INITIAL STUDY

FOR THE

MONTE VISTA WATER DISTRICT
PLANT 30 WELLHEAD TREATMENT PROJECT

Prepared for:

Monte Vista Water District
10575 Central Avenue
Montclair, California 91763

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1. Project Title: Monte Vista Water District Plant 30 Wellhead Treatment Project

2. Lead Agency Name: Monte Vista Water District
   Address: 10575 Central Ave, Montclair, CA 91763

3. Contact Person: Mr. Van Jew, Monte Vista Water District
   Phone Number: (909) 267-2113

4. Project Location: The proposed project is located at the 5616 San Bernardino Avenue, Montclair, CA 91763. The project will be located at the existing Monte Vista Water District Well 30 site, which is located in San Bernardino County. The project site is located within Section 23, Township 1 South, Range 8 West of the USGS 7.5 Minute Ontario topographical quadrangle. The GPS coordinates of the proposed project 34.077348°, -117.682896°. Refer to Figures 1 and 2 for aerial depictions of the regional and site location.

5. Project Sponsor's Name and Address: Monte Vista Water District
   10575 Central Ave, Montclair, CA 91763

6. General Plan Designation: Public Quasi Public

7. Zoning Classification: Single Family Residential

8. Project Description:

Introduction

Monte Vista Water District (MVWD or District) proposes to install a wellhead treatment facility that would provide groundwater treatment for Wells 30, 32, and 33 (the locations of which are shown on Figure 3). Wells 30 and 32 are owned by MVWD, and Well 33 is co-owned with the City of Chino. Due to space constraints at Wells 32 and 33, water from Wells 32 and 33 will be conveyed to the Well 30 site for treatment. MVWD will serve as the Lead Agency under the California Environmental Quality Act (CEQA) for this project. This Initial Study evaluates the potential effects to the environment from implementing the project. The Initial Study Environmental Checklist Form contains 21 environmental issues as summarized on page 7 of this document. Review of the data contained in this Initial Study will assist MVWD to determine the appropriate environmental determination for the proposed project in order to comply with CEQA, the statute, and State CEQA Guidelines. Appendix 1 to this document contains the Basis of Design Report (BDR) for the proposed project. There are several acronyms used to describe the proposed project. These acronyms are referenced at the beginning of this document.

Project Description

The proposed project consists of development of a Wellhead Treatment Plant within the existing Well 30 site to treat water delivered from MVWD Wells 30 and 32, and from Well 33, which is co-owned by both MVWD and the City of Chino. Phase 1 of the project will provide the capacity to treat up to 4,000 gallons per minute (GPM) and Phase 2 will facilitate the treatment of up to 6,000 GPM. The anticipated extraction rate from each well is about 2,000 GPM.

Groundwater sampling and a previously completed study have identified the following target contaminants for treatment within MVWD wells: 1,2,3-trichloropropane (1,2,3-TCP), nitrate, and perchlorate. The California State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW) established a maximum contaminant level (MCL) of 0.005 µg/L in July of 2017 for 1,2,3-TCP. Wells 30, 32, and 33 have observed 1,2,3-TCP concentrations above the MCL, and for in order to comply with the DDW MCL, granular activated carbon (GAC) will be used for treatment as the best available technology (BAT). These wells have also shown detections of 1,2-dibromo-3-chloropropane (DBCP) but at levels that could be handled with blending. GAC will also remove any DBCP concentrations as an ancillary benefit. MVWD wells also have elevated nitrate levels that exceed the 10 mg/L-Nitrate (N) MCL. MVWD is currently utilizing blending as the primary compliance strategy for nitrate, limiting the water quantity that can be extracted from the basin. To mitigate the issues associated with blending, the proposed project will include nitrogen removal through use of ion exchange (IX).

As stated above, the proposed project would provide treatment for 1,2,3-TCP, perchlorate, and nitrate at Wells 30, 32, and 33. Well 33 is the only one of the three wells with current treatment consisting of more than disinfection. Treatment includes regenerable IX for nitrate and perchlorate removal. MVWD intends to bring the treated Well 33 water and untreated Well 32 water to the Well 30 site for GAC and partial IX treatment. It is noted that the treatment plant at Well 33 was not constructed to treat the full 2,000 gpm through the IX system (i.e., a portion of the raw water bypasses treatment, and the total flow from the Well 33 treatment plant is 2,000 gpm). The future treatment plant at Well 30 will have the flexibility to treat the full capacity from the three wells (6,000 gpm).

Existing Water Quality

The existing (raw) water quality at Wells 30, 32, and 33 are shown in Table 1 below. Well 33 already has IX, so the IX treated effluent water quality for Well 33 is included in the table.

Table 1
RAW WATER QUALITY FOR MVWD GROUNDWATER WELLS (09/2004 TO 06/2018)

Parameter	Unit	MCL		W30 Raw	W32 Raw	W33 Raw	W33 IX Eff
1,2,3-Trichloropropane (1,2,3-TCP)	ug/L	0.005	Avg	**0.008**	**0.006**	**0.007**	-
			Range	**<0.005-0.039**	**<0.005-0.014**	**<0.005-0.011**	-
			95th Percentile	**0.031**	**0.014**	**0.011**	-
Alkalinity (Total) as $CaCO_3$	mg/L as $CaCO_3$	-	Avg	129	128.1	146	130
			Range	57-190	58-170	100-170	130-130
			95th Percentile	160	150	160	130
Calcium	mg/L as Ca	-	Avg	53	50	62	59
			Range	15-77	15-70	31-74	59-59
			95th Percentile	68	66	70.2	59

Parameter	Unit	MCL		W30 Raw	W32 Raw	W33 Raw	W33 IX Eff
Chloride	mg/L	-	Avg	24	16	13	-
			Range	11-63	9.6-23	9-22	-
			95th Percentile	55	23	20	-
Dibromochloropropane (DBCP)	ug/L	0.2	Avg	0.17	0.10	0.19	-
			Range	<0.01-0.55	<0.01-0.23	<0.01-0.53	-
			95th Percentile	**0.36**	0.18	**0.27**	-
Hardness as $CaCO_3$	mg/L as $CaCO_3$	-	Avg	160	142	224	220
			Range	100-250	97-200	120-460	220-220
			95th Percentile	238	200	240	220
Iron	ug/L	300	Avg	< 100	< 100	< 100	-
			Range	< 100	0-360	< 100	-
			95th Percentile	< 100	269	< 100	-
Magnesium	mg/L as Mg	-	Avg	15	12	17	17
			Range	11-20	9-15	14-19	17-17
			95th Percentile	20	15	19	17
Manganese	ug/L	50	Avg	< 20	< 20	< 20	< 20
			Range	< 20	< 20	< 20	< 20
			95th Percentile	< 20	< 20	< 20	< 20
Nitrate	mg/L as N	10	Avg	**12**	**12.2**	**16**	1
			Range	**<0.4-20**	**<0.4-19**	**<0.4-19**	<0.4-8.1
			95th Percentile	**19**	**17**	**18**	5.1
Perchlorate	ug/L	6	Avg	4.0	3.1	**6.1**	0.7
			Range	**<4-6.5**	**<4-7**	**<4-8.3**	**<4-6.1**
			95th Percentile	**6.4**	**6.5**	**7.5**	4.0
Sulfate	mg/L	-	Avg	45	34	38	-
			Range	39-52	31-38	37-40	-
			95th Percentile	52	37	40	-
Total Dissolved Solids (TDS)	mg/L	1000	Avg	395	305	320	-
			Range	250-990	250-350	280-340	-
			95th Percentile	742	346	340	-

Notes: Data covered sample results from 09/2004 through 06/2018 reported to California Drink Water Branch Drink Water Watch by the district.

Treated Water Quality

The Plant 30 water treatment facility will produce finished water that complies with all State and Federal drinking water standards. The plant will remove 1,2,3-TCP to below the 0.005 ug/L Detection Limit for the Purpose of Reporting (DLR), nitrate to below 5 mg/L as N (50% of the MCL), and perchlorate to below 4.8 ug/L (80% of the MCL).

MVWD will develop this centralized treatment facility in two phases:

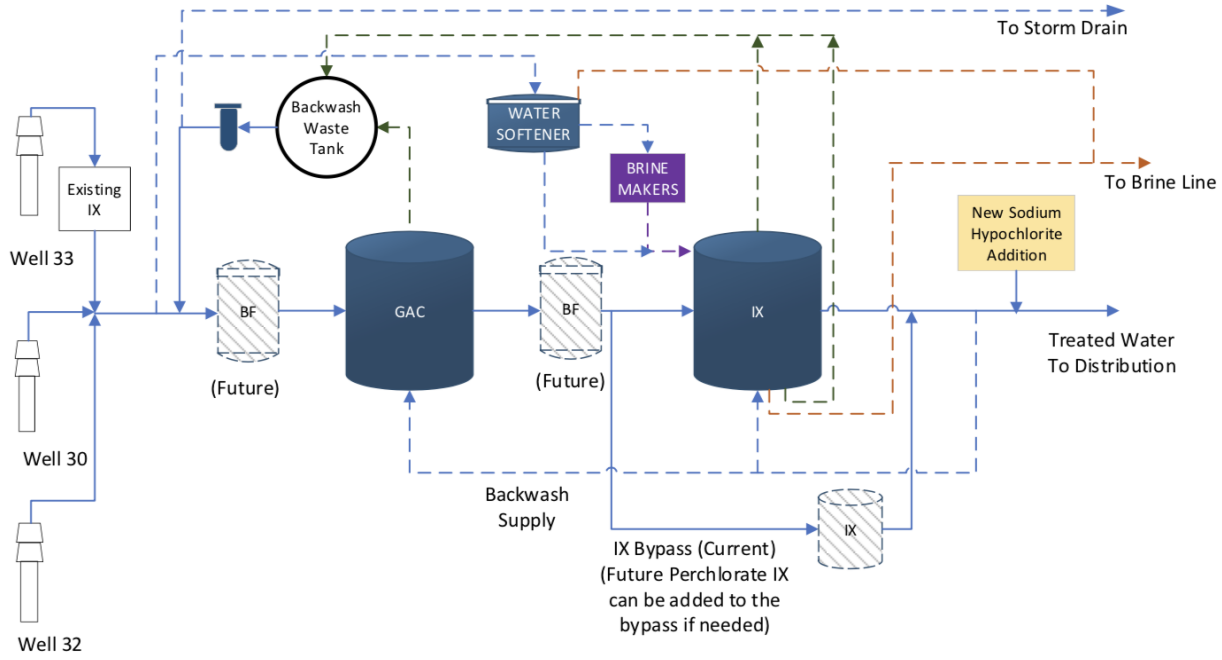
- Phase 1: treatment capacity of 4,000 gpm (treatment of any two groundwater wells)
- Phase 2 (future): acquire additional 2,000 gpm treatment capacity to accommodate total of 6,000 gpm (treatment of the three groundwater wells)

Water from Plant 33 (treated and bypassed water combined) will be re-routed to Plant 30 centralized treatment. A raw water pipeline will be constructed to bring Well 32 untreated groundwater to this site.

Treatment Process

The proposed treatment process includes GAC for 1,2,3-TCP adsorption, bag filtration (future bag filters upstream of GAC if needed, future bag filters between GAC and IX if needed), and IX for nitrate and perchlorate removal. A new chemical building will be constructed to house the sodium hypochlorite storage and feed system and future caustic storage and feed system for the treated water pH adjustment if found to be necessary.

Exhibit 1
GAC AND ION EXCHANGE PROCESS FLOW SCHEMATIC



The entire flow will be treated through GAC for 1,2,3-TCP to achieve the DLR. Nitrate will be partially treated by IX with a bypass to achieve a treatment target of 5 mg/L as N or less at the blended plant effluent. A nitrate mass balance for various well operations is shown in Table 2 below.

Table 2
PLANT 30 INFLUENT WATER QUALITY FOR VARIOUS TREATMENT SCENARIOS
BASED ON A NITRATE MASS BALANCE

	Wells 30 &32		Wells 30 &33		Wells 32 &33		Wells 30,32 &33 (Future)	
	Flow (gpm)	Nitrate (mg/L as N)	Flow (gpm)	Nitrate (mg/L as N)	Flow (gpm)	Nitrate (mg/L as N)	Flow (gpm)	Nitrate (mg/L as N)
Well 30	2,000	19	2,000	19	-	-	2,000	19
Well 32	2,000	17	-	-	2,000	17	2,000	17
Well 33	-	-	2,000	5	2,000	5	2,000	5
IX In	3,240	18	2,800	12	2,680	11	4,400	13.7
IX Out	3,240	2	2,800	2	2,680	2	4,400	2
IX Bypass	760	18	1,200	12	1,320	11	1,560	13.7
Plant Effluent	4,000	5	4,000	5	4,000	5	6,000	5

Notes: 95th percentile nitrate concentrations are used for the mass balance. Well 33 is treated for nitrate prior to entering the centralized treatment system at Plant 30, and an IX effluent nitrate concentration of 5 mg/L-N (95 percentile value) was used for the mass balance.

Perchlorate is present in all three wells and exceeds the MCL at times. The current design basis includes a partial IX bypass to maintain 4.8 ug/L or less of perchlorate, which requires DDW confirmation. This approach is consistent with the way IX at Plant 33 currently operates. If the perchlorate MCL is decreased in the future, space is available to provide perchlorate ion exchange treatment, in lead-lag configuration, on the bypass line.

Pretreatment
Pretreatment is a physical process that removes particles that can interfere with downstream processes and/or affect final water quality. MVWD opted to forgo both GAC and IX pretreatment to avoid the associated headloss that may result in the need for a well pump upgrade; however, connections will be provided for the future bag filtration systems if pretreatment is determined to be needed, including upstream of GAC and between GAC and IX. The design criteria for the future bag filter is provided in Appendix 1.

Liquid Phase Granular Activated Carbon
GAC is an adsorbent material that removes a variety of natural organic compounds, taste and odor compounds, and synthetic organic compounds. Adsorption removes contaminants from the bulk liquid through the accumulation of contaminants at the interface of the liquid and the media surface. GAC is the only BAT approved by DDW for 1,2,3-TCP treatment, which is the reason it was selected for water treatment.

For Phase 1, the GAC contactor system will consist of six trains for a total treatment capacity of 4,000 GPM. Each train will contain two contactors operating in lead/lag configuration. Treatment flow in the common feed header is evenly distributed through six trains, and the flow will be monitored for each train. For Phase 2 (future), three additional lead/lag trains will be added to expand the treatment capacity to 6,000 GPM. The design criteria for the GAC contactor system is outlined in Appendix 1.

When virgin GAC media is installed, GAC media must be backwashed for proper GAC stratification and GAC fines removal. The backwash system will be sized based on media type and bed expansion requirements. Distribution system water may be used as backwash water supply. The target bed expansion is 20% to 30% for the initial backwash. Backwash waste water will be sent to an onsite backwash water recovery tank for reuse. The supernatant from the backwash recovery tank will be filtered through a bag filtration system and pumped to the upstream of the GAC system. The supernatant flow rate will be metered to maintain less than 10% of the plant feed flow.

Ion Exchange
IX is a contaminant removal process that exchanges one set of ions for another. Anion exchange can remove nitrate, perchlorate, hexavalent chromium, and other anions. Since IX is only effective with ionic compounds, IX will not remove nonionized compounds. Ion exchange is one of the approved BATs for nitrate treatment, which is the reason it was selected for water treatment.

For Phase 1, the IX system will consist of four vessels with a nitrate selective resin. Treatment flow in the common feed header will be evenly distributed, and the flow will be monitored for each train. For Phase 2, an additional vessel will be added to expand the treatment capacity. The IX system design incorporates the required empty bed contact time and vendor recommended hydraulic loading rate. The briner system (brine maker) will consist of three 60-ton brine makers for Phase 1. For Phase 2, an additional briner will be added. The design criteria for the IX system is outlined in Appendix 1.

Softener System
The softener system is designed to provide softened water for brine make up water and also to provide slow rinse water for the IX system. Slow rinse with soft water will minimize scaling during the regeneration sequence. A skidded pre-packaged duplex system is proposed for this facility that has the capacity to meet the additional softened water demand for Phase 2. Based on the estimated salt usage in Phase 1, one softener vessel will be regenerated every two days. The water softener system design criteria is detailed in Appendix 1.

Waste Holding Tank
An aboveground welded steel tank will be utilized to store and recover GAC backwash, IX backwash, and IX fast rinse waste. MVWD selected a welded steel tank to minimize leaks and lengthen useful life of the tank. The recovered water would be filtered through a bag filtration system and pumped to the upstream of the GAC for reuse with the option to send water to the storm drain. The waste holding tank is detailed in Appendix 1.

Residuals Handling (Brine Line and Sewer Connection)
The treatment facility is designed for a water recovery rate above 99%. The waste streams that require disposal include:

- Storm water disposal: During GAC changeout, GAC backwash water will be filtered through bag filters and sent to the existing onsite storm drain connection.
- Brine line disposal: IX brine waste and slow rinse, along with waste from the IX softener system will be sent to the brine line.

A new brine connection line will be constructed to connect to the Inland Empire Brine Line Santa Ana Regional Interceptor (SARI). IX brine regeneration waste (84 gpm) and slow rinse (84 gpm), as well as all waste from the water softening operation (backwash, brine regeneration,

slow rinse and fast rinse with flow rate ranging from 12 to 108 gpm) will be directly sent to the brine line for disposal. The waste streams that will be sent to the brine line are summarized in Table 3 below.

Table 3
WASTE STREAMS CONNECTED TO BRINE LINE

Parameter	Units	Value
IX Vessel Brine Waste Flow	gpm	84
IX Vessel Slow Rinse Waste Flow	gpm	84
Softener System Waste Flow	gpm	12-108
Brine Line Diameter	in	4

An existing storm drain connection is available on site. A new line will be constructed to discharge the water from the backwash recovery tank into the storm drain if needed.

Bulk Sodium Hypochlorite Storage and Feed
Bulk sodium hypochlorite will be used for free chlorine disinfection of the treated water. MVWD has an existing sodium hypochlorite storage and feed system that will be removed and replaced to accommodate up to a 6,000 gpm flow with a target chorine dose of 1.5 mg/L. The chlorine injection point will be relocated to post-IX treatment.

To determine the expected chlorine demand for Plant 30, chlorine demand tests were performed for Wells 30 and 33. Results from Well 33 indicated a chlorine demand of 0.5 mg/L after 24 hours. Results from Well 30 indicated a significant chlorine demand (greater than 5 mg/L). Discussion with MVWD revealed that chlorinated water is injected into Well 30 for aquifer recharge, and that the anomalous demand may be associated with breakpoint chlorination of ammonia.

