Delay			7.3
HCM 2010 LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Volume (veh/h)	35	15	613	25	9	488
Future Volume (veh/h)	35	15	613	25	9	488
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.97		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1845
Adj Flow Rate, veh/h	38	5	674	25	10	536
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	505	66	952	35	62	979
Arrive On Green	0.34	0.34	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1493	196	1767	66	11	1818
Grp Volume(v), veh/h	44	0	0	699	546	0
Grp Sat Flow(s),veh/h/ln	1729	0	0	1833	1829	0
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.86	0.11		0.04	0.02	
Lane Grp Cap(c), veh/h	585	0	0	987	1041	0
V/C Ratio(X)	0.08	0.00	0.00	0.71	0.52	0.00
Avail Cap(c_a), veh/h	585	0	0	987	1041	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.79	0.86	0.00
Uniform Delay (d), s/veh	14.6	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	3.4	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.9	0.5	0.0
LnGrp Delay(d),s/veh	14.8	0.0	0.0	3.4	1.6	0.0
LnGrp LOS	B			A	A	
Approach Vol, veh/h	44		699			546
Approach Delay, s/veh	14.8		3.4			1.6
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		39.0				39.0		26.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 34				* 34		22.0
Max Q Clear Time (g_c+I1), s		2.0				2.0		3.1
Green Ext Time (p_c), s		8.3				5.9		0.1

Intersection Summary			
HCM 2010 Ctrl Delay			3.0
HCM 2010 LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
10: Camino Pablo & Los Amigos

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Volume (veh/h)	0	0	2	4	0	1	1	624	3	3	491	0
Future Volume (veh/h)	0	0	2	4	0	1	1	624	3	3	491	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	0	1	4	0	0	1	678	3	3	534	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	447	522	0	0	56	1083	5	57	1086	0
Arrive On Green	0.00	0.00	0.29	0.29	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Sat Flow, veh/h	0	0	1529	1406	0	0	0	1852	8	2	1858	0
Grp Volume(v), veh/h	0	0	1	4	0	0	682	0	0	537	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1529	1406	0	0	1861	0	0	1860	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	0.00		0.00	0.01		0.00
Lane Grp Cap(c), veh/h	0	0	447	522	0	0	1143	0	0	1143	0	0
V/C Ratio(X)	0.00	0.00	0.00	0.01	0.00	0.00	0.60	0.00	0.00	0.47	0.00	0.00
Avail Cap(c_a), veh/h	0	0	447	522	0	0	1143	0	0	1143	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.64	0.00	0.00	0.86	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	16.3	16.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	16.3	16.4	0.0	0.0	1.5	0.0	0.0	1.2	0.0	0.0
LnGrp LOS			B	B			A			A		
Approach Vol, veh/h		1			4			682			537	
Approach Delay, s/veh		16.3			16.4			1.5			1.2	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		23.0		42.0		23.0
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 37		19.0		* 37		19.0
Max Q Clear Time (g_c+I1), s		2.0		2.0		2.0		2.2
Green Ext Time (p_c), s		8.1		0.0		5.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	1.4
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	80	1	10	5	0	10	10	615	0	0	479	3
Future Volume (veh/h)	80	1	10	5	0	10	10	615	0	0	479	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	90	1	2	6	0	0	11	691	0	0	538	3
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	219	1	2	246	0	0	164	1485	0	0	1191	7
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.00	0.12	1.00	0.00	0.00	0.64	0.64
Sat Flow, veh/h	1385	15	31	1701	0	0	1774	1863	0	0	1851	10
Grp Volume(v), veh/h	93	0	0	6	0	0	11	691	0	0	0	541
Grp Sat Flow(s),veh/h/ln	1431	0	0	1701	0	0	1774	1863	0	0	0	1861
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	9.5
Cycle Q Clear(g_c), s	4.1	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0	0.0	0.0	9.5
Prop In Lane	0.97		0.02	1.00		0.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	223	0	0	246	0	0	164	1485	0	0	0	1197
V/C Ratio(X)	0.42	0.00	0.00	0.02	0.00	0.00	0.07	0.47	0.00	0.00	0.00	0.45
Avail Cap(c_a), veh/h	568	0	0	589	0	0	164	1485	0	0	0	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.74	0.74	0.00	0.00	0.00	0.71
Uniform Delay (d), s/veh	29.4	0.0	0.0	27.6	0.0	0.0	26.0	0.0	0.0	0.0	0.0	5.8
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.0	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.1	0.0	0.0	0.2	0.3	0.0	0.0	0.0	5.1
LnGrp Delay(d),s/veh	29.9	0.0	0.0	27.6	0.0	0.0	26.6	0.8	0.0	0.0	0.0	6.7
LnGrp LOS	C			C			C	A				A
Approach Vol, veh/h		93			6			702			541	
Approach Delay, s/veh		29.9			27.6			1.2			6.7	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4	5	6		8				
Phs Duration (G+Y+Rc), s		55.8		9.2	10.0	45.8		9.2				
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0				
Max Green Setting (Gmax), s		* 35		21.0	6.0	* 25		21.0				
Max Q Clear Time (g_c+I1), s		2.0		6.1	2.4	11.5		2.2				
Green Ext Time (p_c), s		11.0		0.2	0.0	5.1		0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			5.5									
HCM 2010 LOS			A									
Notes												

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
12: Camino Pablo & Wildcat Canyon Rd/Bear Creek Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	23	12	45	20	5	9	40	518	147	9	417	12
Future Volume (veh/h)	23	12	45	20	5	9	40	518	147	9	417	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	26	14	42	23	6	5	46	595	138	10	479	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	37	110	39	189	157	55	947	784	10	900	748
Arrive On Green	0.00	0.09	0.09	0.02	0.21	0.21	0.03	0.51	0.51	0.01	0.49	0.49
Sat Flow, veh/h	0	396	1187	1757	914	762	1757	1845	1528	1757	1845	1532
Grp Volume(v), veh/h	0	0	56	23	0	11	46	595	138	10	479	5
Grp Sat Flow(s),veh/h/ln	0	0	1583	1757	0	1677	1757	1845	1528	1757	1845	1532
Q Serve(g_s), s	0.0	0.0	1.5	0.6	0.0	0.2	1.1	10.1	2.1	0.2	7.9	0.1
Cycle Q Clear(g_c), s	0.0	0.0	1.5	0.6	0.0	0.2	1.1	10.1	2.1	0.2	7.9	0.1
Prop In Lane	0.00		0.75	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	147	39	0	346	55	947	784	10	900	748
V/C Ratio(X)	0.00	0.00	0.38	0.59	0.00	0.03	0.84	0.63	0.18	0.97	0.53	0.01
Avail Cap(c_a), veh/h	0	0	1722	964	0	1824	884	8097	6705	884	8097	6724
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.7	21.2	0.0	13.9	21.1	7.6	5.7	21.7	7.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.6	5.1	0.0	0.0	12.1	1.0	0.2	70.7	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	0.3	0.0	0.1	0.7	5.2	0.9	0.3	4.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	19.3	26.3	0.0	13.9	33.1	8.6	5.8	92.4	8.4	5.8
LnGrp LOS			B	C		B	C	A	A	F	A	A
Approach Vol, veh/h		56			34			779			494	
Approach Delay, s/veh		19.3			22.3			9.6			10.1	
Approach LOS		B			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.3	26.5	5.0	8.1	5.4	25.4	0.0	13.0
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0
Max Q Clear Time (g_c+I1), s	2.2	12.1	2.6	3.5	3.1	9.9	0.0	2.2
Green Ext Time (p_c), s	0.0	8.3	0.0	0.2	0.0	4.7	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		10.5
HCM 2010 LOS		B

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Existing Plus Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	44	31	14	31	8	193	24	1413	28	203	796	58
Future Volume (vph)	44	31	14	31	8	193	24	1413	28	203	796	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.5	3.5		3.0	3.5	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.95		1.00	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	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1810	1507		1792	1583	1770	5062		1770	3496	
Flt Permitted		0.81	1.00		0.68	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1503	1507		1268	1583	1770	5062		1770	3496	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	47	33	15	33	9	205	26	1503	30	216	847	62
RTOR Reduction (vph)	0	0	0	0	0	184	0	1	0	0	0	0
Lane Group Flow (vph)	0	80	15	0	42	21	26	1532	0	216	909	0
Confl. Peds. (#/hr)			17						13			
Confl. Bikes (#/hr)									4			7
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		17.2	17.2		17.2	17.2	4.7	41.5		24.3	60.6	
Effective Green, g (s)		18.2	18.2		18.2	18.2	5.7	42.5		25.3	61.6	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.03	0.24		0.14	0.35	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		156	156		131	164	57	1227		255	1229	
v/s Ratio Prot							0.01	c0.30		c0.12	0.26	
v/s Ratio Perm		c0.05	0.01		0.03	0.01						
v/c Ratio		0.51	0.10		0.32	0.13	0.46	1.25		0.85	0.74	
Uniform Delay, d1		74.3	71.1		72.8	71.3	83.2	66.3		73.1	49.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.1		0.5	0.1	2.1	118.9		21.3	2.5	
Delay (s)		75.5	71.2		73.3	71.4	85.3	185.2		94.3	52.3	
Level of Service		E	E		E	E	F	F		F	D	
Approach Delay (s)		74.8			71.8			183.6			60.4	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	105.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	175.2	Sum of lost time (s)	12.5
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	596	104	411	14
Future Volume (vph)	596	104	411	14
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.89		
Flt Protected	0.95	0.99		
Satd. Flow (prot)	1681	1556		
Flt Permitted	0.95	0.99		
Satd. Flow (perm)	1681	1556		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94
Adj. Flow (vph)	634	111	437	15
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	571	626	0	0
Confl. Peds. (#/hr)		17		
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	76.2	76.2		
Effective Green, g (s)	77.2	77.2		
Actuated g/C Ratio	0.44	0.44		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	740	685		
v/s Ratio Prot	0.34	c0.40		
v/s Ratio Perm				
v/c Ratio	0.77	0.91		
Uniform Delay, d1	41.5	45.9		
Progression Factor	1.00	1.00		
Incremental Delay, d2	5.0	16.7		
Delay (s)	46.5	62.6		
Level of Service	D	E		
Approach Delay (s)		54.9		
Approach LOS		D		

Intersection Summary

2: Camino Pablo & SR-24 WB On-Ramp/Santa Maria Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	323	135	52	0	1405	524	66	613	354
Future Volume (veh/h)	0	0	0	323	135	52	0	1405	524	66	613	354
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				252	293	57	0	1544	433	73	674	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				421	442	602	0	1796	1179	259	2442	1092
Arrive On Green				0.24	0.24	0.24	0.00	0.51	0.51	0.15	0.69	0.00
Sat Flow, veh/h				1774	1863	1563	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				252	293	57	0	1544	433	73	674	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1563	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				13.9	15.6	2.6	0.0	41.8	10.5	4.0	8.0	0.0
Cycle Q Clear(g_c), s				13.9	15.6	2.6	0.0	41.8	10.5	4.0	8.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				421	442	602	0	1796	1179	259	2442	1092
V/C Ratio(X)				0.60	0.66	0.09	0.00	0.86	0.37	0.28	0.28	0.00
Avail Cap(c_a), veh/h				421	442	602	0	1969	1256	259	2614	1170
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				37.2	37.9	21.7	0.0	23.6	4.9	41.7	6.5	0.0
Incr Delay (d2), s/veh				6.2	7.6	0.3	0.0	3.8	0.2	2.7	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.5	9.0	1.2	0.0	21.3	8.8	2.2	3.9	0.0
LnGrp Delay(d),s/veh				43.4	45.5	22.0	0.0	27.4	5.1	44.4	6.6	0.0
LnGrp LOS				D	D	C		C	A	D	A	
Approach Vol, veh/h					602			1977			747	
Approach Delay, s/veh					42.4			22.5			10.3	
Approach LOS					D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.0	59.7				79.7		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		25.0
Max Q Clear Time (g_c+I1), s	6.0	43.8				10.0		17.6
Green Ext Time (p_c), s	0.1	10.9				4.8		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Camino Pablo & Camino Sobrante

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	199	52	1243	214	47	834
Future Volume (veh/h)	199	52	1243	214	47	834
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1456	1845	1845	1845
Adj Flow Rate, veh/h	214	52	1337	157	51	897
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	463	813	1067	604	449	2358
Arrive On Green	0.26	0.26	0.39	0.39	0.26	0.67
Sat Flow, veh/h	1757	1568	2840	1568	1757	3597
Grp Volume(v), veh/h	214	52	1337	157	51	897
Grp Sat Flow(s),veh/h/ln	1757	1568	1383	1568	1757	1752
Q Serve(g_s), s	12.8	2.1	48.3	8.6	2.8	14.1
Cycle Q Clear(g_c), s	12.8	2.1	48.3	8.6	2.8	14.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	463	813	1067	604	449	2358
V/C Ratio(X)	0.46	0.06	1.25	0.26	0.11	0.38
Avail Cap(c_a), veh/h	463	813	1067	604	449	2358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	15.0	38.5	26.3	35.8	9.0
Incr Delay (d2), s/veh	3.3	0.2	121.9	0.5	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.9	36.4	3.8	1.4	6.8
LnGrp Delay(d),s/veh	42.0	15.2	160.4	26.8	36.3	9.2
LnGrp LOS	D	B	F	C	D	A
Approach Vol, veh/h	266		1494			948
Approach Delay, s/veh	36.8		146.3			10.7
Approach LOS	D		F			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	36.0	52.3				88.3		37.0
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	4.8	50.3				16.1		14.8
Green Ext Time (p_c), s	0.0	0.0				12.2		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			88.1
HCM 2010 LOS			F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↰↑	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	13	20	77	9	52	166	49	1241	5	62	795	9
Future Volume (veh/h)	13	20	77	9	52	166	49	1241	5	62	795	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1900	1845	1845	1845	1553	1845	1845	1845	1900
Adj Flow Rate, veh/h	14	22	23	10	57	168	53	1349	2	67	864	9
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	176	263	418	80	432	817	456	1156	600	444	1350	14
Arrive On Green	0.28	0.27	0.27	0.28	0.27	0.27	0.26	0.39	0.39	0.25	0.38	0.37
Sat Flow, veh/h	520	961	1528	190	1582	1539	1757	2951	1533	1757	3553	37
Grp Volume(v), veh/h	36	0	23	67	0	168	53	1349	2	67	426	447
Grp Sat Flow(s),veh/h/ln	1481	0	1528	1771	0	1539	1757	1476	1533	1757	1752	1837
Q Serve(g_s), s	0.0	0.0	1.6	0.0	0.0	8.5	3.4	57.3	0.1	4.3	29.1	29.2
Cycle Q Clear(g_c), s	4.0	0.0	1.6	4.0	0.0	8.5	3.4	57.3	0.1	4.3	29.1	29.2
Prop In Lane	0.39		1.00	0.15		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	444	0	418	519	0	817	456	1156	600	444	666	698
V/C Ratio(X)	0.08	0.00	0.06	0.13	0.00	0.21	0.12	1.17	0.00	0.15	0.64	0.64
Avail Cap(c_a), veh/h	444	0	418	519	0	817	456	1156	600	444	674	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	39.2	40.0	0.0	18.4	41.3	44.5	27.1	42.4	37.1	37.2
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.5	0.0	0.6	0.5	84.8	0.0	0.7	2.9	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.7	2.1	0.0	3.7	1.7	36.9	0.1	2.2	14.6	15.3
LnGrp Delay(d),s/veh	39.7	0.0	39.5	40.6	0.0	19.0	41.8	129.3	27.1	43.2	40.0	39.9
LnGrp LOS	D		D	D		B	D	F	C	D	D	D
Approach Vol, veh/h		59			235			1404			940	
Approach Delay, s/veh		39.6			25.1			125.8			40.2	
Approach LOS		D			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	41.0	61.3		44.0	42.0	60.3		44.0
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0
Max Q Clear Time (g_c+I1), s	6.3	59.3		6.0	5.4	31.2		10.5
Green Ext Time (p_c), s	0.1	0.0		0.3	0.1	9.9		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			84.4
HCM 2010 LOS			F

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
5: Camino Pablo & Miner Rd

Existing Plus Project PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	163	38	1211	209	42	703
Future Volume (veh/h)	163	38	1211	209	42	703
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1359	1845	1845	1845
Adj Flow Rate, veh/h	183	25	1361	195	47	790
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	392	615	1332	806	297	2508
Arrive On Green	0.22	0.22	0.52	0.52	0.17	0.72
Sat Flow, veh/h	1757	1568	2650	1563	1757	3597
Grp Volume(v), veh/h	183	25	1361	195	47	790
Grp Sat Flow(s),veh/h/ln	1757	1568	1291	1563	1757	1752
Q Serve(g_s), s	11.8	1.3	67.1	9.0	3.0	10.8
Cycle Q Clear(g_c), s	11.8	1.3	67.1	9.0	3.0	10.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	392	615	1332	806	297	2508
V/C Ratio(X)	0.47	0.04	1.02	0.24	0.16	0.31
Avail Cap(c_a), veh/h	392	615	1332	806	297	2508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	24.4	31.5	17.4	46.1	6.8
Incr Delay (d2), s/veh	4.0	0.1	30.3	0.3	1.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.1	0.6	29.5	3.9	1.5	5.2
LnGrp Delay(d),s/veh	47.8	24.6	61.8	17.8	47.3	6.9
LnGrp LOS	D	C	F	B	D	A
Approach Vol, veh/h	208		1556			837
Approach Delay, s/veh	45.0		56.3			9.2
Approach LOS	D		E			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	26.0	71.1				97.1		33.0
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.0		29.0
Max Q Clear Time (g_c+I1), s	5.0	69.1				12.8		13.8
Green Ext Time (p_c), s	0.0	0.0				13.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	40.2
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
6: Camino Pablo & Ardilla Rd