Operations reported that Plant 33 typically doses 1.5 mg/L of chlorine with an average demand of 0.5 mg/L, resulting in a free chlorine residual of 1.0 mg/L. The design dose of 1.5 mg/L has been selected. If higher demand is observed, the usage rate will be higher; as such, the pumps that will be selected would accommodate the potential higher dose, but storage volume would not be sufficient for a two weeks supply. Design criteria is provided in Appendix 1.

Bulk sodium hypochlorite requires a small tank volume for 14 days of storage at 12.5% trade strength. A new chemical feed building will be constructed. MVWD will install multiple smaller tanks; therefore, three 500 gallon storage tanks (two installed and one future) will be installed with a design basis of 14 days storage at 6,000 gpm. Bulk sodium hypochlorite will be installed because it would minimize tank volume and simplify operations. Two diaphragm metering pumps (one duty and one standby) will be provided for chorine feed.

If higher chlorine doses are required, the delivery frequency or storage volume will need to be increased accordingly. For example, with a chlorine dose of 8 mg/L (demand test for Well 30), bulk deliveries would be required every two to three days with a total tank capacity of approximately 1,500 gallons.

Caustic Chemical Storage and Feed System
The requirement for a caustic feed system was evaluated due to the potential for IX removal of alkalinity (bicarbonate) for approximately 80 bed volumes following regeneration. A caustic chemical storage and feed system may be required under certain water conditions (pH < 8), and therefore space will be provided for a caustic storage tank and feed system located in the chemical feed/disinfection building. Assuming a desired dose of 2.0 mg/L and 14 days of storage, an 800 gallon tank will be required at the build out capacity. The groundwater is currently a pH of approximately 8, which would not necessitate caustic. However, ASR wells may be impacting this pH value and groundwater should be monitored after ASR water is flushed out. MVWD has not noted any negative corrosion impacts from operation of the Plant 33 IX facility, which does not have caustic feed.

MSWD Monitoring
Table 4 provides an overview of the recommended probes and analyzers for MVWD.

Table 4
PROBES AND ANALYZERS RECOMMENDED FOR MVWD

Probe	Purpose	Recommended Units	Location(s)
Nitrate	Control blending, monitor individual IX effluent, and ensure MCL compliance for treated water nitrate	1 (measuring 6 sample points)	IX bypass line, individual IX vessel effluent, and combined treated water line
pH	Monitor pH for caustic requirements and dosing	1	Combined blend and treated water line
Free chlorine	Measure free chlorine residual and monitor disinfection	1	Treated water line
Conductivity	Used to monitor IX regeneration	5	Brine tanks supply line (1), IX regeneration process (4)

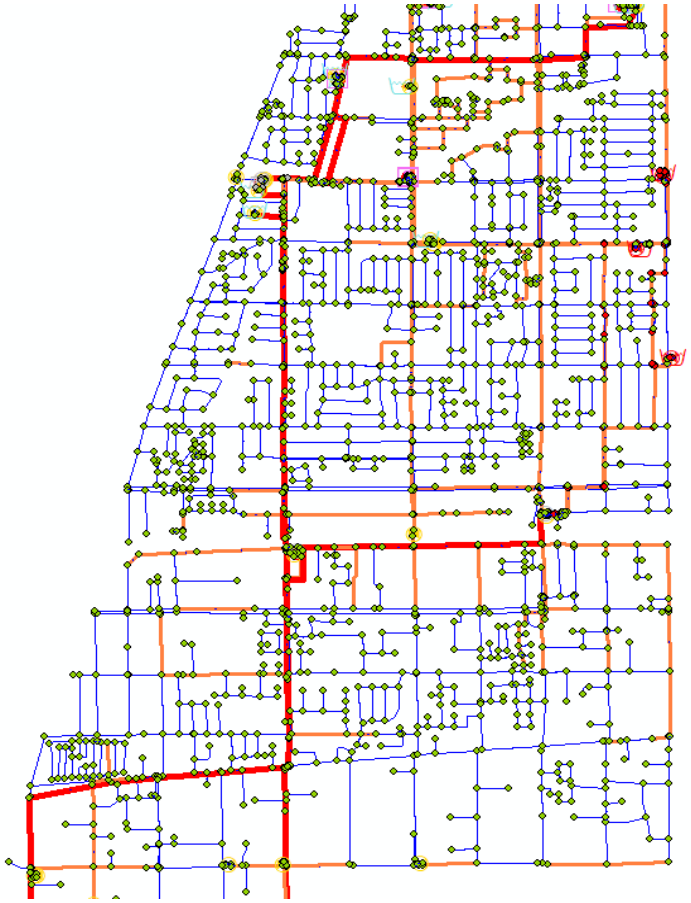
Ancillaries
Safety showers will be provided in the process area near the chemical storage and feed building. In addition, fire sprinklers will be installed in all rooms in the office space. These facilities will be supplied with potable water from the existing water main.

Hydraulics
Benson Feeder Overview
MVWD conveys flow to Chino Hills through a system of large diameter transmission mains. Beginning at the WFA Agua de Lejos Treatment Plant, a 30-inch transmission main extends south into MVWD's service area near Arrow Highway and Benson Avenue, where it splits into two transmission mains: the Ramona Feeder, a 30-inch main that heads west and then south in Ramona Avenue, and the Benson Feeder, which continues south down Benson Avenue. These two feeders convey WFA and MVWD well water and eventually rejoin at the State Street Metering Facility, located at the southeast intersection of State Street and Ramona Avenue. From this point, the flow again splits into two transmission mains that connect to the Chino Hills distribution system: a 42-inch main that heads west then south down End Avenue, and a 30-inch main that continues down Ramona Avenue.

While the Benson Feeder begins as a 20-inch main where Well 33 is connected, it splits into parallel 12-inch and 18-inch mains before rejoining into a 24-inch main upstream of the State

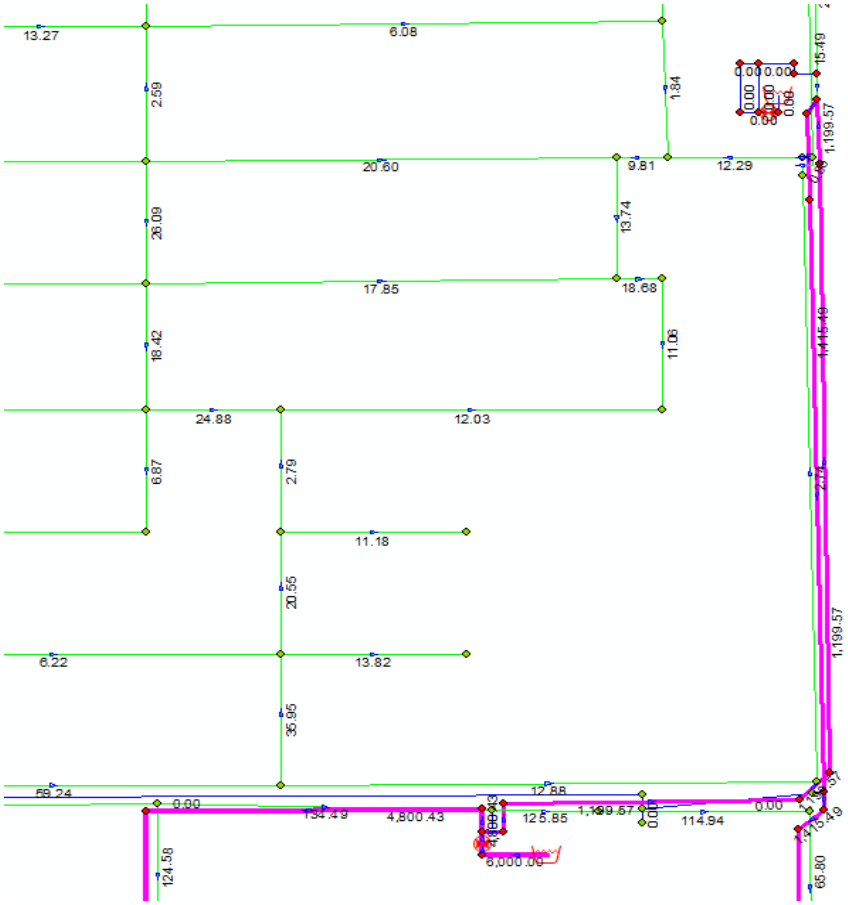
Street Metering Facility. Well 30 currently pumps into the 18-inch main, while Well 32 currently pumps into the 12-inch main (Exhibit 2).

Exhibit 2
MVWD FEEDER SYSTEM



When the Well 32 and 33 supplies are relocated from their current Benson Feeder connection points to the proposed connection point at Well 30, it will change the dynamics of the Benson Feeder. Under proposed conditions, flows delivered from Plant 30 into the Benson Feeder in excess of 4,000 GPM will tend to cause reverse flow in the 18-inch portion of the Benson Feeder between Well 30 and Well 33, flowing north instead of south (Exhibit 3). Pressures in the Benson Feeder are also expected to be increased by approximately 5 psi under future conditions in which all three wells are flowing.

Exhibit 3
BENSON FEEDER IMPACTS



Well Pump Impacts
Well 33 currently pumps through an existing treatment system while Wells 30 and 32 pump directly into the Benson Feeder as described in the previous section. The proposed clustering of wells and addition of treatment will increase the total dynamic head (TDH) requirement of each pump. Increasing the TDH required of existing pumps will cause them to pump further to the left on their pump curves at reduced capacity and efficiency. In general, MVWD Wells 30, 32, and 33 are medium capacity wells that are high horsepower and deep set. All well pumps have been installed fairly recently, between 9 and 13 years ago.

Improvements are recommended for Well 30, potentially including the following: retrofitting to increase impeller diameter and machining bowls to increase available lateral, or replacing the pump with a reduced capacity pump. If existing pump capacity must be maintained, MVWD must determine if the existing electrical infrastructure is adequate for the increase in load, or otherwise improve the electrical infrastructure. MVWD will confirm Well 33 existing treatment system head losses and confirm if the bowl lateral is sufficient. As such, it is assumed that Well 33 may require pump upgrades as part of this project.

Pump Operational Impacts
The American National Standard Institute (ANSI) / Hydraulic Institute (HI) Standard 9.6.3 specifies a preferred operating region (POR) between 70 percent and 120 percent of the best

efficiency point (BEP) for pumps with specific speeds less than 4500. This standard will be used to determine the appropriate pump improvements, if required.

Pump Shaft Stretch and Available Lateral
In addition to whether the pumps are operating within the POR, an analysis of whether the pumps have sufficient lateral clearance to operate at the higher discharge pressures was performed. To maintain the recommended running clearance of 0.125" for Well 30 and 32, Well 30 cannot operate at less than 1,665 GPM and Well 32 cannot operate at less than 1,585 GPM. To operate either pump at lower flow rates requires the lateral settings to be increased. However, both pumps appear to be set near the maximum lateral available in the bowls, and the bowls would need to be machined to increase the setting. Adjusting the current lateral setting to the maximum available setting would allow a pumping rate down to 1,600 gpm for Well 30 and 1,500 gpm for Well 32. To maintain the recommended running clearance of 0.25", Well 33 cannot operate at less than 1,500 gpm; however, it has sufficient available lateral to operate at shutoff without the impellers contacting the bowls.

Well Pump Summary and Recommendations
The following recommendations are made:

- MVWD should confirm that the well pump capacity reductions are acceptable in terms of their commitments to deliver water to the City of Chino Hills
- MVWD should confirm the actual lateral as installed for Well 30, 32, and 33\
- MVWD should confirm the actual headloss across the existing Well 33 treatment system, if possible.
- No improvements are recommended for Well 32 and 33; however, the pump lateral should be reset to ensure proper running clearance for the proposed pumping conditions. MVWD should conduct a separate analysis to identify the necessary improvements for Well 30 to ensure that it is operating within the POR and has sufficient lateral. Potential options may include installing larger impellers, installing a new bowl assembly with increased TDH, replacing the pump with the same motor size and reduced capacity, or replacing the pump with a larger motor and same capacity as originally designed. For any increase in motor size, the electrical infrastructure capacity should also be evaluated.

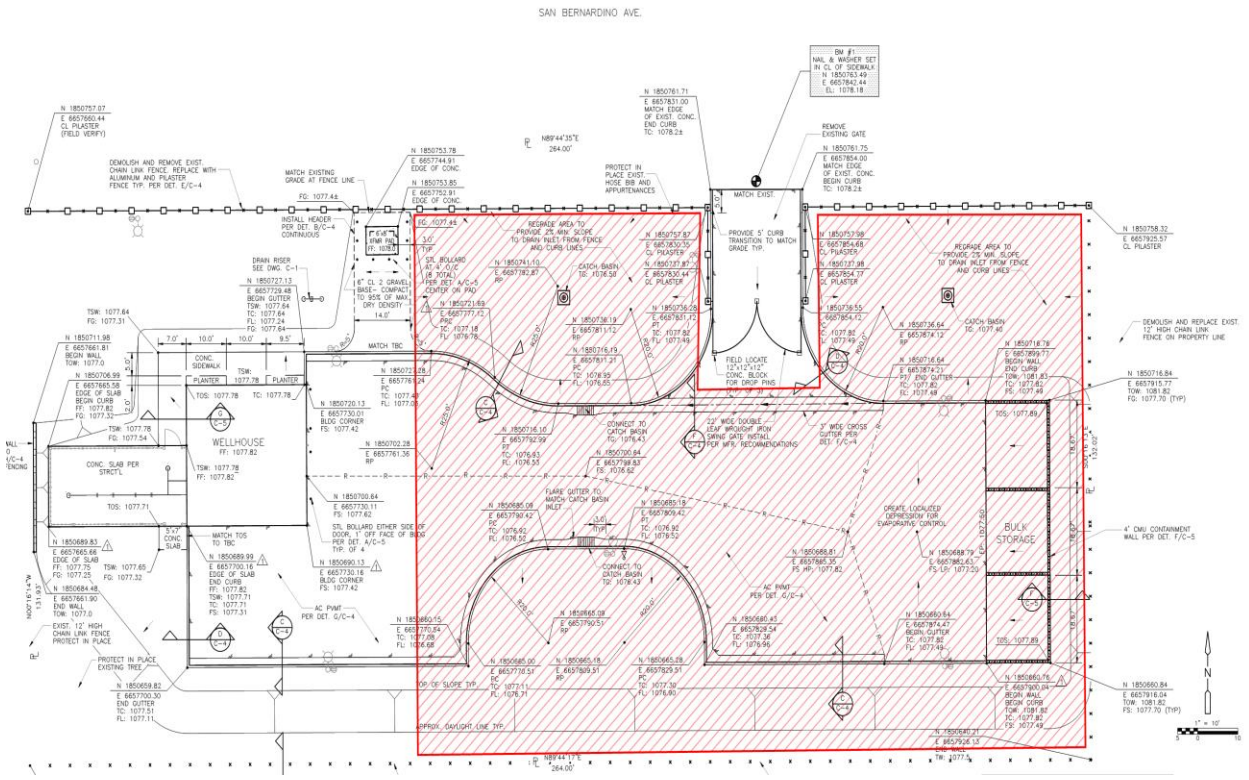
Project Overview (Site work, On- and Off-Site)
On-site improvements include demolition of portions of the existing site, site civil improvements including paving and grading, and yard piping. Off-site pipelines include raw water pipelines from Well 32 and 33, the treated water pipeline (plant effluent), brine pipeline, and waste pipeline to the sewer.

Demolition
Demolition of portions of the site are required to provide space for the proposed treatment improvements. The existing perimeter fencing and access entrance from San Bernardino Avenue will be protected, but the majority of the remaining roughly eastern portion of the site will be cleared and demolished for the proposed improvements.

Existing components being removed that will require replacement include the catch basin and drainage piping that parallels San Bernardino Avenue on the northerly portion of the site, as well as the catch basins and drain piping that runs down the middle of the existing pavement. These systems drain to the air gap catch basin between the wellhouse and transformer, where they flow to the existing 66" storm drain in San Bernardino Avenue. There is also an existing yard

hydrant on the southerly side of the site that will require relocation. The approximate limits of demolition are shown on Exhibit 4. Additional demolition may be required for yard piping and other ancillary site improvements beyond these proposed limits.

Exhibit 4
DEMOLITION LIMITS



On-Site Improvements

Site civil improvements primarily consist of paving and grading. New asphalt concrete pavement will be specified throughout the site to provide adequate access to all treatment facilities. The pavement section will follow the recommendations from the geotechnical report. The access entrance from San Bernardino Avenue will remain.

A combination of surface and below grade drainage systems will be provided. The overall grade of the site from east to west will be maintained. The existing discharge structure that receives the pump-to-waste discharge will be the primary on-site collection point, with the existing connection to the 66" storm drain in San Bernardino Avenue being protected.

From the southerly edge of the existing pavement, the existing grade slopes down to the perimeter wall. In order to grade this area to be relatively flat to accommodate the proposed treatment facilities (GAC treatment), a new retaining wall will be required that parallels the southerly perimeter wall. The retaining wall will run the length of the GAC pad. Beyond the retaining wall, the grading will transition to match the existing grades.

On-Site Pipelines
Yard piping includes all on-site pipelines outside of the individual treatment processes including raw water pipelines, the treated water pipelines, and the brine pipeline. Pipe size recommendations are based on a hydraulic pipe sizing analysis. Below-grade piping will be installed in a trench per MVWD Standards and recommendations from the geotechnical report. Below-grade ductile iron pipe will be encased in polyethylene. Above grade piping will be epoxy coated or painted.

Yard piping is shown graphically on the site plan exhibit (Exhibit 4 above). Note, locations are approximate, the primary purpose is to show how each treatment process is located and interconnected with the process pipelines. Final design layout of yard piping will prioritize an efficient layout to minimize unnecessary crossings and maximize clearance for future maintenance.

Table 5
YARD PIPING SUMMARY

Pipe Description	Nominal Diameter (in)	Pipe Type	Pressure Class
Well 33	12	DIP	350
Well 32 + Well 33	16	DIP	350
GAC In	20	DIP	350
GAC Out	20	DIP	350
IX In	16	DIP	350
IX Out	16	DIP	350
IX Bypass	12	DIP	350
Plant Effluent	20	DIP	350
GAC Backwash Supply	10	DIP	350
IX Backwash	4	DIP	350
Brine Waste/Slow Rinse	4	PVC	165
Fast Rinse	6	PVC	165
Recovered Water	3	PVC	165
Waste Water to Storm Drain	8	PVC	SDR 35
Slow Rinse Waste	3	PVC	165

Off-Site Pipelines
The off-site pipelines include the raw water pipelines from Well 32 and Well 33, treated water pipeline (plant effluent), and the extension of the brine line from the Plant 30 site to their respective connection points in San Bernardino Avenue. A summary of the off-site pipelines is included in Table 6 below and is shown graphically in Figure 4.

Table 6
OFF-SITE PIPELINE SUMMARY

Pipe Description	Nominal Diameter (in)	Pipe Type	Pressure Class	From	To	Pipeline Length Lineal Feet (LF)
Well 33	12	DIP	350	Well 33	Plant 30	1,500 LF
Well 32	12	DIP	350	Well 32	Plant 30	2,700 LF
Plant Effluent	20	DIP	350	Plant 30	Benson Feeder (San Bernardino Ave)	100 LF
Plant Effluent	12	DIP	350	Plant 30	City of Chino 20" Transmission Main (Benson Ave)	900 LF
Brine Waste / Slow Rinse	4	PVC	165	Plant 30	IEUA Brine Line (Palo Verde St)	2,000 LF
Pipeline	16	DIP	-	N Benson Ave	Well 30	900 LF

Off-Site Pipelines: City Requirements

The City of Montclair was initially contacted regarding this project and they provided initial requirements, particularly for work in San Bernardino Avenue since street rehabilitation was recently completed. The initial requirements provided by the City include:

- 1-1/2" grind and cap for the full width of San Bernardino from Plant 30 site through the Benson Avenue intersection
- Replace all striping
- Adjust all sewer and storm drain manholes to grade

Final requirements from the City of Montclair and the City of Ontario will be confirmed through coordination during final design.

Off-Site Pipelines: Well 32 Raw Water Pipeline

Well 32 is located at the northeast corner of Benson Avenue and G Street/Orchard Street. The existing well discharge line heads southwest from the site across the intersection in a steel casing 12 feet below grade and connects to the existing City pipeline at Orchard Street and Del Mar Avenue. This existing pipeline will be isolated by closing the existing valve at Del Mar Avenue.

The proposed raw water pipeline will intercept the existing discharge pipeline on site and run north to Plant 30. In the vicinity of Well 32, Benson Avenue has a multitude of existing utilities in the street. There appears to be a small corridor on the western side of the street. The final recommended alignment will be confirmed in final design.

Off-Site Pipelines: Well 33 Raw Water Pipeline

Well 33 is located at the northwest corner of Benson Avenue and Palo Verde Street. The existing well discharge line splits into two lines and connects to both a City of Chino transmission main and MVWD transmission main (20" Benson Feeder). Both of those connections will be isolated by closing existing valves near their connections.

The proposed raw water pipeline will connect to the existing discharge line that is currently connected to the MVWD transmission main and run south to Plant 30. In the vicinity of Well 33, Benson Avenue has a multitude of existing utilities in the street. The new raw water pipeline will

most likely be located on the eastern side of the street. The final recommended alignment will be confirmed in final design.

Off-Site Pipelines: Treated Water Pipeline (Plant Effluent)
The treated water pipeline (plant effluent) will connect to the existing 18" Benson Feeder pipeline in San Bernardino Avenue. Due to the size and material (CML&C welded steel), a hot-tap connection is not preferred. A cut-in tee connection is proposed due to the size and material of the existing pipeline; however, this requires this portion of the line to be isolated by closing a valve. If there is not a nearby existing valve to isolate the line, a line stop will be required on the existing 18" Benson Feeder. Isolation valves will be provided on-site and above grade for easier access, rather than locating valves in the street.

A treated water pipeline (plant effluent) may also connect to the existing City of Chino 20" diameter transmission main at Benson Avenue and San Bernardino Street.

Off-Site Pipelines: Brine Line
A new brine line is required from the Plant 30 ion exchange system to the existing 21" brine line at Palo Verde Street and Benson Avenue near Well 33. The brine line is owned and maintained by IEUA. The line will flow by pressure from the Plant 30 site to the connection point. Conditions for the connection will follow IEUA requirements.

Electrical
All work for the new enhanced Well No. 30 (treatment system location), 32, and 33 shall be routed to the Well 30 site for treatment and blending for final potable water. The Plant 30 project will be done in accordance with the following codes and standards:

- National Electrical Code (NEC), 2014 Edition.
- State Department of Industrial Safety (CAL/OSHA).
- Local authorities having lawful jurisdiction pertaining to the work
- American Society of Testing and Materials (ASTM)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- Institute of Electrical and Electronic Engineers (IEEE)
- Insulated power Cable Engineers Association (IPCEA).

The existing electrical services are provided by Southern California Edison (SCE) and the primary service is routed underground from a utility pole to a pad mounted utility transformer, which steps down the voltage to 3 phase, 480/277 VAC. The pad mounted transformer is in the northwest corner of the well site and the electrical system incorporates an indoor service entrance section (SES) with utility metering, 1000A main circuit breaker and attached motor control center sections including a 3 phase 208Y/120 VAC lighting panel with an associated 45kva transformer. This SES has the capacity to add 100Amps at 480VAC assuming the main breaker is 100% rated for continuous loads.

Standby Power Generation
A new 3 phase 1000Amp, 480vac, NEMA 3R or 4 non-fused disconnect switch shall be installed, location TBD in detailed design, with the load side of the switch having 2-4"C with parallel 3-500MCM & GND wire/cable terminated into the electrical buss of the main switch board. A standard operating procedure shall be prepared for the use and operation of the portable generator connection and service.

Power Distribution
The Main Switchboard (MCC/SES) will supply a new 3 phase, 100A, power panel (PP-1) located in the electrical room. The panel will distribute power to the various new equipment and loads throughout the proposed treatment system. The power panel will be provided with surge protection and lock out features.

The panel will supply 480 volt, 3-phase, 3-wire power to motor operated valves as well as other small 480 volt loads. If required, a new 25kva transformer will be added along with a potential Lighting Panel LA. This panel will distribute 120/208-volt power to loads such as lighting, receptacles, chemical feed pumps, and instruments.

Lighting
General Lighting should be provided for general illumination throughout the added facility including but not limited to the following:

- General treatment areas
- Electrical and control room (if required)
- Walkways

Task lighting should be provided at the following areas where additional lumens are required:

- Control panels
- Testing/sampling locations
- Instrument readout locations

Additional lights will be installed at strategically located areas around the site to provide sufficient lumens for security and safety. Light fixtures will utilize LED technology for long life and energy efficiency. Exterior light fixtures will be equipped with photo cells for dusk to dawn operation.

Summary of Project Scope & Construction Scenario
The general scope is listed as follows:

- GAC – 12 vessels, slab-on-grade
- IX – 4 vessels, slab-on-grade, waste metering pump
- Chemical Systems – CMU block building, slab-on-grade, 2 double-wall storage tanks, pump
- skid, recirculation pump, fill station
- Water Softening – 2 units, slab-on-grade
- Brine Storage – 3 storage tanks, 2 brine feed pumps, 2 transfer pumps, slab-on-grade
- Backwash Water and Fast Rinse Storage – 1 storage tank, slab-on-grade
    - A 50,000-gallon welded steel tank will be used to store GAC backwash water and IX fast rinse waste
- Site Civil and Yard Piping
- Site prep/grading
    - Excavation and installation of yard pipes
    - Removal and replacement of pavement for piping excavation
    - Site finishing (landscaping, misc. curb/cutter, etc.)
- Electrical and Instrumentation
- Pipeline from Well 32 to San Bernardino Street – 2,700 lineal feet (LF) of 12-inch diameter pipeline
- Pipeline from Well 33 to San Bernardino Street – 1,500 LF of 12-inch diameter pipeline
- Pipeline from N Benson Avenue to Well 30 – 900 LF of 16-inch diameter pipeline

- Brine Line to Palo Verde Street – 2,000 LF of 4-inch diameter pipeline
- Effluent Line from Well 30 to San Bernardino Street – 100 LF of 20" diameter pipeline
- Plant Effluent from Plant 30 to City of Chino 20" Transmission Main – 900 LF of 12" pipeline.

Construction Scenario
Please refer to Appendix 1 for specifics regarding foundation and design.

Construction is anticipated to begin in the November 2019 over a period of approximately 10 months. This project will only consider the development of Phase 1 of the proposed.

Wellhead Treatment Site Construction
Construction at the Well 30 site will involve site demolition; site paving; site prep/grading; excavation and installation of yard pipes including the following: GAC Influent pipeline, GAC to IX pipeline, Brine supply pipeline, IX and backwash waste pipeline, Well 32/33 Influent pipeline (within site only), Well 30 Influent pipeline (within site only), pipeline To Chino Hills (within site only), Brine waste pipeline (within site only), pipeline to sewer (within site only), and, chemical piping (double-contained); removal and replacement of pavement for piping excavation; site finishing (landscaping, misc curb/cutter, etc); site drainage (above and below grade); and, relocating/replacing the existing yard hydrant and piping.

It is anticipated that the maximum number of construction personnel on the Wellhead Treatment project site on any given day will be 15. The maximum number of truck deliveries, which would likely occur during pouring of concrete for facilities, is forecasted at 10 per day.

Demolition at the project site will result in about 100 to 200 CYs of material; the project will recycle 50% or about 50 to 100 CYs. The effort to recycle or dispose of demolished material is anticipated to require about 10 trips to accomplish with no more than 5 round trips occurring within one work day.

Pipeline Construction
Construction of the various pipelines would involve trenching using a conventional cut and cover technique, and jacking and boring where necessary. The trenching technique would include saw cutting of the pavement where applicable, trench excavation, pipe installation, backfill operations, and re-surfacing to the original condition. The trench would be approximately 5 feet deep and 3 feet wide. The pipeline would be installed a minimum of 3 feet below ground surface (bgs). Construction staging areas would be identified by the contractor for pipe lay-down, soil stockpiling, and equipment storage. On average, 100 to 150 linear feet of pipeline may be installed per day. It is assumed that the pipeline installation will require about 10 employees per day. It is assumed that 10 Dump/delivery trucks (100 miles round trip distance) would be required for this effort.

Trenches would be temporarily closed at the end of each workday, by covering with steel trench plates and installing barricades to restrict access to staging areas. The construction equipment needed for pipeline installation would include: backhoe, excavator, bracing, welding equipment, boom lift truck, steamroller, plate compactor. Minimal off-site disposal would include construction related debris and spoils. The final activity associated with the pipeline installation is repaving of roads disturbed by the construction.

9. Surrounding land uses and setting: (Briefly describe the project's surroundings)

The Land Use Map for the City of Montclair is provided as Figure 5. The Land Use Map for the City of Ontario is provided as Figure 6.

Wellhead Treatment Plant Site:

- North: Single Family Residential (City of Montclair)
- East: Public/Quasi – Public (City of Montclair); further east is the City of Ontario
- South: Single Family Residential (City of Montclair)
- West: Single Family Residential (City of Montclair)

The project site currently contains an MVWD well (Well 30), and is located adjacent to Vernon Middle School and Soft Ball Fields. The surrounding setting is generally residential in nature and has been built-out with little to no vacant area in the project vicinity.

Pipeline Alignment:
The land uses surrounding the proposed pipeline alignments are as follows (note: Well 33 is located within the City of Ontario, and the entirety of the land uses to the east of the pipeline alignment along Benson Avenue are within the City of Ontario):

- City of Montclair: Single Family Residential; Public/Quasi – Public; and, Water Storage / Transfer
- City of Ontario: Low Density Residential; Open Space – Non Recreation; and, Public School

Well 33 is located within the City of Ontario on land designated as Open Space – Non Recreation.

Well 32 is located within the City of Montclair on land designated as Public/Quasi – Public.

10. Other agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

Governing Organization	Permit
State	
State Water Resources Control Board	NPDES General Construction Permit
	NPDES Stormwater Permit (existing)
	Operating Permit Amendments – DDW (Amendment)
	California Regional Water Quality Control Board, Colorado River Basin Region
Cal OSHA	Trenching and Excavation Permit
Regional	
Montclair	Planning Permit: Administrative Approval or Site Approval or Special Conditional Use Permit
	Building Permit
	Industrial Waste Discharge to Sewers
	Grading Permit
	Water Quality Management Plan

Governing Organization	Permit
Montclair Fire Department	Montclair Plan Review Application
	Montclair Fire District Permit
Inland Empire Utilities Agency	Sewer Connection Permit
	Joint Industrial Wastewater Discharge Permit

11. Have California Native American tribes traditionally and cultural affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun? Yes. AB-52 was initiated on March 19, 2019 by sending letters to the Gabrieleño Band of Mission Indians – Kizh Nation (Tribe). The Tribe sent responded requesting mitigation measures to be included in this Initial Study on March 20, 2017. The Tribe and MVWD concluded consultation on April 17, 2019 by mutually agreeing to include mitigation to protect Tribal Cultural Resources.

    Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21083.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

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

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

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation, the following finding is made:

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

Tom Dodson & Associates
Prepared by

June 2019
Date

Lead Agency (signature)

6/28/2019
Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

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

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

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

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

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

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

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

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

9) The explanation of each issue should identify:

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

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
I. AESTHETICS: Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

SUBSTANTIATION

a. *Less Than Significant Impact* – Adverse impacts to scenic vistas can occur in one of two ways. First, an area itself may contain existing scenic vistas that would be altered by new development. The proposed project extends from Well 33 located just north of Palo Verde Street along Benson Avenue in the City of Montclair to Well 32 just north of G Street along Benson Avenue in the City of Ontario. Well 30, the site at which the new Wellhead Treatment Plant will be installed, is located just east of Benson Avenue at San Bernardino Street. The majority of the project will be installed below ground within existing road rights of way, including 5,100 LF of raw water pipeline from Wells 32 and 33; 2,000 LF of brine pipeline; 900 LF of effluent pipeline to the City of Chino transmission main; and, 100 LF of pipeline to the Benson feeder pipeline. A review of the project area determined that there are no scenic vistas located internally within the project footprint of the pipeline alignments. The pipeline installation may impact views temporarily during construction; however, once constructed the pipelines will be located underground and there will be no potential to impact scenic vistas within the project footprint. Given that the proposed Wellhead Treatment Plant site is located at the Well 30 site which contains an existing well, it is anticipated that the addition of the Wellhead Treatment Plant at the Well 30 site would be consistent with the surrounding use.

A scenic vista impact can also occur when a scenic vista can be viewed from the project area or immediate vicinity and a proposed project may interfere with the view to a scenic vista. The installation of the pipeline alignments would be constructed belowground within existing roadways. Once constructed, the roadways will be returned to their original condition, and repaved. Given that the project would not degrade views to nearby scenic vistas and that the visual effects of pipeline installation and repaved sections of roadway would not substantially alter the views in the Project footprint in the long-term, implementation of the pipeline alignments is not expected to cause any substantial adverse effects on any important scenic vistas. At the proposed Wellhead Treatment Plant site, though the San Gabriel Mountains are north of the project site, views are limited due to surrounding development. As such, development of the Wellhead Treatment Plant at this site is not anticipated to obstruct any scenic vistas, particularly given that the project site is currently developed and contains an the existing Well 30, which will remain in place as part of this project. Therefore, implementation of the proposed project is not expected to cause any substantial adverse

effects on any important scenic vistas. This potential impact is considered a less than significant adverse aesthetic impact. No mitigation is required.

b. *Less That Significant Impact* – The project footprint does not contain any significant scenic resources. The pipeline alignment will be installed within existing roadways, none of which are located within an Officially Designated Scenic Highway[1]. None of the proposed activities will impact any scenic resources or views of scenic resources in the area. According to the City of Montclair General Plan, there are no state scenic highways located within the City, and therefore none will be impacted by the development of the proposed Wellhead Treatment Plant. The Wellhead Treatment Plant site contains several trees, which are anticipated to be retained on site. However, in the event that any of these trees must be removed, they will be replaced at a ratio of at least a 1:1 ratio. None of the trees at the Wellhead Treatment Plant site would be considered mature trees, and therefore are not protected by the City of Montclair's Municipal Code. Additionally, the proposed project does not contain any rock outcroppings or other significant scenic features because the entirety of the project footprint has been developed. Based on the site condition and immediate surroundings, the Wellhead Treatment site itself does not contain any significant scenic resources. The pipeline alignments would be located within existing roadways; therefore, no trees, rock outcroppings, historic building, or other scenic resources will be impacted as the pipeline footprint is limited to within existing roadways. Therefore, no damage to a scenic resource will occur and any impacts under this issue are considered less than significant.

c. *Less Than Significant Impact* – Please refer to the discussion under issue I(a) above. The proposed project would develop a Wellhead Treatment Plant at a site containing an existing well, and would develop pipeline associated with this development on site and within existing roadways. Given that the proposed project is a water infrastructure project, which are land use independent, the development of the Wellhead Treatment Plant and associated infrastructure would not conflict with applicable zoning or other regulations governing scenic quality. Furthermore, the proposed project would install the Wellhead Treatment Plant at the existing Well 30 site, and therefore will blend in with the existing visual character of the site. The proposed pipeline alignments will occur within existing roadways; as each segment of pipeline is installed, the roadway will be repaved with new asphalt, and will again function as a roadway. Given that construction of each segment of replacement pipeline is temporary, and that the roadways in which the pipeline shall be installed will be repaved once each segment of pipeline has been replaced, the visual character of the project footprint and surrounding area will remain effectively unchanged. Therefore, impacts from implementation of the proposed Plant 30 Wellhead Treatment Project are considered less than significant under this issue.

d. *Less Than Significant With Mitigation Incorporated* – Implementation of the proposed project will create new locations of light sources during the operational phases of the project. There are residences nearby the Wellhead Treatment Plant site, and adjacent to the pipeline alignments at several locations. The proposed Wellhead Treatment Plant will have additional lighting beyond that which currently exists at the project site, and therefore to protect nearby light sensitive land uses from direct light and glare from new lighting, the following mitigation measure will be implemented:

AES-1 ***A facilities lighting plan shall be prepared and shall demonstrate that glare from operating and safety night lights that may create light and glare affecting adjacent occupied property are sufficiently shielded to prevent light and glare from spilling into occupied structures. This plan shall specifically indicate that the lighting doesn't exceed 1.0 lumen at the nearest residence to any lighting site within the project footprint. This plan shall be implemented by the MVWD to minimize light or glare intrusion onto adjacent properties.***

The pipeline alignments will be constructed underground within existing roadways. No reflective materials or coatings are associated with the pipeline installation. The construction activities are

[1] http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/

limited to daylight hours unless an emergency occurs, and the amount of security lighting needed during construction will be minimal. Therefore, the pipeline alignment is not anticipated that the site would create any new permanent sources of light or glare. With implementation of the above measure potential light and glare from the Wellhead Treatment Plant can be controlled to a less than significant impact level.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
II. AGRICULTURE AND FORESTRY RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

SUBSTANTIATION

a. No Impact – According to the California Department of Conservation California Important Farm Finder map depicting the proposed project site and surrounding area (Figure II-1), the proposed project is located within Urban and Built-Up Land, with no farmland of any kind surrounding the area immediately adjacent to the project footprint. Additionally, the proposed Wellhead Treatment Plant is located within a site that both contains an existing well, and is designated for Public/Quasi

Public use by the Montclair General Plan, and the zoning classification is Single Family Residential, and as such is not planned for agricultural use. Therefore, the development of the Plant 30 Wellhead Treatment Project will not pose any significant adverse impact to agricultural resources or values. No mitigation is required.

b. *No Impact* – Implementation of the proposed project will not conflict with existing zoning for agricultural use, or a Williamson Act contract. As stated above, the Wellhead Treatment Plant site is designated for Public/Quasi Public use by the Montclair General Plan, and the zoning classification is Single Family Residential. The Wellhead Treatment Plant site is currently developed with an existing well (Well 30), and the project will install pipeline within existing road rights-of-way; the site does not currently contain any agricultural uses. Based on this information, the proposed project will not conflict with existing zoning for agricultural use, or a Williamson Act contract. No impacts are anticipated and no mitigation is required.

c. *No Impact* – The project footprint is not located within forest land, timberland or timberland zoned for Timberland Production. Therefore, the proposed project will not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)). No impacts are anticipated and no mitigation is required.

d. *No Impact* – The project footprint is not located within forest land and has no commercial trees on the property; therefore, the project will not result in the loss of forest land or conversion of forest land to non-forest production use. No impacts are anticipated and no mitigation is required.

e. *No Impact* – Implementation of the proposed project will not involve other changes in the existing environment, which, due to their location or nature, could result in conversion of valuable farmland to non-agricultural use or forest to non-forest uses. No agricultural or forest resources or uses occur within the general vicinity of the proposed project site. Therefore, no adverse impacts to agricultural, forest or timberland resources will result from project implementation and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

SUBSTANTIATION: The following information utilized in this section of the Initial Study was obtained from the *Air Quality and GHG Impact Analysis, Monte Vista Water District Plant 30 Wellhead Treatment Project, City of Montclair, California* prepared by Giroux and Associates dated April 9, 2019. This document is provided as Appendix 2 to this document.