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Volume (veh/h)	0	1	0	1249	745	0
Future Volume (veh/h)	0	1	0	1249	745	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	1	0	1274	760	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	3	0	1691	1691	0
Arrive On Green	0.00	0.00	0.00	0.92	1.00	0.00
Sat Flow, veh/h	0	851	0	1845	1845	0
Grp Volume(v), veh/h	0	2	0	1274	760	0
Grp Sat Flow(s),veh/h/ln	0	1703	0	1845	1845	0
Q Serve(g_s), s	0.0	0.1	0.0	18.6	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.1	0.0	18.6	0.0	0.0
Prop In Lane	0.00	0.50	0.00			0.00
Lane Grp Cap(c), veh/h	0	6	0	1691	1691	0
V/C Ratio(X)	0.00	0.36	0.00	0.75	0.45	0.00
Avail Cap(c_a), veh/h	0	431	0	1691	1691	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.68	0.00
Uniform Delay (d), s/veh	0.0	49.7	0.0	1.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	14.2	0.0	3.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	10.0	0.3	0.0
LnGrp Delay(d),s/veh	0.0	63.9	0.0	4.3	0.6	0.0
LnGrp LOS		E		A	A	
Approach Vol, veh/h	2			1274	760	
Approach Delay, s/veh	63.9			4.3	0.6	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		95.7		4.3		95.7		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 66		25.3		* 66		
Max Q Clear Time (g_c+I1), s		20.6		2.1		2.0		
Green Ext Time (p_c), s		38.3		0.0		18.8		

Intersection Summary			
HCM 2010 Ctrl Delay			3.0
HCM 2010 LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
7: Camino Pablo & Camino Pablo Frontage Road/South Entrance

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱					↰	↑↱			↑	↱
Traffic Volume (veh/h)	1	0	23	0	0	0	18	1223	8	0	722	4
Future Volume (veh/h)	1	0	23	0	0	0	18	1223	8	0	722	4
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900				1845	1845	1900	0	1845	1845
Adj Flow Rate, veh/h	1	0	5				19	1315	8	0	776	3
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				3	3	3	0	3	3
Cap, veh/h	351	0	313				105	1319	8	0	1144	1275
Arrive On Green	0.20	0.00	0.20				0.08	0.96	0.95	0.00	1.00	1.00
Sat Flow, veh/h	1757	0	1564				1757	1832	11	0	1845	1568
Grp Volume(v), veh/h	1	0	5				19	0	1323	0	776	3
Grp Sat Flow(s),veh/h/ln	1757	0	1564				1757	0	1843	0	1845	1568
Q Serve(g_s), s	0.0	0.0	0.3				1.0	0.0	67.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.3				1.0	0.0	67.5	0.0	0.0	0.0
Prop In Lane	1.00		1.00				1.00		0.01	0.00		1.00
Lane Grp Cap(c), veh/h	351	0	313				105	0	1327	0	1144	1275
V/C Ratio(X)	0.00	0.00	0.02				0.18	0.00	1.00	0.00	0.68	0.00
Avail Cap(c_a), veh/h	351	0	313				105	0	1327	0	1144	1275
HCM Platoon Ratio	1.00	1.00	1.00				1.33	1.33	1.33	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00				0.64	0.00	0.64	0.00	0.68	0.68
Uniform Delay (d), s/veh	32.0	0.0	31.9				43.7	0.0	2.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1				2.4	0.0	19.1	0.0	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1				0.6	0.0	31.1	0.0	0.7	0.0
LnGrp Delay(d),s/veh	32.0	0.0	32.0				46.1	0.0	21.1	0.0	2.2	0.0
LnGrp LOS	C		C				D		C		A	A
Approach Vol, veh/h		6						1342			779	
Approach Delay, s/veh		32.0						21.4			2.2	
Approach LOS		C						C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		76.0		24.0	10.0	66.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 71		20.0	6.0	* 61		
Max Q Clear Time (g_c+I1), s		69.5		2.3	3.0	2.0		
Green Ext Time (p_c), s		1.7		0.0	0.0	15.7		

Intersection Summary			
HCM 2010 Ctrl Delay			14.4
HCM 2010 LOS			B

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	6	32	50	1174	694	13
Future Volume (veh/h)	6	32	50	1174	694	13
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1699	1845	1900
Adj Flow Rate, veh/h	6	6	54	1262	746	13
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	143	143	141	1240	1103	19
Arrive On Green	0.19	0.19	0.11	0.97	1.00	1.00
Sat Flow, veh/h	755	755	1757	1699	1808	31
Grp Volume(v), veh/h	13	0	54	1262	0	759
Grp Sat Flow(s),veh/h/ln	1635	0	1757	1699	0	1839
Q Serve(g_s), s	0.6	0.0	2.9	73.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	2.9	73.0	0.0	0.0
Prop In Lane	0.46	0.46	1.00			0.02
Lane Grp Cap(c), veh/h	311	0	141	1240	0	1122
V/C Ratio(X)	0.04	0.00	0.38	1.02	0.00	0.68
Avail Cap(c_a), veh/h	311	0	141	1240	0	1122
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.10	0.10	0.00	0.09
Uniform Delay (d), s/veh	33.1	0.0	42.4	1.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.8	12.9	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.4	23.3	0.0	0.1
LnGrp Delay(d),s/veh	33.3	0.0	43.2	14.3	0.0	0.3
LnGrp LOS	C		D	F		A
Approach Vol, veh/h	13			1316	759	
Approach Delay, s/veh	33.3			15.5	0.3	
Approach LOS	C			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		77.0		23.0	12.0	65.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 72		19.0	8.0	* 60		
Max Q Clear Time (g_c+I1), s		75.0		2.6	4.9	2.0		
Green Ext Time (p_c), s		0.0		0.0	0.0	15.1		

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Volume (veh/h)	51	22	1155	25	8	656
Future Volume (veh/h)	51	22	1155	25	8	656
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1252
Adj Flow Rate, veh/h	54	7	1229	26	9	698
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	392	51	1188	25	36	547
Arrive On Green	0.26	0.26	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1506	195	1800	38	0	829
Grp Volume(v), veh/h	62	0	0	1255	707	0
Grp Sat Flow(s),veh/h/ln	1729	0	0	1838	829	0
Q Serve(g_s), s	2.8	0.0	0.0	66.0	0.0	0.0
Cycle Q Clear(g_c), s	2.8	0.0	0.0	66.0	65.8	0.0
Prop In Lane	0.87	0.11		0.02	0.01	
Lane Grp Cap(c), veh/h	450	0	0	1213	582	0
V/C Ratio(X)	0.14	0.00	0.00	1.03	1.21	0.00
Avail Cap(c_a), veh/h	450	0	0	1213	582	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.11	0.65	0.00
Uniform Delay (d), s/veh	28.4	0.0	0.0	0.0	19.1	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	19.6	106.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	6.6	31.7	0.0
LnGrp Delay(d),s/veh	29.0	0.0	0.0	19.6	125.9	0.0
LnGrp LOS	C			F	F	
Approach Vol, veh/h	62		1255			707
Approach Delay, s/veh	29.0		19.6			125.9
Approach LOS	C		B			F

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		70.0				70.0		30.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 65				* 65		26.0
Max Q Clear Time (g_c+I1), s		68.0				67.8		4.8
Green Ext Time (p_c), s		0.0				0.0		0.1

Intersection Summary			
HCM 2010 Ctrl Delay			57.0
HCM 2010 LOS			E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱			✥			✥	
Traffic Volume (veh/h)	45	0	5	0	0	2	5	1135	37	0	665	5
Future Volume (veh/h)	45	0	5	0	0	2	5	1135	37	0	665	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1275	1900	1900	1176	1900
Adj Flow Rate, veh/h	47	0	0	0	0	0	5	1195	38	0	700	5
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	0	0	72	81	0	37	1074	34	0	1022	7
Arrive On Green	0.05	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	1339	0	0	1412	1863	0	1	1226	39	0	1167	8
Grp Volume(v), veh/h	47	0	0	0	0	0	1238	0	0	0	0	705
Grp Sat Flow(s),veh/h/ln	1339	0	0	1412	1863	0	1266	0	0	0	0	1175
Q Serve(g_s), s	3.5	0.0	0.0	0.0	0.0	0.0	21.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	0.0	0.0	87.4	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.03	0.00		0.01
Lane Grp Cap(c), veh/h	137	0	0	72	81	0	1143	0	0	0	0	1030
V/C Ratio(X)	0.34	0.00	0.00	0.00	0.00	0.00	1.08	0.00	0.00	0.00	0.00	0.68
Avail Cap(c_a), veh/h	306	0	0	250	317	0	1143	0	0	0	0	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.23
Uniform Delay (d), s/veh	47.1	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	39.3	0.0	0.0	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.0	0.0	0.0	32.1	0.0	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh	47.7	0.0	0.0	0.0	0.0	0.0	40.6	0.0	0.0	0.0	0.0	0.9
LnGrp LOS	D						F					A
Approach Vol, veh/h		47			0			1238			705	
Approach Delay, s/veh		47.7			0.0			40.6			0.9	
Approach LOS		D						D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		91.6		8.4		91.6		8.4
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 74		17.0		* 74		17.0
Max Q Clear Time (g_c+I1), s		89.4		5.5		2.0		0.0
Green Ext Time (p_c), s		0.0		0.1		9.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
11: Camino Pablo & Monte Vista Rd

	↰	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	65	0	4	3	0	5	14	1168	0	0	663	3
Future Volume (veh/h)	65	0	4	3	0	5	14	1168	0	0	663	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1618	0	0	1176	1900
Adj Flow Rate, veh/h	66	0	0	3	0	0	14	1180	0	0	670	3
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	369	0	0	382	0	0	106	1149	0	0	714	3
Arrive On Green	0.22	0.00	0.00	0.22	0.00	0.00	0.06	0.71	0.00	0.00	0.61	0.60
Sat Flow, veh/h	1414	0	0	1476	0	0	1774	1618	0	0	1170	5
Grp Volume(v), veh/h	66	0	0	3	0	0	14	1180	0	0	0	673
Grp Sat Flow(s),veh/h/ln	1414	0	0	1476	0	0	1774	1618	0	0	0	1175
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	0.0	0.7	71.0	0.0	0.0	0.0	52.2
Cycle Q Clear(g_c), s	3.8	0.0	0.0	0.1	0.0	0.0	0.7	71.0	0.0	0.0	0.0	52.2
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	376	0	0	389	0	0	106	1149	0	0	0	717
V/C Ratio(X)	0.18	0.00	0.00	0.01	0.00	0.00	0.13	1.03	0.00	0.00	0.00	0.94
Avail Cap(c_a), veh/h	376	0	0	389	0	0	106	1149	0	0	0	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.09	0.00	0.00	0.00	0.93
Uniform Delay (d), s/veh	32.5	0.0	0.0	31.1	0.0	0.0	44.5	14.5	0.0	0.0	0.0	17.8
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.0	0.0	0.2	16.3	0.0	0.0	0.0	20.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.1	0.0	0.0	0.4	36.2	0.0	0.0	0.0	20.7
LnGrp Delay(d),s/veh	33.5	0.0	0.0	31.1	0.0	0.0	44.8	30.8	0.0	0.0	0.0	38.3
LnGrp LOS	C			C			D	F				D
Approach Vol, veh/h		66			3			1194			673	
Approach Delay, s/veh		33.5			31.1			31.0			38.3	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		75.0		25.0	10.0	65.0		25.0
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0
Max Green Setting (Gmax), s		* 70		21.0	6.0	* 60		21.0
Max Q Clear Time (g_c+I1), s		73.0		5.8	2.7	54.2		2.1
Green Ext Time (p_c), s		0.0		0.1	0.0	3.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	164	104	155	27	8	11	20	1108	110	11	484	8
Future Volume (veh/h)	164	104	155	27	8	11	20	1108	110	11	484	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	167	106	152	28	8	2	20	1131	101	11	494	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	127	182	167	424	106	26	1210	1005	13	1197	997
Arrive On Green	0.00	0.19	0.18	0.09	0.30	0.29	0.01	0.65	0.65	0.01	0.64	0.64
Sat Flow, veh/h	0	680	975	1774	1431	358	1774	1863	1547	1774	1863	1551
Grp Volume(v), veh/h	0	0	258	28	0	10	20	1131	101	11	494	5
Grp Sat Flow(s),veh/h/ln	0	0	1655	1774	0	1789	1774	1863	1547	1774	1863	1551
Q Serve(g_s), s	0.0	0.0	38.4	3.7	0.0	1.0	2.9	138.4	6.3	1.6	33.0	0.3
Cycle Q Clear(g_c), s	0.0	0.0	38.4	3.7	0.0	1.0	2.9	138.4	6.3	1.6	33.0	0.3
Prop In Lane	0.00		0.59	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	308	167	0	529	26	1210	1005	13	1197	997
V/C Ratio(X)	0.00	0.00	0.84	0.17	0.00	0.02	0.78	0.93	0.10	0.82	0.41	0.01
Avail Cap(c_a), veh/h	0	0	308	167	0	529	153	1400	1163	153	1400	1165
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	100.4	106.5	0.0	63.7	125.5	39.9	16.8	126.6	22.2	16.4
Incr Delay (d2), s/veh	0.0	0.0	22.8	2.2	0.0	0.1	16.9	11.3	0.1	33.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	19.6	1.9	0.0	0.5	1.5	74.8	2.7	0.9	17.0	0.1
LnGrp Delay(d),s/veh	0.0	0.0	123.2	108.7	0.0	63.8	142.4	51.3	16.8	160.2	22.5	16.4
LnGrp LOS			F	F		E	F	D	B	F	C	B
Approach Vol, veh/h		258			38			1252			510	
Approach Delay, s/veh		123.2			96.9			49.9			25.4	
Approach LOS		F			F			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.9	169.9	28.0	51.6	7.7	168.2	0.0	79.6
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0
Max Q Clear Time (g_c+I1), s	3.6	140.4	5.7	40.4	4.9	35.0	0.0	3.0
Green Ext Time (p_c), s	0.0	23.5	0.0	0.5	0.0	4.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	53.9
HCM 2010 LOS	D

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	69	43	12	7	4	292	14	931	14	182	468	62
Future Volume (vph)	69	43	12	7	4	292	14	931	14	182	468	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.5	3.5		3.0	3.5	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.92		1.00	0.99	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	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.98	
Flt Protected		0.97	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1807	1460		1803	1562	1770	5067		1770	3465	
Flt Permitted		0.81	1.00		0.86	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1515	1460		1606	1562	1770	5067		1770	3465	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	74	46	13	8	4	314	15	1001	15	196	503	67
RTOR Reduction (vph)	0	0	0	0	0	265	0	1	0	0	0	0
Lane Group Flow (vph)	0	120	13	0	12	49	15	1015	0	196	570	0
Confl. Peds. (#/hr)			39						17			2
Confl. Bikes (#/hr)						1			9			1
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		20.5	20.5		20.5	20.5	2.5	36.8		19.9	53.7	
Effective Green, g (s)		21.5	21.5		21.5	21.5	3.5	37.8		20.9	54.7	
Actuated g/C Ratio		0.16	0.16		0.16	0.16	0.03	0.27		0.15	0.40	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		236	227		250	243	44	1387		268	1373	
v/s Ratio Prot							0.01	c0.20		c0.11	0.16	
v/s Ratio Perm		c0.08	0.01		0.01	0.03						
v/c Ratio		0.51	0.06		0.05	0.20	0.34	0.73		0.73	0.42	
Uniform Delay, d1		53.4	49.6		49.5	50.8	66.1	45.5		55.9	30.1	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6	0.0		0.0	0.1	1.7	1.7		8.5	0.3	
Delay (s)		54.0	49.7		49.6	50.9	67.8	47.2		64.4	30.4	
Level of Service		D	D		D	D	E	D		E	C	
Approach Delay (s)		53.6			50.9			47.5			39.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	138.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Cumulative Plus Project AM

Movement	SEL2	SEL	SER	SER2
Lane Configurations				
Traffic Volume (vph)	315	95	263	16
Future Volume (vph)	315	95	263	16
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.90		
Flt Protected	0.95	0.98		
Satd. Flow (prot)	1681	1563		
Flt Permitted	0.95	0.98		
Satd. Flow (perm)	1681	1563		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93
Adj. Flow (vph)	339	102	283	17
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	305	436	0	0
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	44.8	44.8		
Effective Green, g (s)	45.8	45.8		
Actuated g/C Ratio	0.33	0.33		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	557	518		
v/s Ratio Prot	0.18	c0.28		
v/s Ratio Perm				
v/c Ratio	0.55	0.84		
Uniform Delay, d1	37.6	42.7		
Progression Factor	1.00	1.00		
Incremental Delay, d2	1.1	11.8		
Delay (s)	38.7	54.5		
Level of Service	D	D		
Approach Delay (s)		48.0		
Approach LOS		D		