Background

Climate

The climate of western San Bernardino County, as with all of Southern California, is governed largely by the strength and location of the semi-permanent high-pressure center over the Pacific Ocean and the moderating effects of the nearby vast oceanic heat reservoir. Local climatic conditions are characterized by very warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and comfortable humidity levels. Unfortunately, the same climatic conditions that create such a desirable living climate combine to severely restrict the ability of the local atmosphere to disperse the large volumes of air pollution generated by the population and industry attracted in part by the climate.

The project will be situated in an area where the pollutants generated in coastal portions of the Los Angeles basin undergo photochemical reactions and then move inland across the project site during the daily sea breeze cycle. The resulting smog at times gives San Bernardino County some of the worst air quality in all of California. Fortunately, significant air quality improvement in the last decade suggests that healthful air quality may someday be attained despite the limited regional meteorological dispersion potential. The combination of winds and inversions are thus critical determinants in leading to the degraded air quality in summer, and the generally good air quality in winter in the project area.

Air Quality Standards

Existing air quality is measured at established Southern California Air Quality Management District (SCAQMD) air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table III-1. Because the State of California had established Ambient Air Quality Standards (AAQS) several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air

standards. Those standards currently in effect in California are shown in Table III-1. Sources and health effects of various pollutants are shown in Table III-2.

Table III-1
AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	–	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		–		
Fine Particulate Matter (PM2.5)[9]	24 Hour	–	–	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15.0 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	–	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	–	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–	–	
Nitrogen Dioxide (NO2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	–	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	–	Ultraviolet Flourescense; Spectrophotometry (Paraosaniline Method)
	3 Hour	–		–	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	–	
	Annual Arithmetic Mean	–		0.030 ppm (for certain areas)[11]	–	
Lead 8[12,13]	30-Day Average	1.5 µg/m^3	Atomic Absorption	–	–	–
	Calendar Quarter	–		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Avg	–		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No Federal Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Footnotes

1 California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter – PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year, with a 24-hour average concentration above 150 $\mu g/m^3$, is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

3 Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5 National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6 National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7 Reference method as described by the EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the EPA.

8 On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9 On December 14, 2012, the national PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primarily and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primarily and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10 To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11 On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12 The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13 The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 j.tg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14 In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Table III-2
HEALTH EFFECTS OF MAJOR CRITERIA POLLUTANTS

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Fine Particulate Matter (PM-10)	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter (PM-2.5)	• Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.	• Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

Baseline Air Quality

Existing and probable future levels of air quality around the proposed project area can best be best inferred from ambient air quality measurements conducted by the SCAQMD at the Upland monitoring station. This station measures both regional pollution levels such as smog, as well as primary vehicular pollution levels near busy roadways such as carbon monoxide and nitrogen oxides as well as large particulates (PM-10). However smaller particulates (PM-2.5) data is only available at the nearby Ontario station. Table III-3 provides a 3-year summary of the monitoring data for the major air pollutants compiled from these air monitoring stations. From these data the following conclusions can be drawn:

1. Photochemical smog (ozone) levels frequently exceed standards. The 1-hour state standard was violated an average of 15 percent of all days in the last three years near Upland. The federal 8-hour standard has been exceeded an average of 17 percent of all days within the same period and the state 8-hour standard has been exceeded approximately 22 percent of all days. While ozone levels are still high, they are much lower than 10 to 20 years ago. Attainment of all clean air standards in the project vicinity is not likely to occur soon, but the severity and frequency of violations is expected to continue to slowly decline during the current decade.
2. PM-10 levels have exceeded the state 24-hour standard on approximately four percent of all measurement days. The three times less stringent federal 24 hour-standard has not been exceeded once in the last three years.
3. A substantial fraction of PM-10 is comprised of ultra-small diameter particulates capable of being inhaled into deep lung tissue (PM-2.5). Both the frequency of violations of particulate standards, as well as high percentage of PM-2.5, are air quality concerns in the project area. However, PM-2.5 readings very infrequently exceed the federal 24-hour PM-2.5 ambient standard with less than one percent of the measured days.
4. More localized pollutants such as carbon monoxide, nitrogen oxides, etc. are very low near the project site because background levels throughout western San Bernardino County, never exceed allowable levels. There is substantial excess dispersive capacity to accommodate localized vehicular air pollutants such as NOx or CO without any threat of violating applicable AAQS.

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table III-3
PROJECT AREA AIR QUALITY MONITORING SUMMARY – 2015-2017
(DAYS STANDARDS WERE EXCEEDED AND MAXIMUM OBSERVED LEVELS)

Pollutant/Standard	2015	2016	2017
Ozone			
1-Hour > 0.09 ppm (S)	49	53	66
8-Hour > 0.07 ppm (S)	69	88	87
8- Hour > 0.075 ppm (F)	53	65	72
Max. 1-Hour Conc. (ppm)	0.136	0.156	0.150
Max. 8-Hour Conc. (ppm)	0.110	0.116	0.127
Carbon Monoxide			
1-Hour > 20. ppm (S)	0	0	0
8-Hour > 9. ppm (S, F)	0	0	0
Max 8-Hour Conc. (ppm)	1.3	1.3	1.7
Nitrogen Dioxide			
1-Hour > 0.18 ppm (S)	0	0	0
Max. 1-Hour Conc. (ppm)	0.07	0.07	0.06

Pollutant/Standard	2015	2016	2017
Respirable Particulates (PM-10)			
24-Hour > 50 μg/m^3 (S)	12/336	5/363	26/320
24-Hour > 150 μg/m^3 (F)	0/336	0/363	0/320
Max. 24-Hr. Conc. (μg/m^3)	77.	72.	106.
Fine Particulates (PM-2.5) [1]			
24-Hour > 35 μg/m^3 (F)	1/58	0/55	0/49
Max. 24-Hr. Conc. (μg/m^3)	39.4	28.4	23.5

S=State Standard
F=Federal Standard
Source: South Coast AQMD
Upland Monitoring Station (5175) ,[1] Ontario 1408 Francis Street (5817)

Air Quality Planning

The U.S. EPA is responsible for setting and enforcing the NAAQS for O3, CO, NOx, SO2, PM10, PM2.5, and lead (7). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (14). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The Air Quality Management District (AQMD) adopted an updated clean air “blueprint” in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8-hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. The attainment date was to “slip” from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard. Because projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary “bump-up” from a “severe non-attainment” area to an “extreme non-attainment” designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on “black-box” measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from “severe-17” to “extreme.” This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

Table III-4
SOUTH COAST AIR BASIN EMISSIONS FORECASTS (EMISSIONS IN TONS/DAY)

Pollutant	2015[a]	2020[b]	2025[b]	2030[b]
NOx	357	289	266	257
VOC	400	393	393	391
PM-10	161	165	170	172
PM-2.5	67	68	70	71

[a]2015 Base Year.
[b]With current emissions reduction programs and adopted growth forecasts.
Source: California Air Resources Board, 2013 Almanac of Air Quality

AQMPs are required to be updated every three years. The 2012 AQMP was adopted in early 2013. An updated AQMP was required for completion in 2016. The 2016 AQMP was adopted by the SCAQMD Board in March, 2017, and has been submitted the California Air Resources Board for forwarding to the EPA. The 2016 AQMP acknowledges that motor vehicle emissions have been effectively controlled and that reductions in NOx, the continuing ozone problem pollutant, may need to come from major stationary sources (power plants, refineries, landfill flares, etc.). The current attainment deadlines for all federal non-attainment pollutants are now as follows:

8-hour ozone (70 ppb)	2032
Annual PM-2.5 (12 $\mu g/m^3$)	2025
8-hour ozone (75 ppb)	2024 (former standard)
1-hour ozone (120 ppb)	2023 (rescinded standard)
24-hour PM-2.5 (35 $\mu g/m^3$)	2019

The key challenge is that NOx emission levels, as a critical ozone precursor pollutant, are forecast to continue to exceed the levels that would allow the above deadlines to be met. Unless additional stringent NOx control measures are adopted and implemented, ozone attainment goals may not be met.

The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing water improvement projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

Significance Thresholds Used in This Document

Air quality impacts are considered “significant” if they cause clean air standards to be violated where they are currently met, or if they “substantially” contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Appendix G of the California CEQA Guidelines offers the following four tests of air quality impact significance. A project would have a potentially significant impact if it:

a) Conflict with or obstruct implementation of the applicable air quality plan?
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
c) Expose sensitive receptors to substantial pollutant concentrations?
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Primary Pollutants
Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

Secondary Pollutants
Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of significance of such emissions is based upon a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Table III-5
DAILY EMISSIONS THRESHOLDS

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

Additional Indicators
In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.
- Project could generate vehicle trips that cause a CO hot spot.

Impact Analysis

a. *Less Than Significant Impact* – Projects such as the proposed Plant 30 Wellhead Treatment Project do not directly relate to the AQMP in that there are no specific air quality programs or regulations governing general development. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis. The City requires compliance with the Municipal Code for project such as this, and MVWD intends to meet these standards. The Plant 30 Wellhead Treatment Project will be fully consistent with both the General Plan designation and Zone classification for the project site, mainly because the project involves water treatment, and such projects are considered land use independent. Thus, the proposed project is consistent with regional planning forecasts maintained by the Southern California Association of Governments (SCAG) regional plans. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant only because of consistency with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis. As the analysis of project-related emissions provided below indicates, the proposed project will not cause or be exposed to significant air pollution, and is, therefore, consistent with the applicable air quality plan.

b. *Less Than Significant With Mitigation Incorporated* – Air pollution emissions associated with the proposed project would occur over both a short and long-term time period. Short-term emissions include fugitive dust from construction activities (i.e., site prep, demolition, grading, and exhaust emission) at the proposed Project site. Long-term emissions generated by future operation of the proposed project primarily include energy consumption required to operate the Plant 30 facility and employee/visitor truck trips to the Plant 30 Wellhead Treatment facility.

Construction Emissions

The proposed project consists of development of a Wellhead Treatment Plant within the existing Well 30 site, to treat water from Wells 30, 32, and Well 33. On-site improvements include demolition of portions of the existing site, site civil improvements including paving and grading, and yard piping. Off-site construction include installation of pipelines such as a raw water pipelines from Well 32 and 33, the treated water pipeline (plant effluent), brine pipeline, and waste pipeline to the sewer. In total installation of approximately 8,100 linear feet of pipeline between 4-20 inch diameter will be required. The pipeline will on-average be installed in 3-foot wide trenches. The project is estimated to require 10 months of construction beginning in November 2019. The Wellhead treatment project will require 15 daily workers and the off-site pipeline will require 10 daily workers. With the off-site pipeline progress rate of 100-150 linear feet per day the total duration is expected to be approximately 80 days. Although exhaust emissions will result from on and off-site equipment, the exact types and numbers of equipment will vary among contractors such that such emissions cannot be quantified with certainty. The CalEEMod.2016.3.2 computer model was used to calculate emissions from the prototype construction equipment fleet and schedule as indicated in Table III-6.

Table III-6
CalEEMod CONSTRUCTION ACTIVITY EQUIPMENT FLEET AND WORKDAYS

WELLHEAD SITE

Phase Name and Duration	Equipment
Demolition (1 month) 100 CY demo export	1 Concrete Saw
	1 Dozer
	1 Loader/Backhoe
	2 Skid Steer Loaders
Grade (1 month)	1 Loader/Backhoe
	1 Dozer
	1 Excavator
	1 Grader
Pave/Pour Concrete Slabs (3 months)	1 Paver
	1 Roller
	1 Loader/Backhoe
	4 Mixers
	1 Compactor
Construction and Yard Piping/Drainage (5 months)	1 Trencher
	2 Forklifts
	1 Crane
	2 Skid Steer Loaders

OFF-SITE PIPELINE INSTALLATION

Phase Name and Duration	Equipment
Prep and Concrete Removal (20 days)	1 Concrete Saw
	2 Skid Steer Loaders
	2 Loader/Backhoes
Trenching and Pipeline Install (40 days)	2 Trenchers
	1 Excavator
	2 Forklifts
	1 Loader/Backhoes
Backfill and Paving (20 days)	4 Mixers
	1 Paver
	1 Rollers
	1 Loader/Backhoes
	2 Compactors

Utilizing the indicated equipment fleet shown in Tables III-6 the following worst-case daily construction emissions are calculated by CalEEMod and are listed in Table III-7.

Table III-7
CONSTRUCTION ACTIVITY EMISSIONS
MAXIMUM DAILY EMISSIONS (POUNDS/DAY)

Maximal Construction Emissions per Calendar Year	ROG	NOx	CO	SO_2	PM-10	PM-2.5
Plant 30						
2019	1.5	14.8	11.1	0.0	1.8	1.1
2020	1.4	13.9	8.8	0.0	1.7	1.1
Off-Site Piping						
2020	1.4	12.1	11.2	0.0	1.5	0.9
Yearly Totals						
2019	**1.5**	**14.8**	**11.1**	**0.0**	**1.8**	**1.1**
2020	**2.8**	**26.0**	**20.0**	**0.0**	**3.2**	**2.0**
SCAQMD Thresholds	75	100	550	150	150	55

Source: CalEEMod.2016.3.2 output in appendix

Peak daily construction activity emissions are below their respective SCAQMD CEQA significance thresholds, even if activities overlapped, without the need for any additional mitigation.

Peak daily construction activity emissions are below their respective SCAQMD CEQA significance thresholds without the need for any additional mitigation. However, though construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds, emissions minimization through enhanced dust control measures is recommended for use because of the non-attainment status of the air basin. As such, the following mitigation measure shall be implemented:

AIR-1 ***Fugitive Dust Control. The following measures shall be incorporated into Project plans and specifications for implementation:***

- ***Apply soil stabilizers or moisten inactive areas.***
- ***Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).***
- ***Cover all stock piles with tarps at the end of each day or as needed.***
- ***Provide water spray during loading and unloading of earthen materials.***
- ***Minimize in-out traffic from construction zone.***
- ***Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard.***
- ***Sweep streets daily if visible soil material is carried out from the construction site.***

Similarly, ozone precursor emissions (ROG and NOx) are calculated to be below SCAQMD CEQA thresholds. However, because of the regional non-attainment for photochemical smog, the use of reasonably available control measures for diesel exhaust is recommended. Combustion emissions control options include:

AIR-2 ***Exhaust Emissions Control. The following measures shall be incorporated into Project plans and specifications for implementation:***

- ***Utilize well-tuned off-road construction equipment.***
- ***Establish a preference for contractors using Tier 3 or better heavy equipment.***
- ***Enforce 5-minute idling limits for both on-road trucks and off-road equipment.***

With the above mitigation measures, any impacts related to construction emissions are considered less than significant. No further mitigation is required.

Operational Emissions
Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping and treatment. Electrical consumption has no single uniquely related air pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis.

Conclusion
With the incorporation of mitigation measures **AIR-1** and **AIR-2**, the development of the Plant 30 Wellhead Treatment Project would have a less than significant potential to result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

c. *Less Than Significant Impact* – The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

For the proposed project, the primary source of possible LST impact would be during construction. LST screening tables are available various source-receptor distances. For this project the most stringent thresholds for a 1-acre site and a 25-meter source-receptor distance was used to compare to emissions as shown in Table III-8.

Table III-8
LST AND PROJECT EMISSIONS (POUNDS/DAY)

LST 1 acre/25 meters Northwest San Bernardino Valley	**CO**	**NOx**	**PM-10**	**PM-2.5**
LST Thresholds	863	118	5	4
Max On-Site Emissions				
Plant 30 Wellhead	11	15	2	1
Off-Site Pipeline	11	12	2	1

LSTs were compared to the maximum daily construction activities. As seen in Table III-8, even without use of mitigation, emissions easily meet the LST for construction thresholds. LST impacts are less than significant. As such, the proposed project would have a less than significant potential to expose sensitive receptors to substantial pollutant concentrations.

d. *Less Than Significant Impact* – Project operations (pumping and treatment, and distribution) are an essentially closed system with negligible odor potential. Groundwater contains minimal organic matter capable of odor generation. Chlorine storage and dispensing is prevented from being released to the atmosphere by a required containment system.

The site uses low concentrations of chlorine for water disinfection, but it will be injected into the water stream and have no airborne pathways. The solution will be stored in tanks and the solution will be pumped to the inline mixer. The dosing is controlled by a metering pump installed close to the storage tank. The quality of the disinfected water coming out of the online mixer will be analyzed by a Chlorine Analyzer. Chemical levels will be diluted to below their odor threshold. Therefore, the potential for objectionable odors posing a health risk to humans on- or off-site is considered a less than significant impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

SUBSTANTIATION: The following information utilized in this Section of the Initial Study was obtained from a Biological Resources Assessment prepared by Jericho Systems titled “CEQA Plus Biological Evaluation, Monte Vista Water District Plant 30 Wellhead Treatment Project, Montclair, CA” dated May 3, 2019, which is provided as Appendix 3 to this document.