Intersection Summary

HCM 2010 Signalized Intersection Summary
2: Camino Pablo & SR-24 WB On-Ramp/Santa Maria Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	170	137	33	0	671	484	90	740	787
Future Volume (veh/h)	0	0	0	170	137	33	0	671	484	90	740	787
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				172	180	21	0	754	441	101	831	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				750	787	798	0	1156	1186	154	1657	741
Arrive On Green				0.42	0.42	0.42	0.00	0.33	0.33	0.09	0.47	0.00
Sat Flow, veh/h				1774	1863	1562	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				172	180	21	0	754	441	101	831	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1562	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				4.5	4.5	0.5	0.0	13.4	7.1	4.0	12.0	0.0
Cycle Q Clear(g_c), s				4.5	4.5	0.5	0.0	13.4	7.1	4.0	12.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				750	787	798	0	1156	1186	154	1657	741
V/C Ratio(X)				0.23	0.23	0.03	0.00	0.65	0.37	0.65	0.50	0.00
Avail Cap(c_a), veh/h				750	787	798	0	2944	1986	387	3909	1749
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				13.5	13.5	8.9	0.0	21.1	3.2	32.4	13.6	0.0
Incr Delay (d2), s/veh				0.7	0.7	0.1	0.0	0.6	0.2	4.6	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.3	2.4	0.2	0.0	6.6	8.4	2.2	5.8	0.0
LnGrp Delay(d),s/veh				14.2	14.2	9.0	0.0	21.8	3.4	37.0	13.8	0.0
LnGrp LOS				B	B	A		C	A	D	B	
Approach Vol, veh/h					373			1195			932	
Approach Delay, s/veh					13.9			15.0			16.3	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.4	28.0				38.3		35.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		30.0
Max Q Clear Time (g_c+I1), s	6.0	15.4				14.0		6.5
Green Ext Time (p_c), s	0.1	7.6				6.3		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

3: Camino Pablo & Camino Sobrante

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	188	19	569	135	47	1429
Future Volume (veh/h)	188	19	569	135	47	1429
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	194	8	587	79	48	1473
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	263	339	1977	884	116	2466
Arrive On Green	0.15	0.15	0.56	0.56	0.07	0.70
Sat Flow, veh/h	1757	1568	3597	1568	1757	3597
Grp Volume(v), veh/h	194	8	587	79	48	1473
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1568	1757	1752
Q Serve(g_s), s	5.8	0.2	4.8	1.3	1.4	11.7
Cycle Q Clear(g_c), s	5.8	0.2	4.8	1.3	1.4	11.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	263	339	1977	884	116	2466
V/C Ratio(X)	0.74	0.02	0.30	0.09	0.41	0.60
Avail Cap(c_a), veh/h	1062	1052	3101	1387	1030	3101
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.2	16.9	6.2	5.5	24.5	4.1
Incr Delay (d2), s/veh	3.0	0.0	0.2	0.1	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.1	2.3	0.6	0.7	5.7
LnGrp Delay(d),s/veh	25.2	16.9	6.4	5.6	25.3	4.6
LnGrp LOS	C	B	A	A	C	A
Approach Vol, veh/h	202		666			1521
Approach Delay, s/veh	24.8		6.3			5.3
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.6	34.8				42.4		12.2
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	3.4	6.8				13.7		7.8
Green Ext Time (p_c), s	0.0	8.8				22.4		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
4: Camino Pablo & El Toyonal/Orinda Way

Cumulative Plus Project AM

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↑	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	41	22	106	5	13	87	42	534	12	111	1365	35
Future Volume (veh/h)	41	22	106	5	13	87	42	534	12	111	1365	35
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.99		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	45	24	18	5	14	28	46	587	8	122	1500	37
Adj No. of Lanes	0	1	1	1	1	1	1	2	1	1	2	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	202	91	215	242	263	359	115	2134	952	159	2183	54
Arrive On Green	0.15	0.14	0.14	0.15	0.14	0.14	0.07	0.61	0.61	0.09	0.62	0.60
Sat Flow, veh/h	868	635	1508	1326	1845	1518	1757	3505	1564	1757	3494	86
Grp Volume(v), veh/h	69	0	18	5	14	28	46	587	8	122	751	786
Grp Sat Flow(s),veh/h/ln	1503	0	1508	1326	1845	1518	1757	1752	1564	1757	1752	1827
Q Serve(g_s), s	1.8	0.0	0.8	0.3	0.5	1.1	1.9	6.0	0.2	5.2	21.4	21.6
Cycle Q Clear(g_c), s	2.9	0.0	0.8	3.2	0.5	1.1	1.9	6.0	0.2	5.2	21.4	21.6
Prop In Lane	0.65		1.00	1.00		1.00	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	303	0	215	242	263	359	115	2134	952	159	1095	1142
V/C Ratio(X)	0.23	0.00	0.08	0.02	0.05	0.08	0.40	0.28	0.01	0.77	0.69	0.69
Avail Cap(c_a), veh/h	864	0	793	575	727	740	877	2639	1178	854	1296	1352
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.0	0.0	28.3	30.2	28.2	22.8	34.1	7.0	5.9	33.8	9.4	9.4
Incr Delay (d2), s/veh	0.4	0.0	0.2	0.0	0.0	0.0	2.2	0.1	0.0	7.5	1.9	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.3	0.1	0.3	0.5	1.0	2.9	0.1	2.8	10.8	11.3
LnGrp Delay(d),s/veh	29.4	0.0	28.5	30.2	28.2	22.8	36.4	7.1	5.9	41.3	11.3	11.3
LnGrp LOS	C		C	C	C	C	D	A	A	D	B	B
Approach Vol, veh/h		87			47			641			1659	
Approach Delay, s/veh		29.2			25.2			9.2			13.5	
Approach LOS		C			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.9	50.3		14.9	9.0	52.3		14.9
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0
Max Q Clear Time (g_c+I1), s	7.2	8.0		4.9	3.9	23.6		5.2
Green Ext Time (p_c), s	0.3	8.4		0.4	0.1	22.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
5: Camino Pablo & Miner Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	419	34	489	173	38	1092
Future Volume (veh/h)	419	34	489	173	38	1092
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	466	31	543	99	42	1213
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	519	550	1686	752	97	2077
Arrive On Green	0.30	0.30	0.48	0.48	0.06	0.59
Sat Flow, veh/h	1757	1568	3597	1563	1757	3597
Grp Volume(v), veh/h	466	31	543	99	42	1213
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1563	1757	1752
Q Serve(g_s), s	18.1	0.9	6.8	2.5	1.6	15.4
Cycle Q Clear(g_c), s	18.1	0.9	6.8	2.5	1.6	15.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	519	550	1686	752	97	2077
V/C Ratio(X)	0.90	0.06	0.32	0.13	0.43	0.58
Avail Cap(c_a), veh/h	715	725	3299	1471	542	3299
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.1	15.3	11.4	10.2	32.6	9.0
Incr Delay (d2), s/veh	10.4	0.0	0.2	0.2	1.1	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.3	0.4	3.3	1.1	0.8	7.4
LnGrp Delay(d),s/veh	34.5	15.4	11.6	10.4	33.7	9.6
LnGrp LOS	C	B	B	B	C	A
Approach Vol, veh/h	497		642			1255
Approach Delay, s/veh	33.3		11.4			10.4
Approach LOS	C		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.0	38.3				46.2		25.0
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.0		29.0
Max Q Clear Time (g_c+I1), s	3.6	8.8				17.4		20.1
Green Ext Time (p_c), s	0.0	9.3				23.8		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
6: Camino Pablo & Ardilla Rd

Cumulative Plus Project AM

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Volume (veh/h)	0	1	0	523	1130	0
Future Volume (veh/h)	0	1	0	523	1130	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	0	0	575	1242	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	0	0	1678	1678	0
Arrive On Green	0.00	0.00	0.00	0.91	1.00	0.00
Sat Flow, veh/h	0	0	0	1845	1845	0
Grp Volume(v), veh/h	0	0	0	575	1242	0
Grp Sat Flow(s),veh/h/ln	0	0	0	1845	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	3.7	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	3.7	0.0	0.0
Prop In Lane	0.00	0.00	0.00			0.00
Lane Grp Cap(c), veh/h	0	0	0	1678	1678	0
V/C Ratio(X)	0.00	0.00	0.00	0.34	0.74	0.00
Avail Cap(c_a), veh/h	0	0	0	1678	1678	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.33	1.33
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.52	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.5	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.0	0.7	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	1.1	1.6	0.0
LnGrp LOS				A	A	
Approach Vol, veh/h	1			575	1242	
Approach Delay, s/veh	65.2			1.1	1.6	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		85.9		4.1		85.9		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 57		24.3		* 57		
Max Q Clear Time (g_c+I1), s		5.7		2.0		2.0		
Green Ext Time (p_c), s		12.5		0.0		41.8		

Intersection Summary	
HCM 2010 Ctrl Delay	1.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
7: Camino Pablo & Camino Pablo Frontage Road/South Entrance

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱					↰	↑↱			↑	↱
Traffic Volume (veh/h)	9	0	23	0	0	0	11	501	11	0	1107	4
Future Volume (veh/h)	9	0	23	0	0	0	11	501	11	0	1107	4
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900				1845	1845	1900	0	1845	1845
Adj Flow Rate, veh/h	10	0	2				12	563	12	0	1244	3
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.89	0.89	0.89				0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3				3	3	3	0	3	3
Cap, veh/h	131	0	114				30	1491	32	0	1415	1320
Arrive On Green	0.07	0.00	0.08				0.02	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	1757	0	1529				1757	1798	38	0	1845	1568
Grp Volume(v), veh/h	10	0	2				12	0	575	0	1244	3
Grp Sat Flow(s),veh/h/ln	1757	0	1529				1757	0	1837	0	1845	1568
Q Serve(g_s), s	0.5	0.0	0.1				0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.1				0.6	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00				1.00		0.02	0.00		1.00
Lane Grp Cap(c), veh/h	131	0	114				30	0	1523	0	1415	1320
V/C Ratio(X)	0.08	0.00	0.02				0.40	0.00	0.38	0.00	0.88	0.00
Avail Cap(c_a), veh/h	390	0	340				117	0	1523	0	1415	1320
HCM Platoon Ratio	1.00	1.00	1.00				1.33	1.33	1.33	1.00	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00				0.95	0.00	0.95	0.00	0.18	0.18
Uniform Delay (d), s/veh	38.8	0.0	38.4				43.5	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0				2.9	0.0	0.7	0.0	1.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0				0.3	0.0	0.3	0.0	0.6	0.0
LnGrp Delay(d),s/veh	38.9	0.0	38.4				46.4	0.0	0.7	0.0	1.6	0.0
LnGrp LOS	D		D				D		A		A	A
Approach Vol, veh/h		12						587			1247	
Approach Delay, s/veh		38.8						1.6			1.6	
Approach LOS		D						A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		79.3		10.7	5.6	73.7		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 61		20.0	6.0	* 51		
Max Q Clear Time (g_c+I1), s		2.0		2.5	2.6	2.0		
Green Ext Time (p_c), s		9.6		0.0	0.0	34.8		

Intersection Summary			
HCM 2010 Ctrl Delay			1.8
HCM 2010 LOS			A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
8: Camino Pablo & Claremont Ave

	↗	↘	↖	↑	↓	↙
Movement	**EBL**	**EBR**	**NBL**	**NBT**	**SBT**	**SBR**
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	16	70	16	494	1041	12
Future Volume (veh/h)	16	70	16	494	1041	12
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.94	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	18	16	18	555	1170	13
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	166	148	42	1312	1170	13
Arrive On Green	0.20	0.20	0.03	0.95	1.00	1.00
Sat Flow, veh/h	832	739	1757	1845	1821	20
Grp Volume(v), veh/h	35	0	18	555	0	1183
Grp Sat Flow(s),veh/h/ln	1617	0	1757	1845	0	1841
Q Serve(g_s), s	1.6	0.0	0.9	2.4	0.0	57.8
Cycle Q Clear(g_c), s	1.6	0.0	0.9	2.4	0.0	57.8
Prop In Lane	0.51	0.46	1.00			0.01
Lane Grp Cap(c), veh/h	323	0	42	1312	0	1183
V/C Ratio(X)	0.11	0.00	0.42	0.42	0.00	1.00
Avail Cap(c_a), veh/h	323	0	117	1312	0	1183
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.94	0.94	0.00	0.09
Uniform Delay (d), s/veh	29.4	0.0	42.9	0.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	2.3	0.9	0.0	7.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.5	1.3	0.0	2.6
LnGrp Delay(d),s/veh	30.1	0.0	45.3	1.7	0.0	7.9
LnGrp LOS	C		D	A		F
Approach Vol, veh/h	35			573	1183	
Approach Delay, s/veh	30.1			3.1	7.9	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		68.0		22.0	6.2	61.8		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 63		18.0	6.0	* 53		
Max Q Clear Time (g_c+I1), s		4.4		3.6	2.9	59.8		
Green Ext Time (p_c), s		9.1		0.0	0.0	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	6.8
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

Cumulative Plus Project AM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Volume (veh/h)	49	20	461	49	30	1004
Future Volume (veh/h)	49	20	461	49	30	1004
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.97		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1553
Adj Flow Rate, veh/h	56	6	524	51	34	1141
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	377	40	1102	107	58	998
Arrive On Green	0.24	0.24	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1540	165	1654	161	25	1497
Grp Volume(v), veh/h	63	0	0	575	1175	0
Grp Sat Flow(s),veh/h/ln	1733	0	0	1815	1522	0
Q Serve(g_s), s	2.6	0.0	0.0	0.0	34.5	0.0
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.0	59.8	0.0
Prop In Lane	0.89	0.10		0.09	0.03	
Lane Grp Cap(c), veh/h	424	0	0	1210	1053	0
V/C Ratio(X)	0.15	0.00	0.00	0.48	1.12	0.00
Avail Cap(c_a), veh/h	424	0	0	1210	1053	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.92	0.09	0.00
Uniform Delay (d), s/veh	26.7	0.0	0.0	0.0	0.9	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.2	53.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.4	26.7	0.0
LnGrp Delay(d),s/veh	27.4	0.0	0.0	1.2	54.7	0.0
LnGrp LOS	C			A	F	
Approach Vol, veh/h	63		575			1175
Approach Delay, s/veh	27.4		1.2			54.7
Approach LOS	C		A			D

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		64.0				64.0		26.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 59				* 59		22.0
Max Q Clear Time (g_c+I1), s		2.0				61.8		4.6
Green Ext Time (p_c), s		6.9				0.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
10: Camino Pablo & Los Amigos

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱			✥			✥	
Traffic Volume (veh/h)	0	0	7	9	0	1	3	469	9	0	1014	3
Future Volume (veh/h)	0	0	7	9	0	1	3	469	9	0	1014	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	0.99		1.00	1.00		0.99	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1863	1900	1900	1373	1900
Adj Flow Rate, veh/h	0	0	2	10	0	0	3	533	9	0	1152	3
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	322	372	393	0	40	1031	17	0	958	2
Arrive On Green	0.00	0.00	0.21	0.21	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	0	0	1527	1389	1863	0	0	1473	25	0	1368	4
Grp Volume(v), veh/h	0	0	2	10	0	0	545	0	0	0	0	1155
Grp Sat Flow(s),veh/h/ln	0	0	1527	1389	1863	0	1497	0	0	0	0	1372
Q Serve(g_s), s	0.0	0.0	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	62.9
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.6	0.0	0.0	62.8	0.0	0.0	0.0	0.0	62.9
Prop In Lane	0.00		1.00	1.00		0.00	0.01		0.02	0.00		0.00
Lane Grp Cap(c), veh/h	0	0	322	372	393	0	1085	0	0	0	0	960
V/C Ratio(X)	0.00	0.00	0.01	0.03	0.00	0.00	0.50	0.00	0.00	0.00	0.00	1.20
Avail Cap(c_a), veh/h	0	0	322	372	393	0	1085	0	0	0	0	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.87	0.00	0.00	0.00	0.00	0.09
Uniform Delay (d), s/veh	0.0	0.0	28.0	28.3	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	1.5	0.0	0.0	0.0	0.0	92.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	2.9	0.0	0.0	0.0	0.0	24.6
LnGrp Delay(d),s/veh	0.0	0.0	28.1	28.4	0.0	0.0	6.2	0.0	0.0	0.0	0.0	92.3
LnGrp LOS			C	C			A					F
Approach Vol, veh/h		2			10			545			1155	
Approach Delay, s/veh		28.1			28.4			6.2			92.3	
Approach LOS		C			C			A			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		67.0		23.0		67.0		23.0
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 62		19.0		* 62		19.0
Max Q Clear Time (g_c+I1), s		64.8		2.1		64.9		2.6
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	64.4
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
11: Camino Pablo & Monte Vista Rd

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	6	1	15	168	2	7	5	465	0	0	834	2
Future Volume (veh/h)	6	1	15	168	2	7	5	465	0	0	834	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1373	1900
Adj Flow Rate, veh/h	7	1	4	187	2	6	6	517	0	0	927	2
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	271	48	127	393	5	10	118	1263	0	0	776	2
Arrive On Green	0.24	0.23	0.24	0.24	0.23	0.23	0.13	1.00	0.00	0.00	0.57	0.56
Sat Flow, veh/h	888	204	546	1350	22	44	1774	1863	0	0	1369	3
Grp Volume(v), veh/h	12	0	0	195	0	0	6	517	0	0	0	929
Grp Sat Flow(s),veh/h/ln	1638	0	0	1415	0	0	1774	1863	0	0	0	1372
Q Serve(g_s), s	0.0	0.0	0.0	10.4	0.0	0.0	0.3	0.0	0.0	0.0	0.0	51.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	10.9	0.0	0.0	0.3	0.0	0.0	0.0	0.0	51.0
Prop In Lane	0.58		0.33	0.96		0.03	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	455	0	0	416	0	0	118	1263	0	0	0	777
V/C Ratio(X)	0.03	0.00	0.00	0.47	0.00	0.00	0.05	0.41	0.00	0.00	0.00	1.19
Avail Cap(c_a), veh/h	455	0	0	416	0	0	118	1263	0	0	0	777
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.91	0.91	0.00	0.00	0.00	0.09
Uniform Delay (d), s/veh	26.5	0.0	0.0	30.4	0.0	0.0	36.5	0.0	0.0	0.0	0.0	19.5
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.7	0.0	0.0	0.7	0.9	0.0	0.0	0.0	89.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	4.7	0.0	0.0	0.2	0.3	0.0	0.0	0.0	38.2
LnGrp Delay(d),s/veh	26.6	0.0	0.0	34.1	0.0	0.0	37.3	0.9	0.0	0.0	0.0	108.5
LnGrp LOS	C			C			D	A				F
Approach Vol, veh/h		12			195			523			929	
Approach Delay, s/veh		26.6			34.1			1.3			108.5	
Approach LOS		C			C			A			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		65.0		25.0	10.0	55.0		25.0
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0
Max Green Setting (Gmax), s		* 60		21.0	6.0	* 50		21.0
Max Q Clear Time (g_c+I1), s		2.0		2.5	2.3	53.0		12.9
Green Ext Time (p_c), s		8.2		0.0	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	65.3
HCM 2010 LOS	E

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	5	6	22	199	90	2	62	201	215	8	615	37
Future Volume (veh/h)	5	6	22	199	90	2	62	201	215	8	615	37
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1863	1863	1373	1863
Adj Flow Rate, veh/h	6	7	4	234	106	2	73	236	177	9	724	31
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	217	124	174	563	11	159	1029	856	159	758	874
Arrive On Green	0.00	0.19	0.19	0.10	0.31	0.31	0.09	0.55	0.55	0.09	0.55	0.55
Sat Flow, veh/h	0	1114	637	1774	1821	34	1774	1863	1550	1774	1373	1583
Grp Volume(v), veh/h	0	0	11	234	0	108	73	236	177	9	724	31
Grp Sat Flow(s),veh/h/ln	0	0	1750	1774	0	1856	1774	1863	1550	1774	1373	1583
Q Serve(g_s), s	0.0	0.0	1.2	24.0	0.0	10.5	9.6	15.9	14.1	1.1	122.4	2.2
Cycle Q Clear(g_c), s	0.0	0.0	1.2	24.0	0.0	10.5	9.6	15.9	14.1	1.1	122.4	2.2
Prop In Lane	0.00		0.36	1.00		0.02	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	340	174	0	573	159	1029	856	159	758	874
V/C Ratio(X)	0.00	0.00	0.03	1.35	0.00	0.19	0.46	0.23	0.21	0.06	0.96	0.04
Avail Cap(c_a), veh/h	0	0	340	174	0	573	159	1461	1216	159	1077	1242
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	80.0	110.4	0.0	62.1	105.7	28.1	27.7	101.9	51.9	25.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	188.5	0.0	0.7	9.2	0.2	0.2	0.7	15.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.6	20.9	0.0	5.5	5.1	8.2	6.1	0.6	49.7	1.0
LnGrp Delay(d),s/veh	0.0	0.0	80.2	298.9	0.0	62.8	114.9	28.3	27.9	102.5	67.6	25.1
LnGrp LOS			F	F		E	F	C	C	F	E	C
Approach Vol, veh/h		11			342			486			764	
Approach Delay, s/veh		80.2			224.3			41.1			66.2	
Approach LOS		F			F			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	26.0	139.1	28.0	51.6	26.0	139.1	0.0	79.6				
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6				
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0				
Max Q Clear Time (g_c+I1), s	3.1	17.9	26.0	3.2	11.6	124.4	0.0	12.5				
Green Ext Time (p_c), s	0.0	3.4	0.0	0.0	0.0	8.8	0.0	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			92.4									
HCM 2010 LOS			F									

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Cumulative Plus Project Midday

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	48	28	11	27	9	178	10	529	27	196	560	45
Future Volume (vph)	48	28	11	27	9	178	10	529	27	196	560	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.97		1.00	0.98	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	
Frt		1.00	0.85		1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1533		1795	1558	1770	5033		1770	3493	
Flt Permitted		0.78	1.00		0.76	1.00	0.39	1.00		0.95	1.00	
Satd. Flow (perm)		1460	1533		1412	1558	721	5033		1770	3493	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	55	32	13	31	10	205	11	608	31	225	644	52
RTOR Reduction (vph)	0	0	11	0	0	181	0	3	0	0	0	0
Lane Group Flow (vph)	0	87	2	0	41	24	11	636	0	225	696	0
Confl. Peds. (#/hr)			13						12			
Confl. Bikes (#/hr)						2						6
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	pm+pt	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4	2					
Actuated Green, G (s)		14.5	14.5		14.5	14.5	26.5	24.6		23.3	45.5	
Effective Green, g (s)		14.5	14.5		14.5	14.5	27.5	25.1		23.3	46.0	
Actuated g/C Ratio		0.12	0.12		0.12	0.12	0.22	0.20		0.19	0.37	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		168	176		163	179	177	1005		328	1279	
v/s Ratio Prot							0.00	c0.13		c0.13	0.20	
v/s Ratio Perm		c0.06	0.00		0.03	0.02	0.01					
v/c Ratio		0.52	0.01		0.25	0.13	0.06	0.63		0.69	0.54	
Uniform Delay, d1		52.3	49.2		50.6	49.9	38.6	46.0		47.7	31.5	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.1	0.0		0.3	0.1	0.1	1.0		4.7	0.6	
Delay (s)		53.4	49.2		50.9	50.0	38.6	47.0		52.4	32.1	
Level of Service		D	D		D	D	D	D		D	C	
Approach Delay (s)		52.8			50.2			46.8			37.1	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	125.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	345	92	295	16
Future Volume (vph)	345	92	295	16
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.89		
Flt Protected	0.95	0.99		
Satd. Flow (prot)	1681	1559		
Flt Permitted	0.95	0.99		
Satd. Flow (perm)	1681	1559		
Peak-hour factor, PHF	0.87	0.87	0.87	0.87
Adj. Flow (vph)	397	106	339	18
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	357	503	0	0
Confl. Peds. (#/hr)				
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	47.2	47.2		
Effective Green, g (s)	46.7	46.7		
Actuated g/C Ratio	0.37	0.37		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	625	579		
v/s Ratio Prot	0.21	c0.32		
v/s Ratio Perm				
v/c Ratio	0.57	0.87		
Uniform Delay, d1	31.5	36.6		
Progression Factor	1.00	1.00		
Incremental Delay, d2	1.3	13.1		
Delay (s)	32.7	49.7		
Level of Service	C	D		
Approach Delay (s)		42.6		
Approach LOS		D		

Intersection Summary				

HCM 2010 Signalized Intersection Summary
2: Camino Pablo & SR-24 WB On-Ramp/Santa Maria Way

Cumulative Plus Project Midday

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	343	133	53	0	847	427	35	588	249
Future Volume (veh/h)	0	0	0	343	133	53	0	847	427	35	588	249
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				267	314	42	0	952	356	39	661	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				659	692	674	0	1405	1217	106	1819	814
Arrive On Green				0.37	0.37	0.37	0.00	0.40	0.40	0.06	0.51	0.00
Sat Flow, veh/h				1774	1863	1560	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				267	314	42	0	952	356	39	661	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1560	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				7.8	8.9	1.1	0.0	15.5	4.7	1.5	7.8	0.0
Cycle Q Clear(g_c), s				7.8	8.9	1.1	0.0	15.5	4.7	1.5	7.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				659	692	674	0	1405	1217	106	1819	814
V/C Ratio(X)				0.40	0.45	0.06	0.00	0.68	0.29	0.37	0.36	0.00
Avail Cap(c_a), veh/h				659	692	674	0	3086	1969	406	4098	1833
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				16.3	16.6	11.6	0.0	17.4	2.4	31.6	10.2	0.0
Incr Delay (d2), s/veh				1.8	2.1	0.2	0.0	0.6	0.1	2.1	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.1	4.9	0.5	0.0	7.6	5.4	0.8	3.8	0.0
LnGrp Delay(d),s/veh				18.1	18.8	11.8	0.0	18.0	2.5	33.7	10.3	0.0
LnGrp LOS				B	B	B		B	A	C	B	
Approach Vol, veh/h					623			1308			700	
Approach Delay, s/veh					18.0			13.8			11.6	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.2	31.8				40.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	15.0	60.0				80.0		25.0
Max Q Clear Time (g_c+I1), s	3.5	17.5				9.8		10.9
Green Ext Time (p_c), s	0.0	9.3				4.7		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Camino Pablo & Camino Sobrante

Cumulative Plus Project Midday

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	177	50	710	190	37	695
Future Volume (veh/h)	177	50	710	190	37	695
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	197	32	789	99	41	772
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	733	736	1328	594	92	1689
Arrive On Green	0.42	0.42	0.38	0.38	0.05	0.48
Sat Flow, veh/h	1757	1568	3597	1568	1757	3597
Grp Volume(v), veh/h	197	32	789	99	41	772
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1568	1757	1752
Q Serve(g_s), s	5.8	0.9	14.3	3.3	1.8	11.6
Cycle Q Clear(g_c), s	5.8	0.9	14.3	3.3	1.8	11.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	733	736	1328	594	92	1689
V/C Ratio(X)	0.27	0.04	0.59	0.17	0.44	0.46
Avail Cap(c_a), veh/h	733	736	2139	957	710	2139
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	11.4	19.7	16.3	36.4	13.6
Incr Delay (d2), s/veh	0.9	0.1	0.9	0.3	1.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.4	7.1	1.5	0.9	5.7
LnGrp Delay(d),s/veh	16.1	11.5	20.6	16.6	37.6	14.0
LnGrp LOS	B	B	C	B	D	B
Approach Vol, veh/h	229		888			813
Approach Delay, s/veh	15.4		20.2			15.2
Approach LOS	B		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	8.2	34.0				42.1		37.0
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	3.8	16.3				13.6		7.8
Green Ext Time (p_c), s	0.0	11.4				10.6		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			17.5
HCM 2010 LOS			B

HCM 2010 Signalized Intersection Summary
4: Camino Pablo & El Toyonal/Orinda Way

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	27	10	63	19	11	120	63	687	10	70	650	16
Future Volume (veh/h)	27	10	63	19	11	120	63	687	10	70	650	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	29	11	30	21	12	92	68	747	4	76	707	16
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	357	125	695	334	177	803	129	1214	526	117	1162	26
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.07	0.35	0.35	0.07	0.33	0.31
Sat Flow, veh/h	635	276	1540	592	391	1547	1757	3505	1520	1757	3502	79
Grp Volume(v), veh/h	40	0	30	33	0	92	68	747	4	76	354	369
Grp Sat Flow(s),veh/h/ln	911	0	1540	983	0	1547	1757	1752	1520	1757	1752	1829
Q Serve(g_s), s	0.8	0.0	1.0	0.3	0.0	2.7	3.3	15.7	0.2	3.7	15.0	15.0
Cycle Q Clear(g_c), s	15.6	0.0	1.0	15.4	0.0	2.7	3.3	15.7	0.2	3.7	15.0	15.0
Prop In Lane	0.72		1.00	0.64		1.00	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	481	0	695	510	0	803	129	1214	526	117	582	607
V/C Ratio(X)	0.08	0.00	0.04	0.06	0.00	0.11	0.53	0.62	0.01	0.65	0.61	0.61
Avail Cap(c_a), veh/h	481	0	695	510	0	803	753	2267	983	734	1114	1162
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	0.0	13.6	14.7	0.0	10.9	39.6	24.1	19.0	40.3	24.8	24.8
Incr Delay (d2), s/veh	0.3	0.0	0.1	0.2	0.0	0.3	3.3	1.1	0.0	5.9	2.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.4	0.5	0.0	1.2	1.7	7.8	0.1	2.0	7.5	7.8
LnGrp Delay(d),s/veh	17.5	0.0	13.7	14.9	0.0	11.2	42.9	25.2	19.0	46.2	27.0	26.9
LnGrp LOS	B		B	B		B	D	C	B	D	C	C
Approach Vol, veh/h		70			125			819			799	
Approach Delay, s/veh		15.9			12.2			26.6			28.8	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	34.7		44.0	10.5	34.1		44.0
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0
Max Q Clear Time (g_c+I1), s	5.7	17.7		17.6	5.3	17.0		17.4
Green Ext Time (p_c), s	0.2	10.7		0.2	0.2	9.5		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
5: Camino Pablo & Miner Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	188	37	650	184	18	548
Future Volume (veh/h)	188	37	650	184	18	548
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	204	25	707	116	20	596
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	734	706	1321	587	57	1636
Arrive On Green	0.42	0.42	0.38	0.38	0.03	0.47
Sat Flow, veh/h	1757	1568	3597	1558	1757	3597
Grp Volume(v), veh/h	204	25	707	116	20	596
Grp Sat Flow(s),veh/h/ln	1757	1568	1752	1558	1757	1752
Q Serve(g_s), s	5.3	0.6	10.9	3.5	0.8	7.6
Cycle Q Clear(g_c), s	5.3	0.6	10.9	3.5	0.8	7.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	734	706	1321	587	57	1636
V/C Ratio(X)	0.28	0.04	0.54	0.20	0.35	0.36
Avail Cap(c_a), veh/h	734	706	3389	1506	557	3419
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	10.7	16.9	14.6	32.9	11.9
Incr Delay (d2), s/veh	0.9	0.1	0.7	0.3	1.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.3	5.3	1.5	0.4	3.7
LnGrp Delay(d),s/veh	14.2	10.8	17.6	14.9	34.3	12.2
LnGrp LOS	B	B	B	B	C	B
Approach Vol, veh/h	229		823			616
Approach Delay, s/veh	13.9		17.2			12.9
Approach LOS	B		B			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	6.2	30.2				36.4		33.0
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.6		29.0
Max Q Clear Time (g_c+I1), s	2.8	12.9				9.6		7.3
Green Ext Time (p_c), s	0.0	12.1				8.7		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Volume (veh/h)	0	1	0	687	566	0
Future Volume (veh/h)	0	1	0	687	566	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	1	0	731	602	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.92	0.94	0.94	0.92
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	3	0	1416	1416	0
Arrive On Green	0.00	0.00	0.00	0.77	0.77	0.00
Sat Flow, veh/h	0	873	0	1845	1845	0
Grp Volume(v), veh/h	0	2	0	731	602	0
Grp Sat Flow(s),veh/h/ln	0	1746	0	1845	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	5.3	3.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.3	3.9	0.0
Prop In Lane	0.00	0.50	0.00			0.00
Lane Grp Cap(c), veh/h	0	6	0	1416	1416	0
V/C Ratio(X)	0.00	0.35	0.00	0.52	0.43	0.00
Avail Cap(c_a), veh/h	0	999	0	3521	3784	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	17.4	0.0	1.6	1.4	0.0
Incr Delay (d2), s/veh	0.0	12.8	0.0	1.1	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	2.9	2.1	0.0
LnGrp Delay(d),s/veh	0.0	30.1	0.0	2.6	2.1	0.0
LnGrp LOS		C		A	A	
Approach Vol, veh/h	2			731	602	
Approach Delay, s/veh	30.1			2.6	2.1	
Approach LOS	C			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		30.8		4.1		30.8		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 66		20.0		* 71		
Max Q Clear Time (g_c+I1), s		7.3		2.0		5.9		
Green Ext Time (p_c), s		18.8		0.0		14.0		

Intersection Summary			
HCM 2010 Ctrl Delay			2.4
HCM 2010 LOS			A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↱					↰	↑↱			↑	↱
Traffic Volume (veh/h)	3	0	14	0	0	0	13	663	11	0	552	5
Future Volume (veh/h)	3	0	14	0	0	0	13	663	11	0	552	5
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900				1863	1863	1900	0	1863	1863
Adj Flow Rate, veh/h	3	0	4				14	698	11	0	581	5
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2				2	2	2	0	2	2
Cap, veh/h	591	0	516				37	975	15	0	831	1215
Arrive On Green	0.33	0.00	0.33				0.02	0.53	0.52	0.00	0.45	0.43
Sat Flow, veh/h	1774	0	1548				1774	1828	29	0	1863	1583
Grp Volume(v), veh/h	3	0	4				14	0	709	0	581	5
Grp Sat Flow(s),veh/h/ln	1774	0	1548				1774	0	1857	0	1863	1583
Q Serve(g_s), s	0.1	0.0	0.1				0.5	0.0	17.3	0.0	15.1	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.1				0.5	0.0	17.3	0.0	15.1	0.0
Prop In Lane	1.00		1.00				1.00		0.02	0.00		1.00
Lane Grp Cap(c), veh/h	591	0	516				37	0	990	0	831	1215
V/C Ratio(X)	0.01	0.00	0.01				0.38	0.00	0.72	0.00	0.70	0.00
Avail Cap(c_a), veh/h	591	0	516				177	0	990	0	831	1215
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.91	0.00	0.91	0.00	0.79	0.79
Uniform Delay (d), s/veh	13.4	0.0	13.4				29.0	0.0	10.6	0.0	13.4	1.6
Incr Delay (d2), s/veh	0.0	0.0	0.0				2.2	0.0	4.0	0.0	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0				0.3	0.0	9.8	0.0	8.5	0.0
LnGrp Delay(d),s/veh	13.4	0.0	13.4				31.2	0.0	14.6	0.0	17.3	1.6
LnGrp LOS	B		B				C		B		B	A
Approach Vol, veh/h		7						723			586	
Approach Delay, s/veh		13.4						14.9			17.1	
Approach LOS		B						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		36.0		24.0	5.2	30.8		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 31		20.0	6.0	* 21		
Max Q Clear Time (g_c+I1), s		19.3		2.1	2.5	17.1		
Green Ext Time (p_c), s		6.3		0.0	0.0	2.2		

Intersection Summary			
HCM 2010 Ctrl Delay			15.9
HCM 2010 LOS			B

Notes

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* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
8: Camino Pablo & Claremont Ave