Background

The City of Montclair General Plan states the following in regards to biological resources:

> *(1) wildlife populations no longer exist in the study area due to the elimination of wildlife habitat.*
> *(2) Both the City and its Sphere of Influence are highly urbanized and few undisturbed areas now exist within the planning area.*
> *(3) The Department has been unable to identify any information indicating the presence or suspected presence of any protected plant or animal species or sensitive plant communities and habitats within the planning area that may be impacted by the proposed project.*

CEQA Plus Biological Evaluation Conclusion

The proposed Project will not affect any State or federally listed endangered, threatened, or species of special concern, because there is no habitat to support these species within, adjacent to, or in the broader vicinity of the Project area. In addition, the proposed Project will not adversely affect Critical Habitat as none exists within the Project area.

The Project area supports ornamental trees that have the potential to provide nestable habitat to migratory birds protected under the Migratory Birds Treaty Act (MBTA). Therefore, pre-construction surveys are warranted and recommended should project implementation occur during the bird nesting season.

a. *No Impact* – Vegetation at each well site consists of mature landscaping with planted ornamental and native trees (sycamores, olive, rosemary shrubs, etc.). Residential urban development surrounds each well site. The pipeline alignments along Benson Avenue and San Bernardino Street are paved with either concrete or asphalt and are completely surrounded by urban residential development with other related development such as schools and churches. The habitat conditions within and adjacent to the Project area are not suitable to support for any sensitive habitat and/or any species listed or proposed for listing under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA), or species designated as sensitive by the California Department of Fish and Wildlife (CDFW), or California Native Plant Society (CNPS). With no habitat or species of concern located within the project area, the development of the MVWD Plant 30 Wellhead Treatment Project has no potential for impact to any native biological resources. No impacts are anticipated. No mitigation is required.

b. *No Impact* – Neither the project footprint or surrounding area contain any riparian habitat or other sensitive natural community resources. Therefore, no adverse impact to riparian habitat or any native biological resources would occur from implementing the proposed project. No mitigation is required.

c. *No Impact* – According to the IPaC Trust Resources Report (Appendix 3), the project site does not contain any wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.), or any other sensitive natural community resource. Therefore, with no habitat or species of concern located within the project area, no impacts are anticipated to occur from the implementation of the MVWD Plant 30 Wellhead Treatment Project. No mitigation is required.

d. *Less Than Significant With Mitigation Incorporated* – According to the CEQA Plus Biological Evaluation (Appendix 3), there are species of migratory birds that could potentially be affected by construction activities in the area. With no native habitat, and no wildlife corridors that traverse the project site, implementation of the proposed project is not anticipated to interfere with the movement of native animals of any kind, or to impede the use of any native wildlife nursery sites. However, the project may require removal and replacement of trees on site that may be used for nesting birds. Therefore, the following mitigation measure is provided as a contingency in the event that any nesting birds are found at the site location:

BIO-1 ***The State of California prohibits the "take" of active bird nests. To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal should be conducted outside of the the State identified nesting season (Raptor nesting season is February 15 through July 31; and migratory bird nesting season is March 15 through September 1). Alternatively, the site shall be evaluated by a qualified biologist prior to the initiation of ground disturbace to determine the presence or absence of nesting birds. Acitve bird nests MUST be avoided during the nesting season. If an active nest is located in the project construction area it will be flagged and a 300-foot avoidance buffer placed around it. No activity shall occur within the 300-foot buffer until the young have fledged the nest.***

With implementation of the above mitigation measure, any impacts under this issue are considered less than significant.

e. *Less Than Significant Impact* – The proposed project footprint is highly disturbed as the Wellhead Treatment Plant site currently contains an existing well (Well 30), and the pipeline alignments will

be located within existing road rights-of-way. The Wellhead Treatment Plant site contains several trees that will be retained on site; however, some trees at this site may be removed and replaced at a ratio of at least a 1:1 ratio. None of these trees would be considered mature trees, and therefore are not protected by the City of Montclair's Municipal Code. No other local policies or ordinances protecting biological resources would apply to the proposed project, as no native biological resources exist within the project footprint. Therefore, impacts under this issue are considered less than significant and no mitigation is required.

f. *No Impact* – The footprint of the entirety of the Plant 30 Wellhead Treatment Project is 100% developed, and as stated under Background above, the City of Montclair General Plan concluded that the City is urbanized and has little or no area that could support native wildlife. As such, there are no adopted plans to protect native habitats or natural communities. Therefore, the proposed project does not have a potential conflict with any such plans.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

SUBSTANTIATION: A cultural resources report has been prepared to evaluate the potential for cultural resources to occur within the project area of potential effect entitled "Identification and Evaluation of Historic Properties Plant 30 Wellhead Treatment Plant and Pipeline Project, City of Montclair, San Bernardino County, California," prepared by CRM TECH dated May 10, 2019 (Appendix 4). The following summary information has been abstracted from this report. It provides an overview and findings regarding the cultural resources found within the project area.

Background

The purpose of the study is to provide MVWD and SWRCB with the necessary information and analysis to determine whether the proposed undertaking would have an effect on any "historic properties" or "historical resources," as defined by the pertinent federal and state statutes and regulations, that may exist in or near the area of potential effect (APE). In order to accomplish this objective, CRM TECH conducted a cultural resources records search, pursued historical and geoarchaeological background research, contacted Native American representatives, and carried out a systematic field survey of the entire APE.

Throughout the course of the study, no "historic properties" or "historical resources" were encountered within the APE, and the heavily disturbed subsurface sediments in the vertical APE appear to be relatively low in archaeological sensitivity. Therefore, pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1, CRM TECH recommends to MVWD and SWRCB a finding that *no "historic properties" or "historical resources" will be affected by the proposed undertaking*.

No further cultural resources investigation is recommended for the undertaking unless project plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are inadvertently discovered during earth-moving operations associated with the undertaking, all work in

the immediate area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

Impact Analysis

a&b. *Less Than Significant With Mitigation Incorporated* – CEQA establishes 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" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

Per the above discussion and definition, no archaeological sites or isolates were recorded within the Project boundaries; thus, none of them requires further consideration during this study. In light of this information and pursuant to PRC §21084.1, the following conclusions have been reached for the Project:

- No historical resources within or adjacent to the Project area have any potential to be disturbed as they are not within the proposed area in which the facilities will be constructed and developed, and thus, the Project as it is currently proposed will not cause a substantial adverse change to any known historical resources.
- No further cultural resources investigation is necessary for the proposed project unless construction plans undergo such changes as to include areas not covered by this study.

However, if buried cultural materials are accidentally discovered during any earth-moving operations associated with the Project, the following mitigation measure shall be implemented:

CUL-1 Should any cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist. Responsibility for making this determination shall be with MVWD's onsite inspector. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

With the above mitigation incorporation, as well as the mitigation identified under Tribal Cultural Resources below, the potential for impacts to cultural resources will be reduced to a less than significant level. No additional mitigation is required.

c. *Less Than Significant With Mitigation Incorporated* – As noted in the discussion above, no available information suggests that human remains may occur within the APE and the potential for such an occurrence is considered very low. State law (Section 7050.5 of the Health and Safety Code) as well as local laws requires that the Police Department, County Sheriff and Coroner's Office receive notification if human remains are encountered. However, the following mitigation measure shall be implemented to ensure that construction related activities protect such findings:

CUL-2 Should human remains or funerary objects be encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

With the implementation of the above mitigation measure, any impacts under this issue are considered less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VI. ENERGY: Would the project:				
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operations?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

SUBSTANTIATION

a&b. *Less Than Significant Impact* – Please refer to the Project Description above and to Appendix 1 to this document for specific details regarding the energy requirements for the proposed Wellhead Treatment Plant Project. The existing Well 30, at the Wellhead Treatment Plant site is connected to SCW service routed underground from a utility pole mounted transformed. The Main Switchboard will supply a new 3 phase, 100A, power panel (PP-1) located in the electrical room. The panel will distribute power to the various new equipment and loads throughout the proposed treatment system. The power panel will be provided with surge protection and lock out features.

As stated in Section III, Air Quality, the construction of the proposed Plant 30 Wellhead Treatment Project would require mitigation measures to minimize emissions impacts from construction equipment use. These mitigation measures also apply to energy resources as they require equipment not in use for 5 minutes to be turned off, and for electrical construction equipment to be used where available. These measures would prevent a significant impact during construction due to wasteful, inefficient, or unnecessary consumption of energy resources, and would also conform to the CARB regulations regarding energy efficiency.

California Code of Regulations Title 24, Part 6, California's Energy Efficiency Standards for Residential and Nonresidential Buildings was established in 1978 in response to a legislative mandate to reduce California's energy consumption. New standards were adopted by the Commission in 2008 as mandated by Assembly Bill 970 to reduce California's electricity demand. The proposed project is required to include energy efficient equipment such as lighting to minimize energy impacts. SCE will be the primary provider for electricity. According to SCE's website[2], SCE is committed to delivering power reliably and to meet demand; SCE is expanding and upgrading the transmission and distribution networks to meet the region's growing demand for electricity, and improve grid performance, while meeting California's ambitious renewable-power goals. As such, it is anticipated that SCE would have ample power supply to serve the project without the need for additional electrical capacity.

[2] https://www.sce.com/about-us/reliability/meeting-demand

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VII. GEOLOGY AND SOILS: Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
(ii) Strong seismic ground shaking?	☐	☐	☒	☐
(iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
(iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite land-slide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

SUBSTANTIATION

a. Ground Rupture

Less Than Significant Impact – According to the California Department of Conservation California Geologic Survey Map of the project area (Figure VII-1) the proposed project is not located within an Alquist-Priolo Fault Zone. The City of Montclair General Plan Regional Fault Map, provided as Figure VII-2, depicts the faults that are located within and surrounding the City. The Chino Fault is located within the vicinity of the proposed project to the south; additionally, the San Andreas Fault is located approximately 15 miles north of the proposed project footprint. There is a potential for the proposed Wellhead Treatment Plant and associated infrastructure to be subject to relatively strong ground motions. However, based on this information, the risk for ground rupture at the site location is low; therefore, it is not likely that employees servicing the Wellhead Treatment Plant would be subject to seismic hazards from rupture of a known earthquake fault. Furthermore, the project

would be constructed to meet current California Building Code, which includes seismic safety standards. Therefore, any impacts under this issue are considered less than significant; no mitigation is required.

Strong Seismic Ground Shaking

Less Than Significant Impact – As stated in the discussion above, several faults run through the southern California region in which the proposed project is located. The City of Montclair General Plan Regional Fault Map (Figure VI-2) shows the surrounding faults which include the Chino Fault, the Sierra Madre Fault, the San Jacinto Fault, the Cucamonga Fault, and the San Andreas Fault. Like all other development projects in the City and throughout the Southern California Region, the proposed project will be required to comply with all applicable seismic design standards contained in the 2016 California Building Code (CBC), including Section 1613 Earthquake Loads. Compliance with the CBC will ensure that structural integrity will be maintained in the event of an earthquake. Additionally, underground pipelines are not typically susceptible to severe damage from ground shaking. Many such facilities exist and function within areas susceptible to strong ground shaking effects. Therefore, there is a less than significant potential for people or structures to be exposed to strong seismic ground shaking. No mitigation is required.

Seismic-related Ground Failure Including Liquefaction

No Impact – The Wellhead Treatment Plant site is entirely developed and contains an existing well; the pipeline alignments will occur within existing roadways or within the existing Well 30, 32, and 33 sites. The California Geologic Survey Earthquake Zones of Required Investigation Ontario Quadrangle Map, provided as Figure VI-3, depicts the project area. Based on the Seismic Hazard Zones identified within Figure VI-3, the proposed project is not located within an identified Liquefaction Zone. Therefore, the Project will not expose people or structures to potential substantial adverse liquefaction hazards, including the risk of loss, injury, or death involving landslides. No impacts under this issue are anticipated and no mitigation is required. No mitigation is required.

Landslides

No Impact – According to the map prepared by the California Geologic Survey depicting Earthquake Zones of Required Investigation Ontario Quadrangle Map (Figure VI-3), the proposed project is not located in an area with any known earthquake induced landslide hazards. Based on a site reconnaissance the project area is generally flat and is completely developed. Therefore, the Project will not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. No impacts under this issue are anticipated and no mitigation is required.

b. *Less Than Significant With Mitigation Incorporated* – The entirety of the project area has been developed or has been graded, compacted, and paved with asphalt because the whole of the project area has been developed. As a result, the potential for soil erosion, loss of topsoil, and/or placing structures on unstable soils is generally considered less than significant. City grading standards, best management practices and the Storm Water Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP) are required to control the potential significant erosion hazards. The pipeline alignments will result in land disturbance in the areas that will require removal of roadway to accommodate the trenching required to install the various segments of pipeline. Adequate drainage facilities exist to accommodate existing drainage flows, and no change will result once the roadways are repaved and the pipelines are in place belowground. Additionally, the Wellhead Treatment Plant site is entirely developed and will require removal of existing concrete to modify the site to include the Wellhead Treatment Plant on-site infrastructure. This Project will result in the disturbance of more than one acre of land and will require filing a Notice of Intent (NOI), securing a National Pollutant Discharge Elimination System (NPDES), general construction stormwater discharge permit, and preparation and implementation of a Stormwater

Pollution Prevention Plan (SWPPP) that is reviewed and approved by DWP. The SWPPP will include but not be limited to the following measures to mitigate potential impacts associated with erosion and surface water quality degradation during construction:

GEO-1 Stored backfill material shall be covered with water resistant material during periods of heavy precipitation to reduce the potential for rainfall erosion of the material. If covering is not feasible, then measures such as the use of straw bales or sand bags shall be used to capture and hold eroded material on the project site for future cleanup.

GEO-2 Excavated areas shall be properly backfilled and compacted. Paved areas disturbed by this project will be repaved in such a manner that roadways and other disturbed areas are returned to as near the pre-project condition as is feasible.

GEO-3 All exposed, disturbed soil (trenches, stored backfill, etc.) will be sprayed with water or soil binders twice a day or more frequently if fugitive dust is observed migrating from the site within which the pipelines are being installed.

GEO-4 The length of trench which can be left open at any given time will be limited to that needed to reasonably perform construction activities. This will serve to reduce the amount of backfill stored onsite at any given time.

With implementation of the above mitigation measures, any impacts are considered less than significant. No further mitigation is necessary.

c. *Less Than Significant Impact* – Refer to the discussion under VII(a) above. Potential instability associated with slope stability and liquefaction related to the project was determined to be less than significant, as outlined under discussion a(iii) and a(iv) above. The potential for shrinkage or subsidence at the site was determined to be limited as the project is not identified by the California Geologic Survey Earthquake Zones of Required Investigation Ontario Quadrangle Map (Figure VII-3) as being located within a liquefaction hazard zone. Additionally, the proposed project footprint is currently fully developed, which minimizes the potential for subsidence to occur at the project site. Therefore, implementation of the proposed project will not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse. Impacts are considered less than significant and no mitigation is required.

d. *No Impact* – According to the United States Department of Agriculture (USDA) Web Soil Survey Soil map prepared for the project site (Appendix 5), the proposed project is located on Tujunga loamy sand, 0 to 5 percent slopes and Tujunga gravelly loamy sand 0 to 9 percent slopes. Expansive soils are generally of a clay type soil, not a loamy sand such as the Tujunga series soils that underlay the project site. Thus, based on the absence of clay-type soils on site, the proposed project would not be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property. No impacts are anticipated and no mitigation is required.

e. *No Impact* – This project will develop an above ground bolted steel tank will be utilized to store GAC backwash waste, IX backwash, and IX fast rinse waste. The waste would be metered into a new sewer connection line be require a new connection to the regional wastewater collection system and it will not utilize any subsurface septic tank or leach system. Therefore, no impact to underlying soil from wastewater disposal can occur and no mitigation is required.

f. *Less Than Significant With Mitigation Incorporated* – No unique geologic features exist within the project footprint, and no unique geologic features are known or suspected to occur beneath the

sites. The potential for discovering paleontological resources during development of the Project is considered highly unlikely based on the fact that the footprint has been previously engineered and disturbed at depth. However, because the Project area has not been surveyed in recent history, and the fact that these resources are located beneath the surface and can only be discovered as a result of ground disturbance activities, the following measure shall be implemented:

GEO-5 ***Should any paleontological or unique geological resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection should be performed immediately by a qualified paleontologist or geologist depending on the type of resource discovered. Responsibility for making this determination shall be with the MVWD's onsite inspector. The paleontological or geological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.***

With the implementation of the above mitigation measure, the project would have a less than significant potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
VIII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

SUBSTANTIATION: The following information utilized in this section of the Initial Study was obtained from the *Air Quality and GHG Impact Analysis, Monte Vista Water District Plant 30 Wellhead Treatment Project, City of Montclair, California* prepared by Giroux and Associates dated April 9, 2019. This document is provided as Appendix 2 to this document.

a&b. *Less Than Significant Impact –*

Global Climate Change (GCC) is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. Many scientists believe that the climate shift taking place since the industrial revolution (1900) is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of greenhouse gases in the earth's atmosphere, including carbon dioxide, methane, nitrous oxide, and fluorinated gases. Many scientists believe that this increased rate of climate change is the result of greenhouse gases resulting from human activity and industrialization over the past 200 years.

An individual project like the Project evaluated in this GHGA cannot generate enough greenhouse gas emissions to effect a discernible change in global climate. However, the Project may participate in the potential for GCC by its incremental contribution of greenhouse gasses combined with the cumulative increase of all other sources of greenhouse gases, which when taken together constitute potential influences on GCC.

Significance Thresholds

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

- Generates greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflicts with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

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

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

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

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

Project Related GHG Emissions Generated

Construction Activity GHG Emissions
The project is assumed to require 10 months for construction starting in November of 2019 and continuing September 2020. During project construction, the CalEEMod2016.3.2 computer model predicts that the construction activities will generate the annual CO_2e emissions identified in Table VIII-1.

Table VIII-1
CONSTRUCTION EMISSIONS (METRIC TONS CO_2(e))

Year 2019 Wellhead	38.1
Year 2020Wellhead	116.0
Year 2020 Off-Site Piping	57.3
Total	**211.4**
Amortized	7.0
Significance Threshold	3,000

*CalEEMod Output provided in appendix

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30-year lifetime. The amortized level is also provided. GHG impacts from construction are considered individually less than significant.