Cumulative Plus Project Midday

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	8	30	29	637	527	3
Future Volume (veh/h)	8	30	29	637	527	3
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1900
Adj Flow Rate, veh/h	9	9	31	685	567	3
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	214	214	70	1107	915	5
Arrive On Green	0.28	0.28	0.04	0.60	1.00	0.98
Sat Flow, veh/h	773	773	1757	1845	1833	10
Grp Volume(v), veh/h	19	0	31	685	0	570
Grp Sat Flow(s),veh/h/ln	1633	0	1757	1845	0	1843
Q Serve(g_s), s	0.6	0.0	1.1	15.4	0.0	0.1
Cycle Q Clear(g_c), s	0.6	0.0	1.1	15.4	0.0	0.1
Prop In Lane	0.47	0.47	1.00			0.01
Lane Grp Cap(c), veh/h	452	0	70	1107	0	919
V/C Ratio(X)	0.04	0.00	0.45	0.62	0.00	0.62
Avail Cap(c_a), veh/h	452	0	162	1107	0	919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.63	0.63	0.00	0.84
Uniform Delay (d), s/veh	17.2	0.0	30.5	8.3	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	1.1	1.7	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.6	8.1	0.0	0.7
LnGrp Delay(d),s/veh	17.4	0.0	31.6	9.9	0.0	2.7
LnGrp LOS	B		C	A		A
Approach Vol, veh/h	19			716	570	
Approach Delay, s/veh	17.4			10.9	2.7	
Approach LOS	B			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		43.0		22.0	6.6	36.4		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 38		18.0	6.0	* 28		
Max Q Clear Time (g_c+I1), s		17.4		2.6	3.1	2.1		
Green Ext Time (p_c), s		8.7		0.0	0.0	7.7		

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

Cumulative Plus Project Midday

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		↱			↰
Traffic Volume (veh/h)	35	15	620	25	9	495
Future Volume (veh/h)	35	15	620	25	9	495
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.97		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1845
Adj Flow Rate, veh/h	38	5	681	25	10	544
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	505	66	952	35	62	979
Arrive On Green	0.34	0.34	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1493	196	1768	65	11	1818
Grp Volume(v), veh/h	44	0	0	706	554	0
Grp Sat Flow(s),veh/h/ln	1729	0	0	1833	1829	0
Q Serve(g_s), s	1.1	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.1	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.86	0.11		0.04	0.02	
Lane Grp Cap(c), veh/h	585	0	0	987	1041	0
V/C Ratio(X)	0.08	0.00	0.00	0.72	0.53	0.00
Avail Cap(c_a), veh/h	585	0	0	987	1041	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.78	0.86	0.00
Uniform Delay (d), s/veh	14.6	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.0	3.5	1.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	1.0	0.5	0.0
LnGrp Delay(d),s/veh	14.8	0.0	0.0	3.5	1.7	0.0
LnGrp LOS	B			A	A	
Approach Vol, veh/h	44		706			554
Approach Delay, s/veh	14.8		3.5			1.7
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		39.0				39.0		26.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 34				* 34		22.0
Max Q Clear Time (g_c+I1), s		2.0				2.0		3.1
Green Ext Time (p_c), s		8.4				6.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	3.1
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	0	0	2	4	0	1	1	631	3	3	498	0
Future Volume (veh/h)	0	0	2	4	0	1	1	631	3	3	498	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	0	0	1	4	0	0	1	686	3	3	541	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	0	447	522	0	0	56	1083	5	57	1086	0
Arrive On Green	0.00	0.00	0.29	0.29	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Sat Flow, veh/h	0	0	1529	1406	0	0	0	1852	8	2	1858	0
Grp Volume(v), veh/h	0	0	1	4	0	0	690	0	0	544	0	0
Grp Sat Flow(s),veh/h/ln	0	0	1529	1406	0	0	1861	0	0	1860	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.00		1.00	1.00		0.00	0.00		0.00	0.01		0.00
Lane Grp Cap(c), veh/h	0	0	447	522	0	0	1143	0	0	1143	0	0
V/C Ratio(X)	0.00	0.00	0.00	0.01	0.00	0.00	0.60	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	0	0	447	522	0	0	1143	0	0	1143	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.63	0.00	0.00	0.86	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	16.3	16.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.5	0.0	0.0	0.4	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	16.3	16.4	0.0	0.0	1.5	0.0	0.0	1.2	0.0	0.0
LnGrp LOS			B	B			A			A		
Approach Vol, veh/h		1			4			690			544	
Approach Delay, s/veh		16.3			16.4			1.5			1.2	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		42.0		23.0		42.0		23.0
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 37		19.0		* 37		19.0
Max Q Clear Time (g_c+I1), s		2.0		2.0		2.0		2.2
Green Ext Time (p_c), s		8.3		0.0		5.9		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			1.4
HCM 2010 LOS			A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
11: Camino Pablo & Monte Vista Rd

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	80	1	10	5	0	10	10	622	0	0	486	3
Future Volume (veh/h)	80	1	10	5	0	10	10	622	0	0	486	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	0	0	1863	1900
Adj Flow Rate, veh/h	90	1	2	6	0	0	11	699	0	0	546	3
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	219	1	2	246	0	0	164	1485	0	0	1191	7
Arrive On Green	0.08	0.08	0.08	0.08	0.00	0.00	0.12	1.00	0.00	0.00	0.64	0.64
Sat Flow, veh/h	1385	15	31	1701	0	0	1774	1863	0	0	1851	10
Grp Volume(v), veh/h	93	0	0	6	0	0	11	699	0	0	0	549
Grp Sat Flow(s),veh/h/ln	1431	0	0	1701	0	0	1774	1863	0	0	0	1861
Q Serve(g_s), s	3.9	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	9.7
Cycle Q Clear(g_c), s	4.1	0.0	0.0	0.2	0.0	0.0	0.4	0.0	0.0	0.0	0.0	9.7
Prop In Lane	0.97		0.02	1.00		0.00	1.00		0.00	0.00		0.01
Lane Grp Cap(c), veh/h	223	0	0	246	0	0	164	1485	0	0	0	1197
V/C Ratio(X)	0.42	0.00	0.00	0.02	0.00	0.00	0.07	0.47	0.00	0.00	0.00	0.46
Avail Cap(c_a), veh/h	568	0	0	589	0	0	164	1485	0	0	0	1197
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.73	0.73	0.00	0.00	0.00	0.71
Uniform Delay (d), s/veh	29.4	0.0	0.0	27.6	0.0	0.0	26.0	0.0	0.0	0.0	0.0	5.9
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.0	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.1	0.0	0.0	0.2	0.3	0.0	0.0	0.0	5.2
LnGrp Delay(d),s/veh	29.9	0.0	0.0	27.6	0.0	0.0	26.6	0.8	0.0	0.0	0.0	6.8
LnGrp LOS	C			C			C	A				A
Approach Vol, veh/h		93			6			710			549	
Approach Delay, s/veh		29.9			27.6			1.2			6.8	
Approach LOS		C			C			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		55.8		9.2	10.0	45.8		9.2
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0
Max Green Setting (Gmax), s		* 35		21.0	6.0	* 25		21.0
Max Q Clear Time (g_c+I1), s		2.0		6.1	2.4	11.7		2.2
Green Ext Time (p_c), s		11.1		0.2	0.0	5.1		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			5.5
HCM 2010 LOS			A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
12: Camino Pablo & Wildcat Canyon Rd/Bear Creek Rd

Cumulative Plus Project Midday

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣		↰	↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	23	12	45	20	5	9	40	525	147	9	424	12
Future Volume (veh/h)	23	12	45	20	5	9	40	525	147	9	424	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	26	14	42	23	6	5	46	603	138	10	487	6
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	37	110	39	188	156	55	954	790	10	907	753
Arrive On Green	0.00	0.09	0.09	0.02	0.21	0.21	0.03	0.52	0.52	0.01	0.49	0.49
Sat Flow, veh/h	0	396	1187	1757	914	762	1757	1845	1528	1757	1845	1532
Grp Volume(v), veh/h	0	0	56	23	0	11	46	603	138	10	487	6
Grp Sat Flow(s),veh/h/ln	0	0	1583	1757	0	1676	1757	1845	1528	1757	1845	1532
Q Serve(g_s), s	0.0	0.0	1.5	0.6	0.0	0.2	1.2	10.4	2.1	0.3	8.0	0.1
Cycle Q Clear(g_c), s	0.0	0.0	1.5	0.6	0.0	0.2	1.2	10.4	2.1	0.3	8.0	0.1
Prop In Lane	0.00		0.75	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	146	39	0	344	55	954	790	10	907	753
V/C Ratio(X)	0.00	0.00	0.38	0.59	0.00	0.03	0.84	0.63	0.17	0.97	0.54	0.01
Avail Cap(c_a), veh/h	0	0	1706	955	0	1807	875	8022	6643	875	8022	6662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	18.9	21.4	0.0	14.0	21.3	7.6	5.7	21.9	7.7	5.7
Incr Delay (d2), s/veh	0.0	0.0	0.6	5.1	0.0	0.0	12.0	1.0	0.1	70.6	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.7	0.3	0.0	0.1	0.7	5.5	0.9	0.3	4.2	0.0
LnGrp Delay(d),s/veh	0.0	0.0	19.5	26.5	0.0	14.1	33.3	8.6	5.8	92.5	8.4	5.7
LnGrp LOS			B	C		B	C	A	A	F	A	A
Approach Vol, veh/h		56			34			787			503	
Approach Delay, s/veh		19.5			22.5			9.6			10.1	
Approach LOS		B			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.3	26.8	5.0	8.1	5.4	25.7	0.0	13.1
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0
Max Q Clear Time (g_c+I1), s	2.3	12.4	2.6	3.5	3.2	10.0	0.0	2.2
Green Ext Time (p_c), s	0.0	8.5	0.0	0.2	0.0	4.8	0.0	0.0

Intersection Summary			
HCM 2010 Ctrl Delay			10.5
HCM 2010 LOS			B

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Cumulative Plus Project PM

Movement	EBL	EBT	EBR	WBL	WBT	WBR2	NBL2	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱		↰	↱	↰	↑↑↱		↰	↑↱	
Traffic Volume (vph)	44	31	14	31	8	193	24	1413	28	203	796	58
Future Volume (vph)	44	31	14	31	8	193	24	1413	28	203	796	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0	3.0		3.0	3.0	3.5	3.5		3.0	3.5	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		1.00	0.95	
Frpb, ped/bikes		1.00	0.95		1.00	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	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.97	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1810	1507		1792	1583	1770	5062		1770	3496	
Flt Permitted		0.81	1.00		0.68	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1503	1507		1268	1583	1770	5062		1770	3496	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	47	33	15	33	9	205	26	1503	30	216	847	62
RTOR Reduction (vph)	0	0	0	0	0	184	0	1	0	0	0	0
Lane Group Flow (vph)	0	80	15	0	42	21	26	1532	0	216	909	0
Confl. Peds. (#/hr)			17						13			
Confl. Bikes (#/hr)									4			7
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4		4						
Actuated Green, G (s)		17.2	17.2		17.2	17.2	4.7	41.5		24.3	60.6	
Effective Green, g (s)		18.2	18.2		18.2	18.2	5.7	42.5		25.3	61.6	
Actuated g/C Ratio		0.10	0.10		0.10	0.10	0.03	0.24		0.14	0.35	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.5	4.5		4.0	4.5	
Vehicle Extension (s)		2.0	2.0		2.0	2.0	2.0	2.0		2.0	4.0	
Lane Grp Cap (vph)		156	156		131	164	57	1227		255	1228	
v/s Ratio Prot							0.01	c0.30		c0.12	0.26	
v/s Ratio Perm		c0.05	0.01		0.03	0.01						
v/c Ratio		0.51	0.10		0.32	0.13	0.46	1.25		0.85	0.74	
Uniform Delay, d1		74.4	71.1		72.8	71.4	83.3	66.4		73.1	49.8	
Progression Factor		1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.2	0.1		0.5	0.1	2.1	118.9		21.3	2.6	
Delay (s)		75.5	71.2		73.3	71.5	85.4	185.3		94.4	52.4	
Level of Service		E	E		E	E	F	F		F	D	
Approach Delay (s)		74.9			71.8			183.6			60.5	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	105.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	175.3	Sum of lost time (s)	12.5
Intersection Capacity Utilization	99.7%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
1: Camino Pablo & Brookwood Rd & SR-24 EB Off-Ramp

Cumulative Plus Project PM

Movement	SEL2	SEL	SER	SER2
Lane Configurations	↰	↰↱		
Traffic Volume (vph)	599	104	411	14
Future Volume (vph)	599	104	411	14
Ideal Flow (vphpl)	1900	1900	1900	1900
Total Lost time (s)	2.5	2.5		
Lane Util. Factor	0.95	0.95		
Frpb, ped/bikes	1.00	1.00		
Flpb, ped/bikes	1.00	1.00		
Frt	1.00	0.89		
Flt Protected	0.95	0.99		
Satd. Flow (prot)	1681	1557		
Flt Permitted	0.95	0.99		
Satd. Flow (perm)	1681	1557		
Peak-hour factor, PHF	0.94	0.94	0.94	0.94
Adj. Flow (vph)	637	111	437	15
RTOR Reduction (vph)	0	0	0	0
Lane Group Flow (vph)	573	627	0	0
Confl. Peds. (#/hr)		17		
Confl. Bikes (#/hr)				
Heavy Vehicles (%)	2%	2%	2%	2%
Turn Type	Prot	Prot		
Protected Phases	3	3		
Permitted Phases				
Actuated Green, G (s)	76.3	76.3		
Effective Green, g (s)	77.3	77.3		
Actuated g/C Ratio	0.44	0.44		
Clearance Time (s)	3.5	3.5		
Vehicle Extension (s)	3.0	3.0		
Lane Grp Cap (vph)	741	686		
v/s Ratio Prot	0.34	c0.40		
v/s Ratio Perm				
v/c Ratio	0.77	0.91		
Uniform Delay, d1	41.6	45.9		
Progression Factor	1.00	1.00		
Incremental Delay, d2	5.0	16.7		
Delay (s)	46.6	62.6		
Level of Service	D	E		
Approach Delay (s)		54.9		
Approach LOS		D		

Intersection Summary

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↰	↰↑	↱		↑↑	↱	↰	↑↑	↱
Traffic Volume (veh/h)	0	0	0	323	135	52	0	1408	524	66	620	364
Future Volume (veh/h)	0	0	0	323	135	52	0	1408	524	66	620	364
Number				3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1863	1863	1863	0	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h				252	293	57	0	1547	433	73	681	0
Adj No. of Lanes				1	1	1	0	2	1	1	2	1
Peak Hour Factor				0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %				2	2	2	0	2	2	2	2	2
Cap, veh/h				420	441	601	0	1798	1179	259	2443	1093
Arrive On Green				0.24	0.24	0.24	0.00	0.51	0.51	0.15	0.69	0.00
Sat Flow, veh/h				1774	1863	1563	0	3632	1583	1774	3539	1583
Grp Volume(v), veh/h				252	293	57	0	1547	433	73	681	0
Grp Sat Flow(s),veh/h/ln				1774	1863	1563	0	1770	1583	1774	1770	1583
Q Serve(g_s), s				13.9	15.6	2.6	0.0	41.9	10.5	4.0	8.1	0.0
Cycle Q Clear(g_c), s				13.9	15.6	2.6	0.0	41.9	10.5	4.0	8.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h				420	441	601	0	1798	1179	259	2443	1093
V/C Ratio(X)				0.60	0.66	0.09	0.00	0.86	0.37	0.28	0.28	0.00
Avail Cap(c_a), veh/h				420	441	601	0	1967	1255	259	2612	1169
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh				37.2	37.9	21.7	0.0	23.6	4.9	41.8	6.5	0.0
Incr Delay (d2), s/veh				6.2	7.7	0.3	0.0	3.9	0.2	2.7	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.5	9.0	1.2	0.0	21.4	8.8	2.2	3.9	0.0
LnGrp Delay(d),s/veh				43.4	45.6	22.0	0.0	27.5	5.1	44.5	6.6	0.0
LnGrp LOS				D	D	C		C	A	D	A	
Approach Vol, veh/h					602			1980			754	
Approach Delay, s/veh					42.5			22.6			10.3	
Approach LOS					D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2				6		8				
Phs Duration (G+Y+Rc), s	20.0	59.7				79.7		30.0				
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0				
Max Green Setting (Gmax), s	15.0	60.0				80.0		25.0				
Max Q Clear Time (g_c+I1), s	6.0	43.9				10.1		17.6				
Green Ext Time (p_c), s	0.1	10.8				4.8		1.7				
Intersection Summary												
HCM 2010 Ctrl Delay			23.4									
HCM 2010 LOS			C									
Notes												

User approved volume balancing among the lanes for turning movement.

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	199	52	1246	214	47	851
Future Volume (veh/h)	199	52	1246	214	47	851
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1456	1845	1845	1845
Adj Flow Rate, veh/h	214	52	1340	157	51	915
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	463	813	1067	604	449	2358
Arrive On Green	0.26	0.26	0.39	0.39	0.26	0.67
Sat Flow, veh/h	1757	1568	2840	1568	1757	3597
Grp Volume(v), veh/h	214	52	1340	157	51	915
Grp Sat Flow(s),veh/h/ln	1757	1568	1383	1568	1757	1752
Q Serve(g_s), s	12.8	2.1	48.3	8.6	2.8	14.5
Cycle Q Clear(g_c), s	12.8	2.1	48.3	8.6	2.8	14.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	463	813	1067	604	449	2358
V/C Ratio(X)	0.46	0.06	1.26	0.26	0.11	0.39
Avail Cap(c_a), veh/h	463	813	1067	604	449	2358
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	15.0	38.5	26.3	35.8	9.1
Incr Delay (d2), s/veh	3.3	0.2	123.1	0.5	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.9	36.6	3.8	1.4	7.1
LnGrp Delay(d),s/veh	42.0	15.2	161.6	26.8	36.3	9.3
LnGrp LOS	D	B	F	C	D	A
Approach Vol, veh/h	266		1497			966
Approach Delay, s/veh	36.8		147.5			10.7
Approach LOS	D		F			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	36.0	52.3				88.3		37.0
Change Period (Y+Rc), s	4.0	6.3				6.3		4.0
Max Green Setting (Gmax), s	32.0	46.0				46.0		33.0
Max Q Clear Time (g_c+I1), s	4.8	50.3				16.5		14.8
Green Ext Time (p_c), s	0.0	0.0				12.5		0.5

Intersection Summary			
HCM 2010 Ctrl Delay			88.3
HCM 2010 LOS			F

HCM 2010 Signalized Intersection Summary
4: Camino Pablo & El Toyonal/Orinda Way

Cumulative Plus Project PM

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑	↱		↰↑	↱	↰	↑↑	↱	↰	↑↱	
Traffic Volume (veh/h)	17	20	83	9	52	166	49	1244	5	62	806	9
Future Volume (veh/h)	17	20	83	9	52	166	49	1244	5	62	806	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	0.99		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845	1900	1845	1845	1845	1553	1845	1845	1845	1900
Adj Flow Rate, veh/h	18	22	25	10	57	168	53	1352	2	67	876	9
Adj No. of Lanes	0	1	1	0	1	1	1	2	1	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	195	226	418	80	432	817	456	1156	600	444	1350	14
Arrive On Green	0.28	0.27	0.27	0.28	0.27	0.27	0.26	0.39	0.39	0.25	0.38	0.37
Sat Flow, veh/h	584	825	1528	190	1581	1539	1757	2951	1533	1757	3553	37
Grp Volume(v), veh/h	40	0	25	67	0	168	53	1352	2	67	432	453
Grp Sat Flow(s),veh/h/ln	1409	0	1528	1771	0	1539	1757	1476	1533	1757	1752	1837
Q Serve(g_s), s	0.0	0.0	1.8	0.0	0.0	8.5	3.4	57.3	0.1	4.3	29.7	29.7
Cycle Q Clear(g_c), s	4.0	0.0	1.8	4.0	0.0	8.5	3.4	57.3	0.1	4.3	29.7	29.7
Prop In Lane	0.45		1.00	0.15		1.00	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	426	0	418	519	0	817	456	1156	600	444	666	698
V/C Ratio(X)	0.09	0.00	0.06	0.13	0.00	0.21	0.12	1.17	0.00	0.15	0.65	0.65
Avail Cap(c_a), veh/h	426	0	418	519	0	817	456	1156	600	444	674	707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	0.0	39.3	40.0	0.0	18.4	41.3	44.5	27.1	42.4	37.3	37.3
Incr Delay (d2), s/veh	0.4	0.0	0.3	0.5	0.0	0.6	0.5	85.9	0.0	0.7	3.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.8	2.1	0.0	3.7	1.7	37.1	0.1	2.2	15.0	15.7
LnGrp Delay(d),s/veh	39.8	0.0	39.5	40.6	0.0	19.0	41.8	130.4	27.1	43.2	40.3	40.2
LnGrp LOS	D		D	D		B	D	F	C	D	D	D
Approach Vol, veh/h		65			235			1407			952	
Approach Delay, s/veh		39.7			25.1			126.9			40.5	
Approach LOS		D			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	41.0	61.3		44.0	42.0	60.3		44.0
Change Period (Y+Rc), s	4.0	6.3		4.0	4.0	* 6.3		4.0
Max Green Setting (Gmax), s	37.0	55.0		40.0	38.0	* 55		30.0
Max Q Clear Time (g_c+I1), s	6.3	59.3		6.0	5.4	31.7		10.5
Green Ext Time (p_c), s	0.1	0.0		0.3	0.1	10.0		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	84.8
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
5: Camino Pablo & Miner Rd

Cumulative Plus Project PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑↑	↱	↰	↑↑
Traffic Volume (veh/h)	174	46	1215	212	45	703
Future Volume (veh/h)	174	46	1215	212	45	703
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1359	1845	1845	1845
Adj Flow Rate, veh/h	196	34	1365	198	51	790
Adj No. of Lanes	1	1	2	1	1	2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	392	615	1332	806	297	2508
Arrive On Green	0.22	0.22	0.52	0.52	0.17	0.72
Sat Flow, veh/h	1757	1568	2650	1563	1757	3597
Grp Volume(v), veh/h	196	34	1365	198	51	790
Grp Sat Flow(s),veh/h/ln	1757	1568	1291	1563	1757	1752
Q Serve(g_s), s	12.7	1.8	67.1	9.1	3.2	10.8
Cycle Q Clear(g_c), s	12.7	1.8	67.1	9.1	3.2	10.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	392	615	1332	806	297	2508
V/C Ratio(X)	0.50	0.06	1.02	0.25	0.17	0.31
Avail Cap(c_a), veh/h	392	615	1332	806	297	2508
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	24.6	31.5	17.5	46.3	6.8
Incr Delay (d2), s/veh	4.5	0.2	31.2	0.3	1.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	0.8	29.6	4.0	1.7	5.2
LnGrp Delay(d),s/veh	48.7	24.8	62.7	17.8	47.5	6.9
LnGrp LOS	D	C	F	B	D	A
Approach Vol, veh/h	230		1563			841
Approach Delay, s/veh	45.2		57.0			9.4
Approach LOS	D		E			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	26.0	71.1				97.1		33.0
Change Period (Y+Rc), s	4.0	5.1				5.1		4.0
Max Green Setting (Gmax), s	22.0	66.0				66.0		29.0
Max Q Clear Time (g_c+I1), s	5.2	69.1				12.8		14.7
Green Ext Time (p_c), s	0.0	0.0				13.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	40.8
HCM 2010 LOS	D

	↗	↘	↖	↑	↓	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↰	↱	
Traffic Volume (veh/h)	0	1	0	1261	748	0
Future Volume (veh/h)	0	1	0	1261	748	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1900	1900	1845	1845	1900
Adj Flow Rate, veh/h	0	1	0	1287	763	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	1.00	1.00	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	0	3	0	1691	1691	0
Arrive On Green	0.00	0.00	0.00	0.92	1.00	0.00
Sat Flow, veh/h	0	851	0	1845	1845	0
Grp Volume(v), veh/h	0	2	0	1287	763	0
Grp Sat Flow(s),veh/h/ln	0	1703	0	1845	1845	0
Q Serve(g_s), s	0.0	0.1	0.0	19.2	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.1	0.0	19.2	0.0	0.0
Prop In Lane	0.00	0.50	0.00			0.00
Lane Grp Cap(c), veh/h	0	6	0	1691	1691	0
V/C Ratio(X)	0.00	0.36	0.00	0.76	0.45	0.00
Avail Cap(c_a), veh/h	0	431	0	1691	1691	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.67	0.00
Uniform Delay (d), s/veh	0.0	49.7	0.0	1.1	0.0	0.0
Incr Delay (d2), s/veh	0.0	14.2	0.0	3.3	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.1	0.0	10.5	0.3	0.0
LnGrp Delay(d),s/veh	0.0	63.9	0.0	4.4	0.6	0.0
LnGrp LOS		E		A	A	
Approach Vol, veh/h	2			1287	763	
Approach Delay, s/veh	63.9			4.4	0.6	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		95.7		4.3		95.7		
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		
Max Green Setting (Gmax), s		* 66		25.3		* 66		
Max Q Clear Time (g_c+I1), s		21.2		2.1		2.0		
Green Ext Time (p_c), s		38.3		0.0		18.9		

Intersection Summary						
HCM 2010 Ctrl Delay			3.1			
HCM 2010 LOS			A			

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
7: Camino Pablo & Camino Pablo Frontage Road/South Entrance

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱					↰	↱			↑	↱
Traffic Volume (veh/h)	1	0	23	0	0	0	18	1235	8	0	725	4
Future Volume (veh/h)	1	0	23	0	0	0	18	1235	8	0	725	4
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900				1845	1845	1900	0	1845	1845
Adj Flow Rate, veh/h	1	0	5				19	1328	9	0	780	3
Adj No. of Lanes	1	1	0				1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93				0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3				3	3	3	0	3	3
Cap, veh/h	351	0	313				105	1318	9	0	1144	1275
Arrive On Green	0.20	0.00	0.20				0.08	0.96	0.95	0.00	1.00	1.00
Sat Flow, veh/h	1757	0	1564				1757	1830	12	0	1845	1568
Grp Volume(v), veh/h	1	0	5				19	0	1337	0	780	3
Grp Sat Flow(s),veh/h/ln	1757	0	1564				1757	0	1842	0	1845	1568
Q Serve(g_s), s	0.0	0.0	0.3				1.0	0.0	72.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.3				1.0	0.0	72.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00				1.00		0.01	0.00		1.00
Lane Grp Cap(c), veh/h	351	0	313				105	0	1327	0	1144	1275
V/C Ratio(X)	0.00	0.00	0.02				0.18	0.00	1.01	0.00	0.68	0.00
Avail Cap(c_a), veh/h	351	0	313				105	0	1327	0	1144	1275
HCM Platoon Ratio	1.00	1.00	1.00				1.33	1.33	1.33	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00				0.63	0.00	0.63	0.00	0.68	0.68
Uniform Delay (d), s/veh	32.0	0.0	31.9				43.7	0.0	2.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1				2.3	0.0	21.5	0.0	2.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.1				0.6	0.0	33.5	0.0	0.7	0.0
LnGrp Delay(d),s/veh	32.0	0.0	32.0				46.1	0.0	23.6	0.0	2.2	0.0
LnGrp LOS	C		C				D		F		A	A
Approach Vol, veh/h		6						1356			783	
Approach Delay, s/veh		32.0						23.9			2.2	
Approach LOS		C						C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		76.0		24.0	10.0	66.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 71		20.0	6.0	* 61		
Max Q Clear Time (g_c+I1), s		74.0		2.3	3.0	2.0		
Green Ext Time (p_c), s		0.0		0.0	0.0	15.9		

Intersection Summary			
HCM 2010 Ctrl Delay			16.0
HCM 2010 LOS			B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
8: Camino Pablo & Claremont Ave

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		↰	↑	↱	
Traffic Volume (veh/h)	6	32	50	1186	697	13
Future Volume (veh/h)	6	32	50	1186	697	13
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.96	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1699	1845	1900
Adj Flow Rate, veh/h	6	6	54	1275	749	13
Adj No. of Lanes	0	0	1	1	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	143	143	141	1240	1103	19
Arrive On Green	0.19	0.19	0.11	0.97	1.00	1.00
Sat Flow, veh/h	755	755	1757	1699	1808	31
Grp Volume(v), veh/h	13	0	54	1275	0	762
Grp Sat Flow(s),veh/h/ln	1635	0	1757	1699	0	1839
Q Serve(g_s), s	0.6	0.0	2.9	73.0	0.0	0.0
Cycle Q Clear(g_c), s	0.6	0.0	2.9	73.0	0.0	0.0
Prop In Lane	0.46	0.46	1.00			0.02
Lane Grp Cap(c), veh/h	311	0	141	1240	0	1122
V/C Ratio(X)	0.04	0.00	0.38	1.03	0.00	0.68
Avail Cap(c_a), veh/h	311	0	141	1240	0	1122
HCM Platoon Ratio	1.00	1.00	1.33	1.33	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.00	0.09
Uniform Delay (d), s/veh	33.1	0.0	42.4	1.5	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	0.7	16.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	1.4	24.5	0.0	0.1
LnGrp Delay(d),s/veh	33.3	0.0	43.1	17.8	0.0	0.3
LnGrp LOS	C		D	F		A
Approach Vol, veh/h	13			1329	762	
Approach Delay, s/veh	33.3			18.8	0.3	
Approach LOS	C			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		77.0		23.0	12.0	65.0		
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		
Max Green Setting (Gmax), s		* 72		19.0	8.0	* 60		
Max Q Clear Time (g_c+I1), s		75.0		2.6	4.9	2.0		
Green Ext Time (p_c), s		0.0		0.0	0.0	15.2		

Intersection Summary			
HCM 2010 Ctrl Delay			12.2
HCM 2010 LOS			B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary
9: Camino Pablo & Manzanita Dr

Cumulative Plus Project PM

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↖↗		↑↱			↰↑
Traffic Volume (veh/h)	51	22	1167	25	8	659
Future Volume (veh/h)	51	22	1167	25	8	659
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	0.98		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1900	1900	1262
Adj Flow Rate, veh/h	54	7	1241	26	9	701
Adj No. of Lanes	0	0	1	0	0	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	3	3	3	3
Cap, veh/h	392	51	1188	25	36	552
Arrive On Green	0.26	0.26	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1506	195	1800	38	0	836
Grp Volume(v), veh/h	62	0	0	1267	710	0
Grp Sat Flow(s),veh/h/ln	1729	0	0	1838	836	0
Q Serve(g_s), s	2.8	0.0	0.0	66.0	0.0	0.0
Cycle Q Clear(g_c), s	2.8	0.0	0.0	66.0	65.8	0.0
Prop In Lane	0.87	0.11		0.02	0.01	
Lane Grp Cap(c), veh/h	450	0	0	1213	586	0
V/C Ratio(X)	0.14	0.00	0.00	1.04	1.21	0.00
Avail Cap(c_a), veh/h	450	0	0	1213	586	0
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.09	0.65	0.00
Uniform Delay (d), s/veh	28.4	0.0	0.0	0.0	19.1	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.0	22.8	105.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	7.7	31.7	0.0
LnGrp Delay(d),s/veh	29.0	0.0	0.0	22.8	124.2	0.0
LnGrp LOS	C			F	F	
Approach Vol, veh/h	62		1267			710
Approach Delay, s/veh	29.0		22.8			124.2
Approach LOS	C		C			F

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		70.0				70.0		30.0
Change Period (Y+Rc), s		* 4.7				* 4.7		4.0
Max Green Setting (Gmax), s		* 65				* 65		26.0
Max Q Clear Time (g_c+I1), s		68.0				67.8		4.8
Green Ext Time (p_c), s		0.0				0.0		0.1

Intersection Summary			
HCM 2010 Ctrl Delay			58.3
HCM 2010 LOS			E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱			✥			✥	
Traffic Volume (veh/h)	45	0	5	0	0	2	5	1147	37	0	668	5
Future Volume (veh/h)	45	0	5	0	0	2	5	1147	37	0	668	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.95		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1900	1275	1900	1900	1176	1900
Adj Flow Rate, veh/h	47	0	0	0	0	0	5	1207	38	0	703	5
Adj No. of Lanes	0	1	0	1	1	0	0	1	0	0	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	0	0	72	81	0	37	1074	34	0	1022	7
Arrive On Green	0.05	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Sat Flow, veh/h	1339	0	0	1412	1863	0	1	1226	38	0	1167	8
Grp Volume(v), veh/h	47	0	0	0	0	0	1250	0	0	0	0	708
Grp Sat Flow(s),veh/h/ln	1339	0	0	1412	1863	0	1266	0	0	0	0	1175
Q Serve(g_s), s	3.5	0.0	0.0	0.0	0.0	0.0	21.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	0.0	0.0	0.0	0.0	87.4	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.00	0.00		0.03	0.00		0.01
Lane Grp Cap(c), veh/h	137	0	0	72	81	0	1143	0	0	0	0	1030
V/C Ratio(X)	0.34	0.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.69
Avail Cap(c_a), veh/h	306	0	0	250	317	0	1143	0	0	0	0	1030
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.22
Uniform Delay (d), s/veh	47.1	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	43.8	0.0	0.0	0.0	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.0	0.0	0.0	33.5	0.0	0.0	0.0	0.0	0.2
LnGrp Delay(d),s/veh	47.7	0.0	0.0	0.0	0.0	0.0	45.1	0.0	0.0	0.0	0.0	0.8
LnGrp LOS	D						F					A
Approach Vol, veh/h		47			0			1250			708	
Approach Delay, s/veh		47.7			0.0			45.1			0.8	
Approach LOS		D						D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		91.6		8.4		91.6		8.4
Change Period (Y+Rc), s		* 4.7		4.0		* 4.7		4.0
Max Green Setting (Gmax), s		* 74		17.0		* 74		17.0
Max Q Clear Time (g_c+I1), s		89.4		5.5		2.0		0.0
Green Ext Time (p_c), s		0.0		0.1		9.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↑			↱	
Traffic Volume (veh/h)	65	0	4	3	0	5	14	1180	0	0	666	3
Future Volume (veh/h)	65	0	4	3	0	5	14	1180	0	0	666	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1618	0	0	1176	1900
Adj Flow Rate, veh/h	66	0	0	3	0	0	14	1192	0	0	673	3
Adj No. of Lanes	0	1	0	0	1	0	1	1	0	0	1	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	0	0	2	2
Cap, veh/h	369	0	0	382	0	0	106	1149	0	0	714	3
Arrive On Green	0.22	0.00	0.00	0.22	0.00	0.00	0.06	0.71	0.00	0.00	0.61	0.60
Sat Flow, veh/h	1414	0	0	1476	0	0	1774	1618	0	0	1170	5
Grp Volume(v), veh/h	66	0	0	3	0	0	14	1192	0	0	0	676
Grp Sat Flow(s),veh/h/ln	1414	0	0	1476	0	0	1774	1618	0	0	0	1175
Q Serve(g_s), s	3.7	0.0	0.0	0.0	0.0	0.0	0.7	71.0	0.0	0.0	0.0	52.8
Cycle Q Clear(g_c), s	3.8	0.0	0.0	0.1	0.0	0.0	0.7	71.0	0.0	0.0	0.0	52.8
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.00	0.00		0.00
Lane Grp Cap(c), veh/h	376	0	0	389	0	0	106	1149	0	0	0	717
V/C Ratio(X)	0.18	0.00	0.00	0.01	0.00	0.00	0.13	1.04	0.00	0.00	0.00	0.94
Avail Cap(c_a), veh/h	376	0	0	389	0	0	106	1149	0	0	0	717
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.09	0.09	0.00	0.00	0.00	0.93
Uniform Delay (d), s/veh	32.5	0.0	0.0	31.1	0.0	0.0	44.5	14.5	0.0	0.0	0.0	17.9
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.0	0.0	0.0	0.2	20.3	0.0	0.0	0.0	21.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	0.0	0.1	0.0	0.0	0.4	37.4	0.0	0.0	0.0	21.1
LnGrp Delay(d),s/veh	33.5	0.0	0.0	31.1	0.0	0.0	44.8	34.8	0.0	0.0	0.0	39.0
LnGrp LOS	C			C			D	F				D
Approach Vol, veh/h		66			3			1206			676	
Approach Delay, s/veh		33.5			31.1			34.9			39.0	
Approach LOS		C			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		8
Phs Duration (G+Y+Rc), s		75.0		25.0	10.0	65.0		25.0
Change Period (Y+Rc), s		* 4.7		4.0	4.0	* 4.7		4.0
Max Green Setting (Gmax), s		* 70		21.0	6.0	* 60		21.0
Max Q Clear Time (g_c+I1), s		73.0		5.8	2.7	54.8		2.1
Green Ext Time (p_c), s		0.0		0.1	0.0	3.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	36.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