Operational GHG Emissions
Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping and treatment. Electrical consumption has no single uniquely related GHG pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis.

Consistency with GHG Plans, Programs and Policies
The City of Montclair participated in preparation of the San Bernardino County Regional Greenhouse Gas Reduction Plan in March 2014. In this document, the City of Montclair selected a goal to reduce its GHG emissions to a level that is 20% below its 2008 GHG emissions by 2020. The City plans for these reductions to stem from building energy alternatives, wastewater reuse, smartbus technologies and other performance standard for new development.

Water conveyance and treatment is a very small component of the total City of Montclair GHG emissions inventory. However, it is likely that this project would be considered GHG positive as it provides a localized water source and distribution system.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
IX. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

SUBSTANTIATION

a&b. *Less Than Significant With Mitigation Incorporated* – The project may create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or may create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. During construction there is a potential for accidental release of petroleum products in sufficient quantity to pose a significant hazard to people and the environment. The following mitigation measure will be incorporated into the Storm Water Pollution Prevent Plan (SWPPP) prepared for the project and implementation of this measure can reduce this potential hazard to a less than significant level.

HAZ-1 All spills or leakage of petroleum products during construction activities will be remediated in compliance with applicable state and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste will be collected and disposed of at an appropriately licensed disposal or treatment facility. This measure will be incorporated into the SWPPP prepared for the Project development.

The project will consist of a new Wellhead Treatment Plant and supporting onsite infrastructure at MVWD Well 30; 5,100 LF of raw water pipeline from Wells 32 and 33; 2,000 LF of brine pipeline; 100 LF of pipeline to the Benson feeder pipeline; a 900 LF effluent pipeline to the City of Chino transmission main and, infrastructure to connect Wells 32 and 33 to the new Wellhead Treatment Plant at MVWD Well 30. The proposed water treatment process will require a holding tank containing sodium hypochlorite. The process will also require storage of Cl_2 (chlorine gas). Additionally, the proposed water treatment process will include GAC, which will remove 1,2,3-TCP from the Wells 30, 32, and 33 water, and is an adsorbent material that removes a variety of natural organic compounds, taste and odor compounds, and synthetic organic compounds. In order to remove nitrate from the source water, IX will be utilized, which is a contaminant removal process that exchanges one set of ions for another. MVWD will develop safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous. These procedures will comply with all federal, state and local regulations will ensure that the Project operates in a manner that poses no substantial hazards to the public or the environment. No additional mitigation is necessary to ensure the impact of managing these chemicals result in a less than significant impact on the environment. The activities associated with remaining facilities within the proposed Plant 30 Wellhead Treatment Project will not involve significant potential for routine transport or use of substantial volumes of hazardous materials or routine generation of hazardous wastes.

c. *Less Than Significant Impact* – The Project will not emit hazardous emissions or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. The proposed Wellhead Treatment Plant is located within the site containing the existing Well 30 site, which is located adjacent to Vernon Middle School. The existing Well 30 does not currently utilize chlorine to treat the water extracted from the well. However, the proposed project will include the development of a Wellhead Treatment Plant that will require use of several materials that are potentially hazardous when not handled according to Federal, State, and local regulations. These materials will be enclosed within a container that can control accidental release. The pipeline alignments, which will not involve the use of hazardous materials and will be located underground, would be located within one quarter mile of El Camino Elementary School. As previously stated, the Project will comply with all federal, state and local regulations, which will ensure that no existing or proposed schools will be impacted by the use of these materials as part of the proposed project. Substantial hazards to the public or the environment involving the use of petroleum products and exhaust emissions with construction activities are will be minimal, as stated under the Air Quality Section of this document. All hazardous or potentially hazardous materials would comply with all applicable federal, state, and local agencies and regulations pertaining to the handling and use of hazardous materials. Adherence to these policies and regulations, as well as the implementation of the above mitigation measures will ensure that the Project will not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school during either construction or operations of the Project. Any impacts under this issue are considered less than significant, and no mitigation is required.

d. *Less Than Significant Impact* – According to the California State Water Board's GEOTRACKER site, which provides information regarding Leaking Underground Storage Tanks (LUST), there are no active LUST locations within or around the project alignment (Figure IX-1). There are 6 LUST Cleanup sites adjacent to the overall project footprint (Figure IX-2 through IX-7); the source of contamination has been remediated at these LUST Cleanup sites. Therefore, these remediated LUST Cleanup sites will have no potential to pose a hazard to the public or the environment. Given

that there are no open LUST cases within the vicinity of the proposed project, impacts under this issue are considered less than significant and

e. *No Impact* – There nearest public airport is the Ontario International Airport, located approximately 6 miles east of the project. According to the LA/Ontario International Airport Land Use Compatibility Plan, Compatibility Policy Map: Safety Zones (Figure IX-8), the proposed project is not located within any identified safety zone. Brackett Field is located approximately 5 miles northwest of the project site in the City of La Verne, however at this distance, the project has no potential to cause or experience any adverse impact related to public airport operations at either Brackett Field or Ontario International Airport. There are no private airstrips located within two miles of the Project site. Therefore, the project area has no potential to cause or experience any adverse impact related to private airstrip operations. No impacts will occur as a result of project implementation. No mitigation is required.

f. *Less Than Significant With Mitigation Incorporated* – According to the City's General Plan, no evacuation routes have been identified, though effectively the I-10 could be considered an evacuation route within the City. The proposed project would not disrupt traffic to the I-10, though the project would require lane closure and traffic management along the roadways in which pipeline will be installed during construction only. Refer to the Transportation/Traffic Section of this document, Section XVI. Mitigation to address any potential short-term traffic disruption and emergency access issues are included in this section. Impacts are reduced to a less than significant level with mitigation incorporated. No additional mitigation is required.

g. *No Impact* – According to the San Bernardino County Land Use Plan General Plan Hazard Overlay for the project area, the proposed project is not located within the fire safety overlay district (Figure VIII-9). The proposed project area is located in an urban area removed from the high fire hazard areas that are located adjacent to the San Gabriel Mountains. Therefore, project implementation would not result and a potential to expose people or structures to fire hazards. Potential project-related impacts are less than significant; no mitigation measures are required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
X. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐
(i) result in substantial erosion or siltation onsite or offsite?	☐	☐	☒	☐
(ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?	☐	☐	☒	☐
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?; or,	☐	☐	☒	☐
(iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant With Mitigation Incorporated* – The proposed Plant 30 Wellhead Treatment Project is located within the Cities of Montclair and Ontario. The project in and of itself will result in construction of new water treatment systems that would allow MVWD to reduce levels of 1,2,3-TCP, perchlorate, and nitrate to acceptable DDW levels. For a developed area, the only three sources of potential violation of water quality standards or waste discharge requirements are from generation of municipal wastewater; from stormwater runoff; and potential discharges of pollutants, such as accidental spills. The City of Montclair implements National Pollutant Discharge Elimination System (NPDES) requirements for surface discharge for all qualified Projects. The Project site is beyond one acre in size, therefore, it is required to obtain coverage under an NPDES permit. To address stormwater and accidental spills within this environment, any new project must ensure that site development implements a Storm Water Pollution Prevention Plan (SWPPP) to control potential sources of water pollution that could violate any standards or discharge requirements during construction. Also, a Water Quality Management Plan (WQMP) must be prepared and implemented to ensure that project-related surface runoff meets discharge requirements over the long term. The SWPPP would specify the Best Management Practices (BMPs) that the Project would be required to implement during construction activities to ensure that

all potential pollutants of concern are controlled, minimized, and/or otherwise appropriately treated prior to being discharged from the subject property as stormwater runoff. Compliance with the terms and conditions of the NPDES and the SWPPP is mandatory and is judged adequate mitigation by the regulatory agencies for potential impacts to stormwater during construction activities. Implementation of the following mitigation measure is also considered adequate to reduce potential impacts to stormwater runoff to a less than significant level.

HYD-1 ***MVWD shall require that the construction contractor prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving offsite into receiving waters. The SWPPP shall include a Spill Prevention and Cleanup Plan that identifies the methods of containing, cleanup, transport and proper disposal of hazardous chemicals or materials released during construction activities that are compatible with applicable laws and regulations. BMPs to be implemented in the SWPPP may include but not be limited to:***

- ***The use of silt fences;***
- ***The use of temporary stormwater desilting or retention basins;***
- ***The use of water bars to reduce the velocity of stormwater runoff;***
- ***The use of wheel washers on construction equipment leaving the site;***
- ***The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;***
- ***The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and***
- ***Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.***

With implementation of these mandatory Plans and their BMPs, as well as mitigation measure HAZ-1 and HYD-1 above, the development of the MVWD Plant 30 Wellhead Treatment site will not cause a violation of any water quality standards or waste discharge.

b. *Less Than Significant Impact* – The proposed project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. The proposed project will not increase the amount of water available to MVWD or City of Chino customers, but it will expand the infrastructure from Wells 32 and 33 to reach the Well 30 site where the raw water will be treated by a new Wellhead Treatment Plant to reduce levels of 1,2,3-TCP, perchlorate, and nitrate to acceptable DDW levels. In effect, the treatment program will expand the available groundwater from the Chino Basin aquifer. According to MVWD's 2015 Urban Water Management Plan (UWMP), MVWD currently has 12 active groundwater wells with a combined capacity of approximately 28.2 million gallons per day (MGD).[3] The proposed project would not create a greater area of impervious surface than that which exists within the project footprint, and also would not require greater water supplies from the aquifer in order to operate, particularly because the proposed project would treat a comparable amount of water for potable use to that which MVWD and the City of Chino supply at present. Thus, the Plant 30 Wellhead Treatment Project is not forecast to cause a significant demand for new groundwater supplies. The potential impact under this proposed project is considered less than significant; no mitigation measures are required.

[3] http://www.mvwd.org/download.cfm?ID=1716

c.(i) *Less Than Significant Impact* – The proposed project is not anticipated to significantly change the volume of flows downstream of the project site, and would not be anticipated to change the amount of surface water in any water body in an amount that could initiate a new cycle of erosion or sedimentation downstream of the project site. The onsite drainage will capture the incremental increase in runoff from the project site associated with project development. Furthermore, once installed, the roadways within which the pipeline alignments will be located would be returned to their original condition or better and as such would not create any potential for greater erosion on or offsite. The new Wellhead Treatment Plant site will incorporate infiltration mechanisms throughout the site to minimize runoff from leaving the project site. The downstream drainage system will not be altered and given the control of future surface runoff from the Wellhead Treatment Plant site, thus, the potential for downstream erosion or sedimentation will be controlled to a less than significant impact level.

c.(ii) *Less Than Significant Impact* – The proposed project will alter the existing drainage courses or patterns onsite but will maintain the existing offsite downstream drainage system through control of future discharges from the site, which would prevent flooding onsite or offsite from occurring. The proposed onsite drainage improvements include replacing an existing catch basin at the Wellhead Treatment Plant. This system will be designed to capture incremental onsite runoff, and prevent additional runoff from leaving the site. Thus, the implementation of onsite drainage improvements and applicable requirements will ensure that drainage and stormwater will not substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site. Impacts under this issue are considered less than significant with no mitigation required.

c.(iii) *Less Than Significant Impact* –The proposed project will alter the site such that drainage within the site will be altered, but will maintain the existing offsite downstream drainage system through control of future discharges from the site, which would prevent the project from exceeding the capacity of existing or planned stormwater drainage systems and from providing substantial additional sources of polluted runoff. The Wellhead Treatment Plant site will be designed to include combination of surface and below grade drainage systems will be provided. The overall grade of the site from east to west and towards the existing catch basins will be maintained. The existing pump-to- waste discharge structure and catch basin will be the primary on-site collection point, with the existing connection to the 66” storm drain in San Bernardino Street being protected. The pipeline alignment will be installed within existing roadways that would be returned to their original or better condition once the pipeline has been installed, and therefore no changes to the stormwater drainage system within these roadways are anticipated. Thus, the implementation of onsite drainage improvements at the Wellhead Treatment Plant site and applicable requirements throughout the project footprint will ensure that that drainage and stormwater will not create or contribute runoff that would exceed the capacity of existing or planned offsite stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts under this issue are considered less than significant with no mitigation required.

c.(iv) *Less Than Significant Impact* – According to the San Bernardino County Land Use Plan General Plan Hazard Overlays (Figure X-1), the proposed project footprint is not located in an area that contains any flood hazards. Furthermore, development of this site is not anticipated to redirect or impede flood flow at the project site, particularly given that drainage on site will be directed to the onsite drainage systems, which will be capable of intercepting the future flow rate from the project site. Therefore, impacts under this issue are considered less than significant and no mitigation is required.

d. *No Impact* – According to the San Bernardino County Land Use Plan General Plan Hazard Overlay Map depicting the project area, the proposed project is not located in an area susceptible to damn inundation (Figure X-1). Therefore, dam inundation is not likely, and implementation of the proposed Project would not expose people or structures to any significant risk of releasing pollutants due involving flooding as a result of a levee or dam to risk than that which presently exists within the project footprint. No mitigation is required.

e. *Less Than Significant Impact* – The purpose of the proposed project is to reduce levels of 1,2,3-TCP, perchlorate, and nitrate to acceptable DDW levels within MVWD and the City of Chino's respective service areas by developing a Wellhead Treatment Plant that would treat water from Wells 30, 32, and 33. Water quality results for MVWD Wells 30 and 32, and MVWD and City of Chino co-owned Well 33 show concentrations of 1,2,3-TCP, nitrate, and perchlorate at levels above the respective DLRs/MCLs for these constituents. The proposed project would ensure that the water quality from these three wells improves to a level that is below the DLRs/MCLs for each constituent. As such, the proposed project would result in MVWD conforming to DDW standards, and therefore, the proposed project would have a less than significant potential to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XI. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

SUBSTANTIATION

a. *No Impact* – The project consists of development of a Wellhead Treatment Plant at the existing Well 30 site, and the installation of various pipeline alignments as supporting infrastructure. The pipeline alignments have no General Plan Land Use Designation because pipelines and the roadways in which the pipeline will be installed are considered essential infrastructure. The Wellhead Treatment Plant site (Well 30 site) has a City of Montclair General Plan land use designation of Public Quasi Public and the zoning classification is Single Family Residential. Furthermore, the proposed Wellhead Treatment Plant site contains the existing Well 30, and therefore, development of this project site would not physically divide an established community, particularly given that the addition of the Wellhead Treatment Plant is a complimentary use to that which exists on site. The development of the pipeline alignments would not result in physically dividing an established community, particularly because this action will occur within existing road rights-of-way and once constructed, the roadways will continue to function as they do at present. No impacts are anticipated and no mitigation is required.

b. *Less Than Significant Impact* – Please refer to the discussion under issue XI(a) above. The proposed project is zoned for Single Family Residential and has a City of Montclair General Plan land use designation of Public Quasi Public. The types of improvements proposed by this project are considered land use independent, and can be constructed within any land use district. Additionally, several features of the proposed project, such as the water transmission pipelines, will be constructed below ground within existing roadway rights-of-way, and will have no permanent effect on the efficiency of the surrounding roadway systems. Therefore, implementation will not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Any impacts are considered less than significant. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XII. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

SUBSTANTIATION:

a&b. *No Impact* – The proposed project will occur within sites containing existing development including Well 30, Well 32, and Well 33, as well as existing paved roadways in which the proposed pipeline alignments would be installed. No mineral resources are known to be located within the project footprint and no mining operations exist within the project footprint. According to the City of Montclair General Plan, there are no active mining activities within the City. Past mining activities have left several large pits in Montclair and Upland, which are now being used for flood control and water conservation purposes. Future utilization of sand and gravel resources is unlikely due to the extensive urban development within the City. Based on the developed nature of the project site and surrounding area, as well as the existing land use designation (Public / Quasi Public), the development proposed by the project will not cause any loss of mineral resource values to the region or residents of the state, nor would it result in the loss of any locally important mineral resources identified in the City of Montclair General Plan. No impacts would occur under this issue. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIII. NOISE: Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

SUBSTANTIATION

Background

Noise is generally described as unwanted sound. The proposed Plant 30 Wellhead Treatment Project will occur within sites and areas containing existing development. The Well 30, 32, and 33 sites contain existing wells and connecting infrastructure, while the roadways in which the proposed pipeline alignments will be installed function as roadways connecting the communities within the Cities of Montclair and Ontario with surrounding development. The project site is located in an area surrounded by the following land uses: Single Family Residential (City of Montclair), Public/Quasi – Public (City of Montclair), Water Storage / Transfer (City of Montclair), Low Density Residential (City of Ontario), Open Space – Non Recreation (City of Ontario), and Public School (City of Ontario). The Wellhead Treatment Plant site itself is designated for Public/Quasi Public, and contains the existing Well 30.

The City of Montclair General Plan Noise Element states that the primary source of noise is generated from vehicular traffic on the I-10 freeway and arterial roadways such as Central Avenue. Additional noise impacts are produced by the four separate rail lines, which exist both north of Arrow Highway and south of Holt Boulevard. The proposed project is located on and around Benson Avenue between Palo Verde Street and Orchard Street generally within the City of Montclair, though the Well 33 site is located within the City of Ontario. The project site is less than one mile north of the rail line that is located south of Holt Boulevard.

The unit of sound pressure ratio to the faintest sound detectable to a person with normal hearing is called a decibel (dB). Sound or noise can vary in intensity by over one million times within the range of human hearing. A logarithmic loudness scale, similar to the Richter scale for earthquake magnitude, is therefore used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all sound frequencies within the entire spectrum. Noise levels at maximum human sensitivity from around 500 to 2,000 cycles per second are factored more heavily into sound descriptions in a process called “A-weighting,” written as “dBA.”

Leq is a time-averaged sound level; a single-number value that expresses the time-varying sound level for the specified period as though it were a constant sound level with the same total sound energy as the time-varying level. Its unit is the decibel (dB). The most common averaging period for Leq is hourly.