	↗	→	↘	↙	←	↖	↖	↑	↗	↘	↓	↙
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥		↰	↱		↰	↑	↱	↰	↑	↱
Traffic Volume (veh/h)	164	104	155	27	8	11	20	1120	110	11	487	8
Future Volume (veh/h)	164	104	155	27	8	11	20	1120	110	11	487	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	167	106	152	28	8	2	20	1143	101	11	497	5
Adj No. of Lanes	0	1	0	1	1	0	1	1	1	1	1	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	125	179	164	418	104	26	1218	1012	14	1206	1004
Arrive On Green	0.00	0.18	0.18	0.09	0.29	0.29	0.01	0.65	0.65	0.01	0.65	0.65
Sat Flow, veh/h	0	680	975	1774	1431	358	1774	1863	1547	1774	1863	1551
Grp Volume(v), veh/h	0	0	258	28	0	10	20	1143	101	11	497	5
Grp Sat Flow(s),veh/h/ln	0	0	1655	1774	0	1789	1774	1863	1547	1774	1863	1551
Q Serve(g_s), s	0.0	0.0	39.0	3.8	0.0	1.0	2.9	142.2	6.3	1.6	33.2	0.3
Cycle Q Clear(g_c), s	0.0	0.0	39.0	3.8	0.0	1.0	2.9	142.2	6.3	1.6	33.2	0.3
Prop In Lane	0.00		0.59	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	0	0	304	164	0	522	26	1218	1012	14	1206	1004
V/C Ratio(X)	0.00	0.00	0.85	0.17	0.00	0.02	0.78	0.94	0.10	0.81	0.41	0.00
Avail Cap(c_a), veh/h	0	0	304	164	0	522	151	1381	1147	151	1381	1150
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	102.4	108.3	0.0	65.3	127.2	40.1	16.6	128.3	22.0	16.2
Incr Delay (d2), s/veh	0.0	0.0	24.4	2.2	0.0	0.1	16.9	11.9	0.1	33.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	20.0	2.0	0.0	0.5	1.6	77.1	2.7	0.9	17.2	0.1
LnGrp Delay(d),s/veh	0.0	0.0	126.7	110.5	0.0	65.4	144.0	52.0	16.6	161.8	22.3	16.2
LnGrp LOS			F	F		E	F	D	B	F	C	B
Approach Vol, veh/h		258			38			1264			513	
Approach Delay, s/veh		126.7			98.7			50.7			25.2	
Approach LOS		F			F			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	173.4	28.0	51.6	7.8	171.6	0.0	79.6
Change Period (Y+Rc), s	4.0	6.0	4.0	4.6	4.0	6.0	4.0	4.6
Max Green Setting (Gmax), s	22.0	190.0	24.0	47.0	22.0	190.0	24.0	47.0
Max Q Clear Time (g_c+I1), s	3.6	144.2	5.8	41.0	4.9	35.2	0.0	3.0
Green Ext Time (p_c), s	0.0	23.1	0.0	0.5	0.0	4.9	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		54.7
HCM 2010 LOS		D

APPENDIX H

Summary of Orinda Water Treatment Plant Alternatives from the WTTIP EIR

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Background

Chapter 6, Analysis of Alternatives, of the Water Treatment and Transmission Improvements Program (WTTIP) Environmental Impact Report (EIR) describes and evaluates alternatives to the WTTIP, describes the alternatives screening process and alternatives eliminated from consideration, and compares the environmental merits of the WTTIP alternatives. WTTIP EIR Table 6-1 lists all of the alternatives considered in the WTTIP EIR, indicates whether the alternatives were evaluated in the EIR or were eliminated, and the source of the alternative.

As shown in Table H-1, the WTTIP EIR considered nine alternatives involving the Orinda Water Treatment Plant (WTP), six of which were eliminated from consideration and three of which were evaluated in the EIR, including the "project" (Alternative 1, described below) that was adopted by the EBMUD Board of Directors on December 19, 2006. This Supplemental EIR summarizes and incorporates by reference the alternatives evaluation contained in the WTTIP EIR.

TABLE H-1
SUMMARY OF WTTIP ALTERNATIVES CONSIDERED

		Evaluated or Eliminated?			Source	
	Proposed Project/Alternative	**Evaluated in WTTIP EIR Chapters 2–5**	**Evaluated in WTTIP EIR Chapter 6**	**Eliminated (see WTTIP EIR Section 6.10 for reasons)**	**Lamorinda Facilities Plan**	**Other[a]**
ALTERNATIVES INVOLVING WATER TREATMENT PLANTS						
Alternatives Involving Systemwide Changes	Alternative 1 – Supply from Orinda and Lafayette WTPs	X			X	
	Alternative 2 – Supply from Orinda WTP	X			X	
	Alternative 4 – Supply from Lafayette and Orinda WTPs			X	X	
	Alternative 6 – Supply from Orinda and Walnut Creek WTPs			X	X	
Other Water Treatment Plant Improvement Alternatives	Relocate Orinda WTP to Scow Canyon			X		X
	Relocate Orinda WTP near Briones Dam			X		X
	Eliminate Transmission of Treated Water to West of Hills from Orinda WTP			X		X
	Expand Lafayette WTP and Decommission Orinda WTP			X		X
	Modified Orinda WTP Site Plan		X			X

NOTE:
[a] Includes alternatives suggested in responses to the Notice of Preparation, alternatives suggested at public meetings, alternatives developed by Jacobs Associates for the Orinda-Lafayette Aqueduct, and alternatives developed by EBMUD and EIR preparers.

Alternatives 1 and 2

Description. The WTTIP EIR evaluated Alternative 1 (Supply from Orinda and Lafayette WTPs) and Alternative 2 (Supply from Orinda WTP) at an equal level of detail. Both Alternatives 1 and 2 co-located the post-filtration ultraviolet (UV) disinfection and chlorine contact basin (CCB) facilities with a large clearwell[1] in the North Orinda Sports Field; the current Project would construct the UV disinfection and CCB facilities within the Orinda WTP. Alternatives 1 and 2 also proposed a backwash water recycle system[2] with corresponding emergency generator, a solids pumping plant and storage[3], a low lift pumping plant with a second clearwell that would act as a buffer between the filters and the pumping plant and an electrical substation to power the low-lift pumping plant[4], and high-rate sedimentation units[5] within the Orinda WTP; these components are not included in the current Project. The fundamental difference between Alternatives 1 and 2 was whether the Lafayette WTP would be retained and upgraded (Alternative 1) or decommissioned (Alternative 2). Table H-2 provides a summary of the actions at the Orinda WTP that were evaluated as part of Alternatives 1 and 2.

- **Alternative 1** involved retaining and upgrading the Lafayette WTP, as well as upgrading the Orinda, Sobrante, Walnut Creek, and Upper San Leandro WTPs. The proposed changes at these WTPs generally involved improvements to water treatment processes, treated water storage, and/or transmission. Refer to Figure H-1 for a site plan of the Orinda WTP with implementation of Alternative 1.

- **Alternative 2** involved decommissioning the Lafayette WTP. Customers served by the Lafayette WTP[6] would instead receive water from the Orinda WTP year-round. To accomplish this, EBMUD would modify Orinda WTP operations and construct a treated water storage facility (clearwell), pumping plant, and combination tunnel/pipeline (referred to as the Orinda-Lafayette Aqueduct). Proposed changes to the Sobrante, Walnut Creek, and Upper San Leandro WTPs would basically be the same as Alternative 1, although the

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[1] Clearwells are reservoirs (often tanks) used to store water that has been fully treated prior to release into the distribution system. The WTTIP recommended building a clearwell at the Orinda WTP, concluding that consolidating clearwell capacity at that Orinda WTP would allow EBMUD to more effectively manage water quality delivered to the distribution system. However, since approval of the WTTIP, EBMUD has determined that potential adverse water quality episodes associated with the lack of a clearwell at the Orinda WTP could instead be remedied through changes in operations and facilities west of the Oakland Berkeley hills; specifically, improvements to transmission pipelines. EBMUD has moved forward with implementing these improvements; as such, there is no longer a need for construction of a clearwell at the Orinda WTP.

[2] The backwash recycle water system included below-grade basins as well as above-ground buildings and a tank. The basins included two backwash water equalization basins, and two flocculation and two sedimentation basins. WTP operators periodically clean the filters by backwashing them with water to flush out particles and prevent the filters from clogging. The backwash water was to be stored in the equalization basin before being treated in flocculation/sedimentation basins. A backwash recycle water system is not proposed as part of the Project, but may be constructed at some point in the future.

[3] Solids generated from backwash water processing were proposed to be stored in tanks or basins before being trucked to the EBMUD Wastewater Treatment Plant. A solids pumping plant and storage is not proposed as part of the Project, but may be constructed at some point in the future.

[4] A low-lift pumping plant would have been required under WTTIP Alternatives 1 and 2 to provide clearwell storage, but is no longer needed with removal of the clearwell.

[5] High-rate sedimentation units are basins where unwanted particles are filtered out of untreated drinking water by “settling” at the bottom of the basins. High-rate sedimentation units are not proposed as part of the Project, but may be constructed at some point in the future.

[6] The areas served by the Lafayette WTP (during warm-weather demand conditions) include portions of Lafayette, Moraga, Orinda, and Walnut Creek.

proposed sizes of some facilities at the Sobrante and Upper San Leandro WTPs would be larger. Figure H-2 presents a site plan of the Orinda WTP with implementation of Alternative 2.

TABLE H-2
SUMMARY OF WTTIP ALTERNATIVES 1 AND 2: ORINDA WTP IMPROVEMENTS

	Alternative 1 (Preferred)		Alternative 2	
Facility and Project	**Project Level**	**Program Level**	**Project Level**	**Program Level**
Capacity	175 mgd (no change)		No change, but WTP would need to operate at 180 mgd during peak demand periods	
Backwash Water Recycle System	■		■	
Clearwell		■	■	■
Los Altos Pumping Plant No. 2			■	
San Pablo Pumping Plant and Pipelines		■		■
Low Lift Pumping Plant		■		■
Orinda-Lafayette Aqueduct			■	
Electrical Substation		■	■	
Emergency Generator	■		■	
High-Rate Sedimentation Units		■		■
Chlorine Contact Basin		■		■
Ultraviolet Light Disinfection		■		■

SOURCE: EBMUD, 2006

Reasons for Elimination from Further Study. As indicated above, the EBMUD Board of Directors approved Alternative 1 for implementation. Alternative 2 was rejected by the EBMUD Board of Directors because this alternative did not provide clear environmental, economic, social, or other benefits beyond those of Alternative 1, and it would also result in greater impacts in certain areas (EBMUD, 2006b). Regarding the location of the ultraviolet (UV) disinfection unit and chlorine contact basin (CCB) under Alternative 1, as indicated in Section 4.3, the West of Hills Master Plan determined there was no need for constructing a clearwell at the Orinda WTP. With the clearwell no longer necessary, the area provided by the North Orinda Sports Field site was no longer required for the clearwell and proximate UV/CCB facilities. Siting the UV and CCB components alone at the North Orinda Sports Field would require large pipelines (approximately 9 feet in diameter) to be installed for approximately 3,600 feet to extend from the filter gallery building to the ballfields and back to the Claremont Tunnel. Also, the pipelines between the North Orinda Sports Field and the existing Orinda WTP facilities under this alternative would require multiple crossings of San Pablo Creek and Manzanita Drive. Given the large diameter pipeline length and tunneling constraints for the pipelines needed for this alternative, siting the UV Structure and CCB at the North Orinda Sports Field was removed from further consideration.

Modified Orinda WTP Site Plan

The Modified Orinda WTP Site Plan Alternative was the only other alternative related to the Orinda WTP that was retained for consideration in the WTTIP EIR. This alternative is described below and shown on Figure H-3.

- **Description.** Developed in response to comments from the Orinda Historic Landmarks Committee, this alternative involved relocating some structures associated with the backwash water recycle facilities and the potential future high-rate sedimentation unit. The Modified Orinda WTP Site Plan Alternative could have been implemented under either Alternative 1 or Alternative 2.

- **Reasons for Elimination from Further Study.** This alternative was eliminated because, although the Modified Alternative Orinda WTP Site Plan would have a reduced impact on the historic setting of the main building, impacts to views along Camino Pablo would incrementally worsen, as would noise impacts to residents west of Camino Pablo. Additionally, EBMUD preferred to implement the site plan proposed in the WTTIP EIR instead of this alternative because the proposed layout provides easier truck access to the emergency generator building and the solids storage tank.

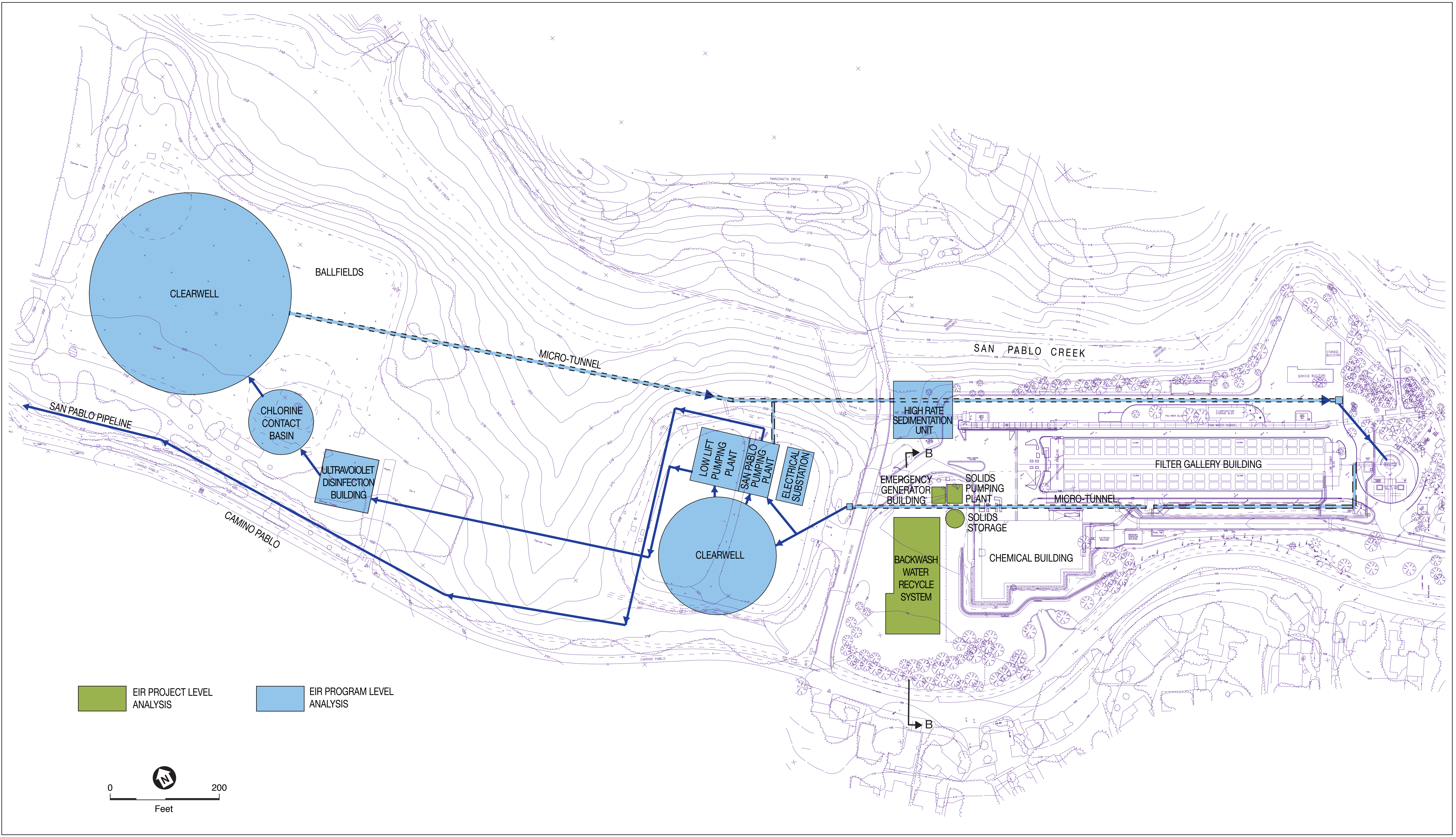
Alternatives Eliminated from Further Consideration in the WTTIP EIR

This appendix presents summary descriptions of several other alternatives pertaining to the Orinda WTP that were considered for inclusion in the WTTIP EIR and the reasons each was eliminated from further study.