Because community receptors are more sensitive to unwanted noise intrusion during more sensitive evening and nighttime hours, state law requires that an artificial dBA increment be added to quiet time

noise levels. The State of California has established guidelines for acceptable community noise levels that are based on the Community Noise Equivalent Level (CNEL) rating scale (a 24-hour integrated noise measurement scale). The guidelines rank noise land use compatibility in terms of "normally acceptable," "conditionally acceptable," and "clearly unacceptable" noise levels for various land use types. The State Guidelines, Land Use Compatibility for Community Noise Exposure, single-family homes are "normally acceptable" in exterior noise environments up to 60 dB CNEL and "conditionally acceptable" up to 70 dB CNEL based on this scale. Multiple family residential uses are "normally acceptable" up to 65 dB CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries and churches are "normally acceptable" up to 70 dB CNEL, as are office buildings and business, commercial and professional uses with some structural noise attenuation.

a. *Less Than Significant With Mitigation Incorporated* – The proposed project footprint is located in areas with moderate-to-high background noise given the proximity to the local roadway system at any point within the project area. City's General Plan Noise Contour Map under both existing (Figure XIII-1) and buildout (Figure XIII-2), the project is located within an area with a general noise level of 70 dBA CNEL in most locations due to the proximity of the proposed project footprint to adjacent roadways, which would indicate that the background noise environment in the general project vicinity sometimes exceeds the normally acceptable exterior noise environment. The proposed project would develop a Wellhead Treatment Plant at the existing Well 30 site, which is located approximately 125 feet from the nearest residential sensitive receptor when measured from the boundary of the Well 30 site, though the proposed project is also located adjacent to a school. The proposed project would also construct the proposed pipeline alignments within existing road rights of way, which traverse through areas containing residences adjacent to the roadways, and, as such, the exteriors of the nearest residences, which contain sensitive receptors, are located between 25 and 50 from the pipeline alignments at several points within the project footprint. The City of Montclair Noise Standards are as follows in Table XIII-1 below:

Table XIII-1
CITY OF MONTCLAIR NOISE STANDARDS

Zone	Time	Decibels
Residential	10 PM – 7 AM	45 dBA
Residential	7 AM – 10 PM	55 dBA
Commercial	10 PM – 7 AM	55 dBA
Zone	**Time**	**Decibels**
Commercial	7 AM – 10 PM	65 dBA
Industrial	10 PM – 7 AM	60 dBA
Industrial	7 AM – 10 PM	70 dBA

Short Term Noise

Exterior noise-generating construction activities will be restricted to the hours identified in Section 6.12.060 of the City of Montclair Noise Ordinance, which prohibits noise generated by construction activities between the hours of 8:00 PM and 7:00 AM on any given day. The City of Montclair General Plan states that, since construction noise is of a temporary nature, the City does not require noise mitigation. Section 5-4.07. of the Noise Ordinance provides an exemption for noise sources associated with construction; however, the ordinance requires operational considerations (i.e., hours of construction, mufflers on construction equipment) to minimize noise impacts during the construction process.

Construction equipment generates noise that ranges between approximately 75 and 90 dBA at a distance of 50 feet. Refer to Table XIII-2, which shows construction equipment noise levels at 25, 50 and 100 feet from the noise source.

Table XII-2
NOISE LEVELS OF CONSTRUCTION EQUIPMENT AT 25, 50 AND 100 FEET (in dBA Leq) FROM THE SOURCE

Equipment	Noise Levels at 25 feet	Noise Levels at 50 feet	Noise Levels at 100 feet
Earthmoving			
Front Loader	85	79	73
Backhoes	86	80	74
Dozers	86	80	74
Tractors	86	80	74
Scrapers	91	85	79
Trucks	91	85	79
Material Handling			
Concrete Mixer	91	85	79
Concrete Pump	88	82	76
Crane	89	83	77
Derrick	94	88	82
Stationary Sources			
Pumps	82	79	70
Generator	84	78	72
Compressors	87	81	75
Other			
Saws	84	78	72
Vibrators	82	76	70

Source: U.S. Environmental Protection Agency "Noise"

Receptors located adjacent to the roadways in which the proposed pipeline alignment will be installed may experience increased noise levels during construction, but the proposed project will comply with the City's restrictions on night-time construction activity. Therefore, through compliance with the City's noise standards, construction of the proposed project would not result in the generation of a substantial temporary or permanent noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. However, contingency mitigation is provided below to reduce noise levels at residences and/or minimize or address complaints from local sensitive noise receptors. The short-term noise impacts associated with Project construction activities are forecast to be less than significant through implementing the following measures. As construction activities may be a nuisance to nearby residents, the following mitigation is recommended:

NOI-1 ***No construction activities shall occur during the hours of 8 PM through 7 AM, on any given day; at no time shall construction activities occur on Sundays or holidays, unless a declared emergency exists.***

NOI-2 ***MVWD shall establish a noise complaint response program and shall respond to any noise complaints received for this Project by measuring noise levels at the affected receptor site. If the noise level exceeds an Ldn of 60 dBA exterior or an Ldn of 45 dBA interior at the receptor, MVWD will implement adequate measures (which may include portable sound attenuation walls, use of quieter equipment, shift of construction schedule to avoid***

the presence of sensitive receptors, etc.) to reduce noise levels to the greatest extent feasible.

NOI-3 MVWD will require that all construction equipment be operated with mandated noise control equipment (mufflers or silencers). Enforcement will be accomplished by random field inspections by applicant personnel during construction activities.

NOI-4 Equipment not in use for five minutes shall be shut off.

NOI-5 Equipment shall be maintained and operated such that loads are secured from rattling or banging.

NOI-6 Construction employees shall be trained in the proper operation and use of equipment consistent with these mitigation measures, including no unnecessary revving of equipment.

NOI-7 No radios or other sound equipment shall be used at this site unless required for emergency response by the contractor.

Long Term

The long term or permanent change in noise from the proposed Wellhead Development Project would be minimal, though it would vary between the different project components. Generally, pipelines are located below-ground and do not generate noise in and of themselves; therefore, development of the pipeline alignments will not generate any routine noise in the long-term. The proposed Wellhead Treatment Plant will introduce a new noise source at the Well 30 site; however, this new noise would not be greater such that the nearest sensitive receptor would experience an increase in noise as a result of the proposed project, particularly given that the nearest residential sensitive receptor from the Wellhead Treatment Plant is located 125 feet from boundary of the project site. The proposed project is also located adjacent to a school; however, as stated above, the increase in noise compared to that which exists at the project site at present as a result of the pump at Well 30 is minimal and would not exceed City thresholds for exterior (or interior) noise. This is due to the fact that the noise generating activities that would result from the proposed Wellhead Treatment Plant would be enclosed within a structure or noise attenuation features that would minimize noise generation from operations of the Project. Additionally, as stated above, the Wellhead Treatment Plant is located within an area with a general noise level of 70 dBA CNEL due to the proximity of the adjacent roadway. Based on the existing noise levels in the area surrounding the project from nearby traffic, and due to the fact that the new noise generating activities will occur within an enclosed setting, operation of the proposed project would not result in the generation of a substantial temporary or permanent noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b. *Less Than Significant Impact* – Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by vibration of room surfaces is called structure borne noises. Sources of groundborne vibrations include natural phenomena (e.g. earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g. explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous or transient. Vibration is often described in units of velocity (inches per second), and discussed in decibel (VdB) units in order to compress the range of numbers required to describe vibration. Vibration impacts related to human development are generally associated with activities such as train operations, construction, and heavy truck movements.

The FTA assessment states that in contrast to airborne noise, ground-borne vibration is not a common environmental problem. Although the motion of the ground may be noticeable to people outside structures, without the effects associated with the shaking of a structure, the motion does not provoke the same adverse human reaction to people outside. Within structures, the effects of

ground-borne vibration include noticeable movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. FTA assessment further states that it is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. However, some common sources of vibration are trains, trucks on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment. The Federal Transit Association (FTA) guidelines identify a level of 80 VdB for sensitive land uses. This threshold provides a basis for determining the relative significance of potential Project related vibration impacts.

Due to the location of the Wellhead Treatment Plant site, and the lack of any sensitive receptors within a reasonable distance of the project site, construction and operations at this site will not expose people to generation of excessive groundborne vibration or groundborne noise levels.

Background vibration within the project footprint that traverses through the City Montclair and a small portion of the City of Ontario would generally result from cars and trucks travelling along the roadways in which the proposed pipeline alignments would be installed. These roadways are generally moderate-to-heavily travelled given that they are major north-south, and east-west roadways within the Cities. Groundborne vibration is normally perceptible to humans at approximately 65 VdB, while 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible. Construction activity can result in varying degrees of groundborne vibration; in the short term, construction from installing the pipelines has the potential to create some groundborne vibration to the nearest sensitive receptors at some sites within the project footprint. However, any short-term impacts to the nearest sensitive receptors would be considered less than significant through implementing the following mitigation measure:

NOI-8 During future initiation of construction activities with heavy equipment within 300 feet of occupied residences, vibration field tests shall be conducted at the nearest occupied residences upon receipt. To the extent feasible, if vibrations exceed 72 VdB, the construction activities shall be revised (smaller equipment, reduced activity) to reduce vibration below this threshold.

With implementation of the above mitigation measure, the project would comply with the Cities of Montclair and Ontario Municipal Codes, and would prevent significant impacts from occurring as a result of the pipeline installation component of the proposed project. Therefore, impacts from project related vibration would be considered less than significant with implementation of mitigation. No further mitigation is required.

c. *Less Than Significant Impact* – The nearest public airport is the Ontario International Airport, located approximately 5 miles east of the project. According to the LA/Ontario International Airport Land Use Compatibility Plan, Compatibility Policy Map: Noise Impact Zone (Figure XIII-3), the proposed project is not located within the boundaries of the any CNEL Noise Impact Zone, though it is located within the Airport Influence Area. Based on this information, the Project will have a less than significant potential to expose people residing or working in the project area to excessive noise levels generated by nearby aircraft or airport operations. No private airstrips are located within the vicinity of the proposed project. Therefore, impacts under this issue are considered less than significant and no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIV. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

SUBSTANTIATION

a. *Less Than Significant Impact* – Implementation of the Project will not induce substantial population growth in the area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). The Project is considered a vital infrastructure project because it proposes to improve the water quality of Wells 30, 32, and 33, which are currently in have observed 1,2,3-TCP concentrations above the DDW DLR/MCL and have observed elevated nitrate levels that exceed the 10 mg/L-N DDW MCL. It is anticipated that construction will require a temporary work force; however, this is short-term and with a maximum of about 30 employees will not induce substantial population growth. It is not anticipated that MVWD would require many additional permanent employees as a result of the installation of the Wellhead Treatment Plant. Should MVWD employ any new persons as a result of this project, the amount would not exceed 5 persons. It is unknown whether the new employees will be drawn from the general area or will bring new residents to the project area. Relative to the total number residents of Montclair—approximately 38,686 as of 2016 according to the Southern California Association of Governments— an increase of the maximum 5 employees as new residents represents a minor increase in the area population. According to the City of Montclair General Plan, the buildout population (in which all available land within Montclair will be occupied, serving as the land uses identified within the General Plan) is 45,000 residents. The potential for a minor increase of 5 individuals is not considered a substantial growth in population. Furthermore, though the proposed project is considered an infrastructure project, the purpose of the proposed project is not to expand the MVWD service area, it is to respond to the elevated concentrations of 1,2,3-TCP and nitrate within MVWD and the City of Chino's existing water supply. Thus, based on the type of project and the small increment of potential population the population generation associated with project implementation, the proposed project will not induce substantial population growth either directly or indirectly.

b. *No Impact* – The proposed project will occur within sites containing existing wells or within existing road rights of way, neither of which contain housing or persons. No occupied residential homes are located within the project footprint; therefore, implementation of the proposed project will not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere. No impacts will occur; therefore, no mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XV. PUBLIC SERVICES: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?	☐	☐	☒	☐
b) Police protection?	☐	☐	☒	☐
c) Schools?	☐	☐	☒	☐
d) Parks?	☐	☐	☒	☐
e) Other public facilities?	☐	☐	☒	☐

SUBSTANTIATION

a. *Less Than Significant Impact* – The proposed project area is generally served by the Montclair Fire Department, though Well 33 and portions of the pipeline alignments located on Benson Avenue are located within the City of Ontario which is served by the City of Ontario Fire Department. The proposed project is located less than one mile east from Ontario Fire Department Station 4, located at 1005 N Mountain Ave in Ontario. Though the only permanent above ground operational feature is located within the City of Montclair at Well 30. The Ontario Fire Department provides fire protection and emergency medical services to the City of Ontario. It currently has eight stations, which are comprised of eight 4-man paramedic engine companies and two 4-man truck companies. The department responds to more than 15,000 calls per year, serving and protecting a city population of approximately 173,000.[4]

The Montclair Fire Department responds to a wide variety of service call types. These include fires, ruptures/explosions, emergency medical incidents, rescues, hazardous conditions, public service assistance calls, good intent calls, false calls, severe weather incidents, and natural disasters. The proposed project footprint is located in proximity (by two or three miles) to Montclair Fire Station 151 at 8901 Monte Vista Avenue (located just north of I-10) and to Montclair Fire Station 152 at 10825 Monte Vista Avenue (located just south of Holt Boulevard). The Montclair Fire Department responded to 5,349 calls for service in 2015 and 5,515 in 2016.[5] According to the City of Montclair General Plan, there is a maximum three-minute response time is available throughout the planning area. The project site is within a distance where any future calls can be responded to within the Fire Department's target response time. Additionally, the City of Montclair requires the Fire Department to review the project as part of the application process. Further, as stated under the Hazards and Hazardous Materials discussion, the project site is located outside of the wildland fire hazard zone. The proposed Well 30 site is currently served by adequate fire protection services. Therefore, the project will add minimal new demand for fire protection services because the proposed Wellhead Treatment Plant will not require a permanent on site staff to operate, and the use is not of a type that would create a substantial fire risk. The Citys' (of both Montclair and Ontario) General Fund covers operational expenses, and the proposed project will continue to contribute to the general fund to offset this incremental demand for fire protection services. Any impacts are considered less than significant and no mitigation is required.

[4] http://www.ontarioca.gov/fire
[5] https://www.cityofmontclair.org/city-government/fire-department/calls-for-service

b. *Less Than Significant Impact* – The proposed project area is generally served by the Montclair Police Department (MPD), which is a municipal law enforcement agency responsible for the delivery of a full range of law enforcement services. The MPD services a 5.5 square-mile community of roughly 37,000 residents. The MPD has evolved into a community-oriented organization employing 60 sworn officers today, with the police headquarters located at 4870 Arrow Highway, Montclair, CA 91763, approximately 2.7 miles northwest of the project site. The Ontario Police Department (OPD) serves the City of Ontario. OPD Headquarters are located at 2500 S. Archibald Avenue in Ontario, CA 91761, about 5 miles east of the project area. OPD enforces local, state, and federal laws; performs investigations and makes arrests; and responds to City emergencies. The project footprint is located within existing patrol routes for both MPD and OPD and future calls can be responded to within the identified priority call target response times. Given that the proposed project only has one above ground component at a site that is fenced (Well 30 site), a less than significant potential exists for demand for police protection or expansion of police infrastructure. The Cities (of both Montclair and Ontario) General Fund covers operational expenses. The Project will continue to contribute to the applicable City General Fund to offset this incremental demand for police protection services. Any impacts are considered less than significant and no mitigation is required.

c. *Less Than Significant Impact* – The proposed project will utilize the existing Well 30 site to develop a Wellhead Treatment Plant. The associated infrastructure that will be developed as part of this project will be installed below ground or at existing Well 32 and 33 sites. The project is not anticipated to generate any new direct demand for the area schools. The proposed project may place additional demand on school facilities, but such demand would be indirect and speculative. The City of Montclair is served by the Ontario-Montclair School District. The State of California requires a portion of the cost of construction of public schools to be paid through a fee collected on residential, commercial, and industrial developments. The development impact fee mitigation program of the Ontario-Montclair School District adequately provides for mitigating the impacts of the proposed project in accordance with current state law, though the propose project is exempt from such fees because it is a water supply project that would extend vital infrastructure to customers within its service area. As such, no mitigation is required. Furthermore, given that the proposed project is not anticipated to permanently employ more than 5 persons as part of this project, the demand on school services would be minimal and well within the Ontario-Montclair School District's capacity for additional students.

d. *Less Than Significant Impact* – The proposed project will utilize the existing Well 30 site to develop a Wellhead Treatment Plant. The associated infrastructure that will be developed as part of this project will be installed below ground or at existing Well 32 and 33 sites. The project is not anticipated to generate any new direct demand for parks within the City, as project would have a minimal potential to induce substantial population growth within the City. According to the City of Montclair Engineering Department Fee Schedule, the City does not impose their Park Development Impact Fees (DIF) on Public-Quasi Public land uses, therefore the project is not required to contribute DIF designated for park development. Furthermore, given that the proposed project is not anticipated to permanently employ more than 5 persons as part of this project, the increased demand for area parks would be minimal. Therefore, the proposed project will have a less than significant impact to parks and recreation facilities.

e. *Less Than Significant Impact* – Other public facilities include library and general municipal services. Since the Project will not directly induce substantial population growth, it is not forecast that the use of such facilities will substantially increase as a result of the proposed project. According to the City of Montclair Engineering Department Fee Schedule, the City does not impose their Development Impact Fees (DIF) on Public-Quasi Public land uses, therefore the project is not required to contribute DIF designated for library and municipal services. Furthermore, given that the proposed project is not anticipated to permanently employ more than 5 persons as part of this project, the increased demand for library service would be minimal. Therefore, the proposed project will have a less than significant impact to other public services.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVI. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

SUBSTANTIATION

a. *Less Than Significant Impact* – As addressed in the discussion under XIII and XV(d) above, the proposed Project does not include a use that would substantially induce population growth; as stated in the discussion under Population and Housing, the proposed project is not anticipated to employ new MVWD personnel in an amount greater than 5 persons; however, it is unknown what portion of the employees will be new residents. The City's General Plan states that construction of new facilities contributes to the City's ability to provide needed public services and enhance public access to those same service and systems. The proposed project will contribute to the City's General Fund through payment of property tax. Given that the proposed project consists of a Wellhead Treatment Plant within an existing well site, and associated infrastructure within existing uses and within roadways, the Plant 30 Wellhead Treatment Project is not anticipated to result in a substantial increase in the use of existing park and recreation facilities. Therefore, any impacts under this issue are considered less than significant. No mitigation is required.

b. *No Impact* – The proposed project would develop a Wellhead Treatment Plant at the existing Well 30 site and would develop associated pipeline alignments within adjacent roadways, as well as on site infrastructure at Well 32 and 33. The only new above ground feature of the proposed project will be located at Well 30, which is currently in use as a site containing a well. Though the proposed project is adjacent to a school and to recreational fields, the proposed project has no potential to include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Thus, no impacts are anticipated under this issue. No mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVII. TRANSPORTATION: Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous inter-sections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
d) Result in inadequate emergency access?	☐	☒	☐	☐

SUBSTANTIATION

a. *Less Than Significant With Mitigation Incorporated* – The proposed project is located within the Cities of Montclair and Ontario. Though above ground component—the Wellhead Treatment Plant—is located within the City of Montclair at the existing Well 30 site. The City of Montclair does not have specific traffic study guidelines, therefore, the County of San Bernardino Congestion Management Program (CMP) Traffic Study Guidelines have been utilized in the following analysis. The County's traffic study guidelines indicate that if a project generates fewer than 100 to 250 peak hour trips and contributes less than 50 peak hour trips to a CMP intersection, a formal traffic study is typically not required as off-site improvements are assumed to be nominal for low traffic generating uses. As such, the proposed project is not anticipated to violate the County's Traffic Study Guidelines due to the limited number of trips required to implement the proposed project (below the County's Traffic Study Guidelines).