Alternative 4 – Supply from Lafayette and Orinda WTPs

Description. Alternative 4 is a hybrid of Alternatives 1 and 2. Upgrades at the Lafayette WTP would be similar to those proposed under Alternative 1, but somewhat less extensive (e.g., demand capacity would only be 25 million gallons per day (mgd), so only one smaller clearwell would be constructed). All of the facilities proposed at the Orinda WTP under Alternative 2 (including the disinfection improvements proposed as part of the Orinda WTP Disinfection Improvements Project, but co-located with a large clearwell in the North Orinda Sports Field) are included in Alternative 4, but the capacity (and size) of the new Los Altos Pumping Plant No. 2 and associated clearwell would be smaller. Proposed changes at the Walnut Creek, Sobrante, and Upper San Leandro WTPs would essentially be the same as under Alternatives 1 and 2. Similar to Alternative 2, Alternative 4 includes the Orinda-Lafayette Aqueduct, but with a smaller (36-inch-diameter) pipeline in the open-cut section.

Reasons for Elimination from Further Study. Alternative 4 ranked fourth in three out of the five weighting scenarios. Because Alternative 4 is a hybrid of Alternatives 1 and 2, it offered no distinct environmental advantages over either one and essentially combined the impacts of both; Alternative 4 did not meaningfully add to the range of EIR alternatives. The fact that some facilities at the Orinda WTP would have been smaller than those proposed under Alternative 2 and could have reduced the duration of some construction activities, such as clearwell excavation, but would have had little effect on other activities, such as tunnel construction (a 12-foot-diameter tunnel would have still been required, even though the pipeline diameter would have been smaller than under Alternative 2).

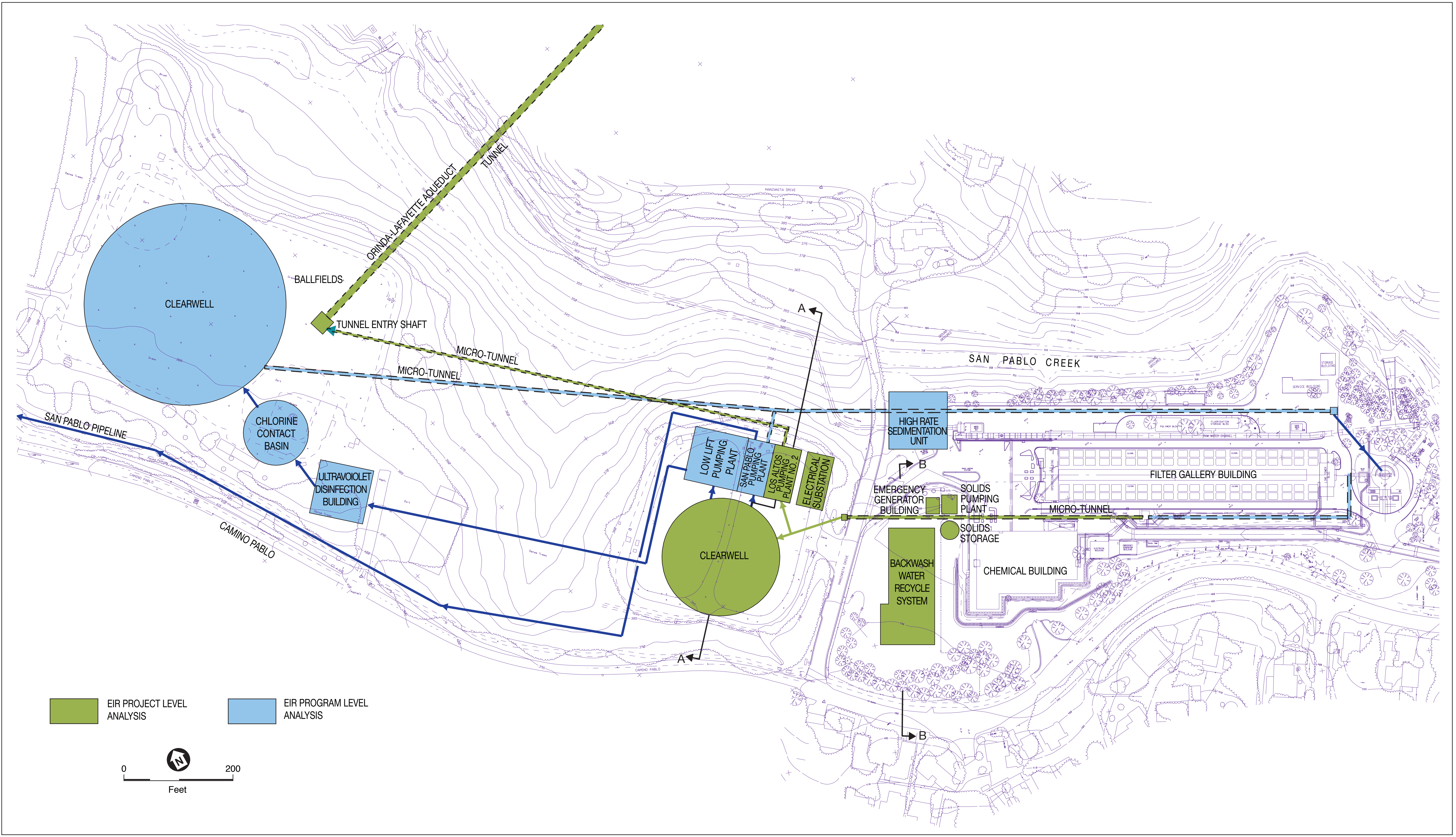


SFO\17xxxx\D171040.00 - EBMUD Orinda WTP Project\05 Graphics-GIS-Modeling\Illustrator

SOURCE: EBMUD, 2006

EBMUD Orinda Water Treatment Plant Disinfection Improvements Project

Figure H-1
WTTIP EIR Orinda WTP Alternative 1 – Site Plan



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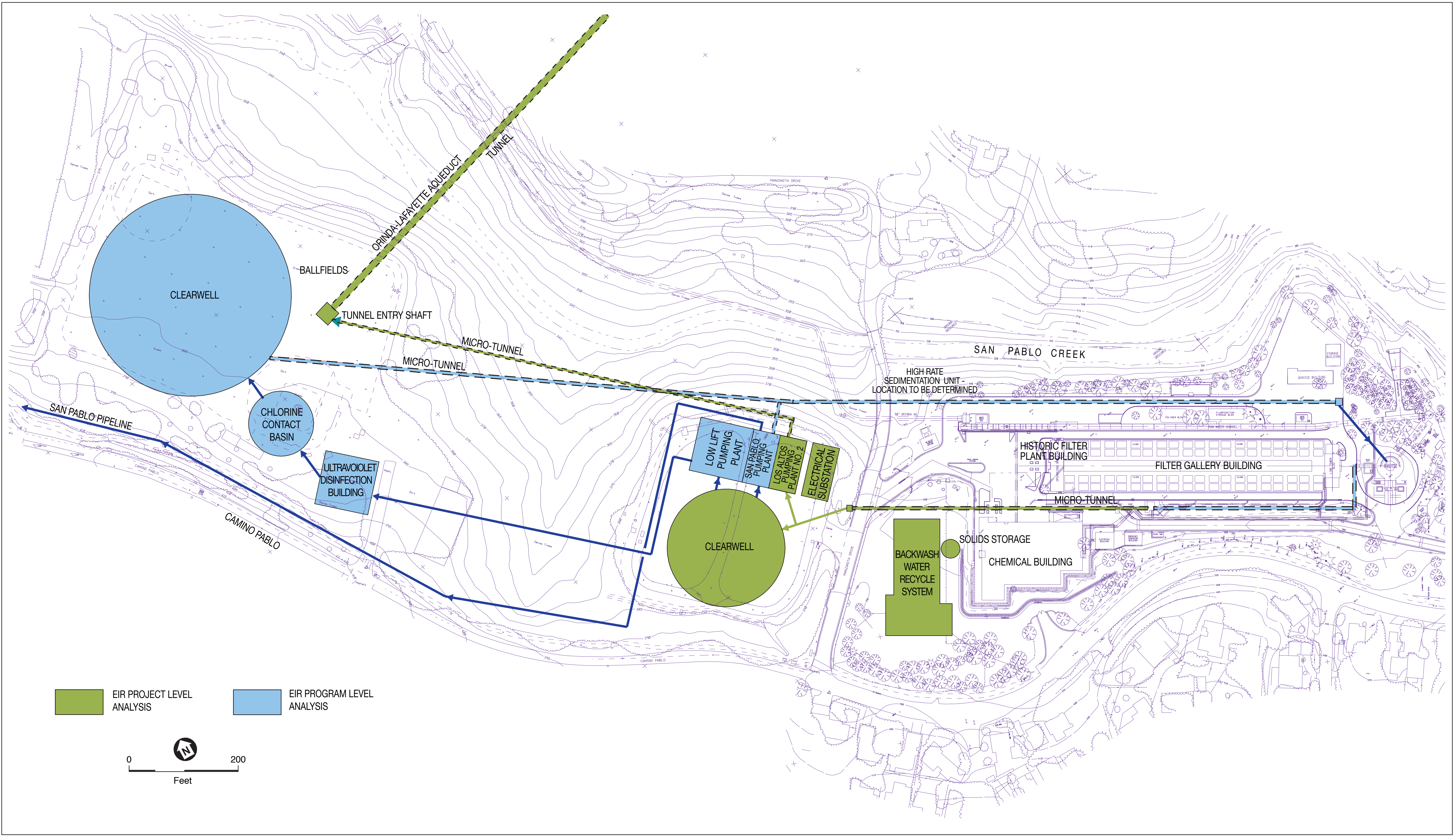
SOURCE: EBMUD, 2006

EBMUD Orinda Water Treatment Plant Disinfection Improvements Project

Figure H-2
WTTIP EIR Orinda WTP Alternative 2 – Site Plan

ESA



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SOURCE: EBMUD, 2006

EBMUD Orinda Water Treatment Plant Disinfection Improvements Project

Figure H-3
WTTIP EIR Modified Orinda WTP Site Plan Alternative

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Alternative 6 – Supply from Orinda and Walnut Creek WTPs

Description. Alternative 6 involves decommissioning the Lafayette WTP and making up for the shortfall in water supply from both the Orinda and Walnut Creek WTPs. For the Orinda WTP, the proposed facilities are the same as under Alternative 2 (and thus included the disinfection improvements proposed as part of the Orinda WTP Disinfection Improvements Project, but co-located with a large clearwell in the North Orinda Sports Field), but the new Los Altos No. 2 Pumping Plant and clearwell would be smaller. For the Walnut Creek WTP, the facilities would be the same as under Alternative 5. Improvements to the Upper San Leandro and Sobrante WTPs would be similar to those proposed under Alternatives 1 and 2.

Reasons for Elimination from Further Study. Alternative 6 ranked sixth under all the weighting scenarios. Alternative 6 would have required the most permits and had the highest estimated present-value capital cost out of all six projects. Environmental screening done during preparation of the WTTIP EIR identified a three-year construction period and a higher number of services located within both 500 and 500–1,000 feet of treatment plant and pipeline construction areas than either Alternative 1 or 2. Alternative 6 offers no distinct environmental advantages over Alternative 1 or 2.

Other Water Treatment Plant Improvement Alternatives

Relocate Orinda WTP to Scow Canyon

Description. This alternative would involve decommissioning the Orinda and Lafayette WTPs and building a new water treatment plant in Scow Canyon on the east shore of San Pablo Reservoir and north of the Orinda WTP. The source water for the new WTP would come from San Pablo Reservoir. An intake pipeline for the raw water would be constructed in San Pablo Reservoir near Scow Canyon. The new WTP would be a conventional water treatment plant as opposed to a filtration plant (like the existing Orinda and Lafayette WTPs) because water from the San Pablo Reservoir requires more treatment. EBMUD would construct two parallel 90-inch-diameter treated water pipelines to convey water from the water treatment plant in Scow Canyon to the Orinda WTP. The existing tunnel to the San Pablo WTP would be reconstructed to carry a treated water pipeline, as would also occur as part of the program-level San Pablo Pipeline project proposed in the WTTIP. The alignment for the two treated water pipelines would follow Old San Pablo Dam Road. Like Alternative 2, a water treatment plant in Scow Canyon would require construction of the Orinda-Lafayette Aqueduct to convey water east to the Lafayette WTP service area. The estimated cost associated with this alternative was estimated to be $2.3 billion.

Reasons for Elimination from Further Study. This relocation alternative was eliminated based on feasibility, ability to meet the WTTIP’s objectives regarding source water quality and reliability, and environmental impacts.

Relocate Orinda WTP near Briones Dam

Description. This alternative would involve decommissioning the Orinda and Lafayette WTPs and building a new WTP on Bear Creek Road near Briones Dam. The source water for the new WTP would come from the Briones Center, on the alignment of the Lafayette Aqueducts. A new intake pipeline would be constructed in Briones Reservoir adjacent to the WTP, and a new raw water pumping plant would be constructed near Briones Center. This water treatment plant would also use conventional treatment processes as discussed for the Scow Canyon alternative. Two parallel 84-inch-diameter treated water pipelines would be constructed from the water treatment plant on Bear Creek Road to the Orinda WTP. A tunnel would be constructed to house the pipelines. Additionally, a 42-inch-diameter pipeline would be open-trenched from the WTP to the eastern portal of the San Pablo Raw Water Tunnel. The existing tunnel to the San Pablo WTP would be reconstructed to carry a treated water pipeline. This alternative would require construction of the Orinda-Lafayette Aqueduct to convey water east to the Lafayette WTP service area. The estimated cost associated with this alternative was estimated to be $1.9 billion.

Reasons for Elimination from Further Study. This relocation alternative was eliminated based on feasibility, ability to meet the WTTIP's objectives regarding source water quality and reliability, and environmental impacts.

Eliminate Transmission of Treated Water to West of Hills from Orinda WTP

Description. This alternative explored the concept of providing separate treatment facilities to serve East of Hills customers and West of Hills customers, respectively. This alternative would include expansion of the San Pablo WTP to 30 mgd, construction of a new 130-mgd-WTP in the West of Hills area, decommissioning of the Orinda WTP, reconstruction of the Lafayette WTP to treat 50 mgd, conversion of the Claremont Tunnel to raw water, and additional transmission facility improvements. The result would be that WTPs west of the Oakland-Berkeley Hills would provide water to West of Hills customers, while WTPs east of the Oakland-Berkeley Hills would provide water to East of Hills customers. Given the configuration of the West of Hills treated water transmission system, a new WTP serving the West of Hills area would need to be located at or very near the existing Claremont Center (the western terminus of the Claremont Tunnel). However, the Claremont Center is too small to accommodate a 130-mgd water treatment plant and the area around the site is surrounded by residences and a school. The estimated cost associated with this alternative was estimated to be $2.1 billion.

Reasons for Elimination from Further Study. This transmission alternative was eliminated based on feasibility, ability to meet the WTTIP's objectives regarding source water quality and reliability, and environmental impacts.

Expand Lafayette WTP and Decommission Orinda WTP

Description. The possibility of converting the Lafayette WTP to a 174-mgd membrane filtration plant was also investigated. This alternative is similar, but larger, than the Membrane Filtration Alternative described in WTTIP EIR Section 6.4. The Membrane Filtration Alternative modified WTTIP EIR Alternative 1 to incorporate a different water treatment technology, membrane filtration,[7] at the Lafayette WTP. It also converts both of the Lafayette Aqueducts to convey

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[7] The U.S. Environmental Protection Agency defines membrane filtration as a pressure- or vacuum-driven separation process in which particulate matter larger than 1 micron is rejected by an engineered barrier, primarily through a size exclusion mechanism, and which has a measurable removal efficiency of a target organism (e.g., *cryptosporidium*). The definition includes the following membrane processes used in drinking water treatment: microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

treated water. Under this alternative, the Orinda-Lafayette Aqueduct would be constructed as it would be under Alternative 2, but the pipeline would be approximately 86-inches in diameter and would convey raw water from Briones Reservoir back to the Lafayette WTP. The Orinda-Lafayette Aqueduct would also serve to gravity-flow raw water to San Pablo Reservoir. This conveyance would serve both the Sobrante WTP and the Briones Pumping Plant.

The Orinda and San Pablo WTPs would be decommissioned under this alternative. Construction of the San Pablo Pipeline (program-level element) would facilitate the decommissioning of the San Pablo WTP. This pipeline would be constructed using open-trench construction. The San Pablo Pipeline and Claremont Tunnel would convey the treated water to the West of Hills area. In addition, a raw water pipeline would be constructed between Briones Center and the eastern portal of the Orinda-Lafayette Aqueduct and a new treated water pipeline/microtunnel would be constructed from Briones Center to connect Lafayette Aqueduct No. 2 to the eastern portal of the Claremont Tunnel. The cost associated with this alternative was estimated to be $1.4 billion.

Reasons for Elimination from Further Study. This alternative was eliminated based on feasibility, ability to meet the WTTIP's objectives regarding source water quality and reliability, and environmental impacts.

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