In the short-term, the proposed project will require the installation of pipelines within existing road rights-of-way. The roadways within which the pipelines will be installed (San Bernardino Street and Benson Avenue) are major roadways that are important to circulation within the area. The pipeline installation will require one lane to be closed to complete the installation of the various pipeline alignments; this will ensure that each roadway can still operate during construction. However, the project will require implementation of a traffic management plan in order to comply with the Cities of Montclair and Ontario and the County of San Bernardino Master Plan of Roads and Circulation Plans, which will ensure adequate circulation within the area.

During construction, an estimated 25 roundtrips from construction workers would occur per day. A maximum of 25 roundtrips per day will occur to support construction efforts (i.e. delivery or removal of construction materials, etc.). Implementation of the Project has the potential to conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. However, with implementation of the following mitigation measure requiring a construction traffic management plan, the impacts of implementing the Project would be considered less than significant.

TRAF-1 The construction contractor will provide adequate traffic management resources, as determined by the County of San Bernardino, City of Montclair, and, if required, the City of Ontario. MVWD shall require a construction traffic management plan for work in public roads that complies with the Work Area Traffic Control Handbook, or other applicable standard, to provide adequate traffic control and safety during excavation activities. The traffic management plan shall be prepared and approved by the City(s) and County

prior to initiation of excavation or pipeline construction. At a minimum this plan shall include how to minimize the amount of time spent on construction activities; how to minimize disruption of vehicle and alternative modes of transport traffic at all times, but particularly during periods of high traffic volumes; how to maintain safe traffic flow on local streets affected by construction at all times, including through the use of adequate signage, protective devices, flag persons or police assistance to ensure that traffic can flow adequately during construction; the identification of alternative routes that can meet the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; and at the end of each construction day roadways shall be prepared for continued utilization without any significant roadway hazards remaining.

TRAF-2 MVWD shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable County of San Bernardino, City of Montclair, and, where required, the City of Ontario standard design requirements.

During operation of the proposed project, trips to the Wellhead Treatment Plant site are anticipated to be minimal given that it is anticipated that the Wellhead Treatment Plant would not require on-site monitoring each day. As such, operation of the proposed project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system. Therefore, with implementation of the above mitigation measures, implementation of the project has a less than significant potential to conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system.

b. *Less Than Significant Impact* – The proposed project would develop a Wellhead Treatment Plant and associated infrastructure within the City of Montclair and adjacent to the City of Ontario. Neither the City of Montclair or the City of Ontario has developed a threshold for vehicle miles travelled; however, the proposed project will require minimal vehicle miles traveled to accomplish once constructed. Construction of the proposed project will require a maximum of about 25 trips to and from the site each day as a result of employee and construction related trips. Given that these trips are temporary, and are not anticipated to exceed 100 miles round trip per day during the 225 days of construction, construction related vehicle miles traveled impacts are considered less than significant. Furthermore, the proposed project would not generate a significant number of trips once in operation, and the MVWD Main Office site is location less than 2 miles from the proposed project site. Generally, personnel that would service the Wellhead Treatment Plant would travel from the MVWD Main Office site. As such, development of the Plant 30 Wellhead Treatment Project is not anticipated to result in significant impact related to vehicle miles travelled, and thus would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b). Impacts under this issue are considered less than significant.

c. *Less Than Significant With Mitigation Incorporated* – The project will temporarily alter existing roadways during construction of the proposed pipeline. However, this alteration will not create any hazards due to design features of incompatible uses. The project will consist of a new Wellhead Treatment Plant and supporting onsite infrastructure at MVWD Well 30; 5,100 LF of raw water pipeline from Wells 32 and 33; 2,000 LF of brine pipeline; 900 LF of effluent pipeline to the City of Chino transmission main; and, 100 LF of pipeline to the Benson feeder pipeline. This effort will occur within existing rights-of-way within Benson Avenue and San Bernardino Street. As stated under issue XVII(a) above, the with the implementation of mitigation measures **TRAF-1** and **TRAF-2** above, which require implementation of a construction traffic management plan, any potential increase in hazards due to design features or incompatible use will be considered less than significant in the short term. In the long term, no impacts to any hazards or incompatible uses in

existing roadways are anticipated because once the pipeline is constructed, the roadway will be returned to its original condition, or better and the proposed Wellhead Treatment Plant will be confined to the existing Well 30 site. Thus, any impacts are considered less than significant with implementation of mitigation. No additional mitigation is required.

d. *Less Than Significant With Mitigation Incorporated* – Please refer to the discussion under issue XVII(a) above. The proposed project will require closure of one lane within the roadway in which each pipeline segment will be installed. The proposed Plant 30 Wellhead Treatment Project would install 5,100 LF of raw water pipeline from Wells 32 and 33; 2,000 LF of brine pipeline; 900 LF of effluent pipeline to the City of Chino transmission main; and, 100 LF of pipeline to the Benson feeder pipeline. This effort will occur within existing rights-of-way within Benson Avenue and San Bernardino Street. During construction, a potential exists for short-term hazards and constraints on both normal and emergency access within the affected area, especially due to the construction of the proposed pipeline alignment, as it will require partial lane closure within existing rights-of-way. There are no emergency access roadways located within the project footprint. However, adequate emergency access will be provided along these routes throughout construction. Though closure of one lane will have a short term impact on traffic, the implementation of mitigation measures **TRAF-1** and **TRAF-2** will ensure that impacts are reduced to a level of less than significant. No additional mitigation is required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XVIII. TRIBAL CULTURAL RESOURCES: Would the project cause a substantial change in the significance of tribal cultural resources, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographic-ally defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to the California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in sub-division (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

SUBSTANTIATION

A Tribal Resources is defined in the Public Resources Code section 21074 and includes the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe that are either of the following: included or determined to be eligible for inclusion in the California Register of Historical Resources or included in a local register of historical resources as defined in subdivision (k) of Section 5020.1;
- A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purpose of this paragraph, the lead agency shall consider the significance of the resources to a California American tribe;
- A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape;
- A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "non-unique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal resource if it conforms with the criteria of subdivision (a).

a&b. *Less Than Significant With Mitigation Incorporated* – Monte Vista Water District initiated AB 52 consultation with the tribe who previously notified the District: the Kizh Gabrieleño Band of Mission Indians. Notification was provided to the tribe via an AB 52 consultation letter which was initiated on March 19, 2019. The tribe responded by letter on March 25, 2019 and requested that MVWD implement several mitigation measures. Van Jew, on behalf of MVWD, responded to the Tribe by requesting minor modifications to the language of the mitigation measures, which the Gabrieleño approved via email on May 3rd, which concluded the AB 52 consultation period.

TRC-1 <u>Retain a Native American Monitor/Consultant</u>: The Project Applicant shall be required to retain and compensate for the services of a Tribal

monitor/consultant who is both approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and is listed under the NAHC's Tribal Contact list for the area of the project location. This list is provided by the NAHC. The monitor/consultant will only be present on-site during the construction phases that involve ground disturbing activities. Ground disturbing activities are defined by the Gabrieleño Band of Mission Indians-Kizh Nation as activities that may include, but are not limited to, pavement removal, pot-holing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the project area. The Tribal Monitor/consultant will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. The on-site monitoring shall end when the project site grading and excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources.

TRC-2 ***Unanticipated Discovery of Tribal Cultural and Archaeological Resources:*** ***Upon discovery of any archaeological resources, cease construction activities in the immediate vicinity of the find until the find can be assessed. All archaeological resources unearthed by project construction activities shall be evaluated by the qualified archaeologist and tribal monitor/consultant approved by the Gabrieleño Band of Mission Indians-Kizh Nation. If the resources are Native American in origin, the Gabrieleño Band of Mission Indians-Kizh Nation shall coordinate with the landowner regarding treatment and curation of these resources. Typically, the Tribe will request reburial or preservation for educational purposes. Work may continue on other parts of the project while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section15064.5 [f]). If a resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource", time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, should be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources.***

TRC-3 ***Public Resources Code Sections 21083.2(b) for unique archaeological resources. Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, they shall be offered to a local school or historical society in the area for educational purposes.***

TRC-4 ***Unanticipated Discovery of Human Remains and Associated Funerary Objects: Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe***

that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC) and PRC 5097.98 shall be followed.

TRC-5 ***Resource Assessment & Continuation of Work Protocol: Upon discovery, the tribal and/or archaeological monitor/consultant/consultant will immediately divert work at minimum of 150 feet and place an exclusion zone around the burial. The monitor/consultant(s) will then notify the Tribe, the qualified lead archaeologist, and the construction manager who will call the coroner. Work will continue to be diverted while the coroner determines whether the remains are Native American. The discovery is to be kept confidential and secure to prevent any further disturbance. If the finds are determined to be Native American, the coroner will notify the NAHC as mandated by state law who will then appoint a Most Likely Descendent (MLD).***

TRC-6 ***Kizh-Gabrieleno Procedures for burials and funerary remains: If the Gabrieleno Band of Mission Indians – Kizh Nation is designated MLD, the following treatment measures shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. These remains are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects.***

TRC-7 ***Treatment Measures: Prior to the continuation of ground disturbing activities, the land owner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. The Tribe will work closely with the qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be taken which includes at a minimum detailed descriptive notes and sketches. Additional types of documentation shall be approved by the Tribe for data recovery purposes. Cremations will either be removed in bulk or by means as necessary to ensure completely recovery of all material. If the discovery of human remains includes four or more burials, the location is considered a cemetery and a separate treatment plan shall be created. Once complete, a final report of all activities is to be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive diagnostics on human remains. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall***

be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

TRC-8 ***<u>Professional Standards</u>: Archaeological and Native American monitoring and excavation during construction projects will be consistent with current professional standards. All feasible care to avoid any unnecessary disturbance, physical modification, or separation of human remains and associated funerary objects shall be taken. Principal personnel must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a principal investigator working with Native American archaeological sites in southern California. The Qualified Archaeologist shall ensure that all other personnel are appropriately trained and qualified.***

With the incorporation of these mitigation measures, as well as the mitigation identified under Cultural Resources, any impacts under these issues are considered less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XIX. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☒	☐	☐

SUBSTANTIATION

a. Water

Less Than Significant Impact – The proposed Plant 30 Wellhead Treatment Project is located within the Cities of Montclair and Ontario. The project in and of itself will result in construction of new water systems that would allow MVWD to reduce levels of 1,2,3-TCP, perchlorate, and nitrate to acceptable DDW levels. The entirety of the project would not result in any significant environmental effects. The project will not increase the amount of water available to MVWD customers, but it will expand the infrastructure from Wells 32 and 33 to reach the Well 30 site where the raw water will be treated by a new Wellhead Treatment Plant to reduce levels of 1,2,3-TCP, perchlorate, and nitrate to acceptable DDW levels. The proposed project is considered a vital infrastructure project that would provide MVWD's customers with water containing contaminant levels acceptable to the DDW. Therefore, development of the Plant 30 Wellhead Treatment Project would not result in a significant environmental effect related to the relocation or construction of new or expanded water facilities. Impacts are less than significant.

Wastewater

Less Than Significant Impact – The proposed Plant 30 Wellhead Treatment Project would develop a Wellhead Treatment Plant and associated infrastructure that would reduce levels of 1,2,3-TCP, perchlorate, and nitrate to acceptable DDW levels. The pipeline alignments associated with the proposed project would be located below ground, and would not require access to restroom facilities; nor will the Wellhead Treatment Plant. However, the proposed project will require installation of brine line (pipeline). IX brine waste and slow rinse, along with waste from the IX softener system will be sent to the brine line. IX brine regeneration waste (84 gpm) and slow rinse (84 gpm), as well as all waste from the water softening operation (backwash, brine regeneration, slow rinse and fast rinse with flow rate ranging from 12 to 108 gpm) will be directly sent to the brine line for disposal. The Inland Empire Brine Line is a pipeline that was constructed to protect the

Santa Ana River Watershed from desalter concentrate and various saline wastes. Organizations whose processes create high-saline waste that does not qualify for use, reclamation or return to the region through the municipal sewer system domestic-treatment plants, but does qualify for ocean discharge, can use the brine line to transport the waste. The brine pipeline carries the waste directly to specially equipped treatment plants operated by the Orange County Sanitation District. After treatment, the waste is discharged to the Pacific Ocean.[6] The Inland Empire Brine Line and Orange County Sanitation District have enough capacity to accommodate the additional flows. As such, the installation of the brine pipeline as well as the entirety of the proposed project would not result in a significant impact as a result of implementation of the proposed project.

Stormwater

Less Than Significant Impact – The surface runoff from the site, nonpoint source storm water runoff, will be managed in accordance with the WQMP as discussed in the Hydrology and Water Quality Section (Section X) of this Initial Study. The onsite drainage will capture the incremental increase in runoff from the project site associated with project development. Runoff will be managed onsite through a stormwater management system. During GAC changeout, GAC backwash water will be filtered through bag filters and sent to the existing onsite storm drain connection. The roadways within which the pipeline will be installed will be returned to their original condition upon completion of the placement of each section of pipeline. Therefore, surface water will be adequately managed on the Wellhead Treatment Plant site. The roadways will generate essentially the same amount of stormwater as they do at present because no expansion of roadway or change in drainage patterns are anticipated. Conveyance of stormwater to drainage alignments and storm drains within these roadways will remain intact and unchanged once construction has been completed. Therefore, development of the Plant 30 Wellhead Treatment Project would not result in a significant environmental effect related to the relocation or construction of new or expanded stormwater facilities. Impacts are less than significant.

Electric Power

Less Than Significant Impact – The existing electrical services are by Southern California Edison (SCE) and the primary service is routed underground from a utility pole to a pad mounted utility transformer, which steps down the voltage to 3 phase, 480/277 VAC. Additional capacity is not anticipated to be required; however, the project will develop a new 3 phase, 100A, power panel (PP-1) at the Main Switchboard (MCC/SES), which will distribute power to various new equipment and loads throughout the proposed treatment system. The panel will supply a 480 volt, 3-phase, 3-wire power which will supply power to motor operated valves as well as other small 480 volt loads. If required, a new 25kva transformer will be added along with a potential Panel LA. This panel will distribute 120/208-volt power to loads such as lighting, receptacles, chemical feed pumps, and instruments. As such, though the proposed project will install new electrical power facilities on site, development of the Plant 30 Wellhead Treatment Project would not result in a significant environmental effect. Impacts under this issue are considered less than significant.

Natural Gas

No Impact – Development of the Wellhead Treatment Plant would not require installation of natural gas. Therefore, the project would not result in a significant environmental effect related to the relocation or construction of new or expanded natural gas facilities. No impacts are anticipated.

Telecommunications

No Impact – Development of the Wellhead Treatment Plant would not installation of wireless internet service or phone serve. Therefore, the project would not result in a significant environmental effect related to the relocation or construction of new or expanded telecommunication facilities. No impacts are anticipated.

b. *Less Than Significant Impact* – Please refer to issue X(b), Hydrology and Water Quality, above. The project will be supplied with water by MVWD. The proposed project would not require the

[6] https://www.wmwd.com/183/Inland-Empire-Brine-Line-SARI

provision of expanded water supply to operate the proposed Wellhead Treatment Plant, though construction of the site and of the pipeline alignment would require a temporary supply of water. The project proponent, MVWD, supplies water to the area. MVWD's water supply comes from groundwater produced from the Chino Groundwater Basin, Imported State Water Project surface water received from the Metropolitan Water District of Southern California (MWD) through the Inland Empire Utilities Agency (IEUA), and the Water Facilities Authority (WFA). The proposed project may require approximately 10,000 GPD of water for a period of about 100 days during construction. This temporary increase in water demand for construction purposes is considered less than significant because the project will be conducted within the existing MVWD entitlements to potable water. Based on the limited and short-term demand for potable water during construction of the proposed pipeline replacement project, sufficient water supplies are available to serve the project, as indicated in the 2015 Urban Water Management Plan (UWMP) for MVWD. Impacts under this issue are considered less than significant and no mitigation is required.

c. *Less Than Significant Impact* – Please refer to the discussion under XIX(a) above. Neither the Wellhead Treatment Plant site and the pipeline alignments associated with the proposed project require installation of restroom facilities; construction will require portable toilets that will be handled by the provider of such facilities. However, the proposed project will require installation of brine line (pipeline). IX brine waste and slow rinse, along with waste from the IX softener system will be sent to the brine line. IX brine regeneration waste (84 gpm) and slow rinse (84 gpm), as well as all waste from the water softening operation (backwash, brine regeneration, slow rinse and fast rinse with flow rate ranging from 12 to 108 gpm) will be directly sent to the brine line for disposal. Santa Ana Watershed Project Authority (SAWPA) was formed in 1968 to develop a long-range plan for managing, preserving, and protecting the quality of water supplies in the Santa Ana Basin. SAWPA has a wastewater discharge ordinance applicable to the Brine Line. SAWPA owns and operates the Brine Line above the Orange County line and has purchased 17 MGD of treatment and disposal capacity rights at OCSD's treatment facilities Between July 1, 2016 through December 31, 2016, the total flow to the Inland Empire Brine Line was 10.712 MG.[7] As such, given the ample available capacity that SAWPA has reserved for the Inland Empire Brine Line, the addition of the brine waste from the proposed project is anticipated to be less than significant. No mitigation is required.

d. *Less Than Significant Impact* – The City of Montclair is served by Burrtec Waste Industries, which provides trash, recycling, and some street sweeping/bulky item pickup services to its customers. The nearest landfill to the Project area is the Mid-Valley Sanitary Landfill. According to the CalRecycle, the maximum permitted capacity of Mid-Valley Sanitary Landfill is 101,300,000 Cubic Yards (CY), while its remaining capacity is 67,520,000 CY, and the Landfill can handle 7,500 tons of material per day.[8] The proposed project will remove concrete and material from the Wellhead Treatment Plant site to install the new infrastructure related to the Wellhead Treatment Plant facility. The project will also result in construction waste from the removal of asphalt, concrete, and similar materials within the roadways in which the pipeline alignment will be installed. Based on the scale of the materials requiring removal, which will occur over a period several days or weeks, the waste that developing the Wellhead Treatment Plant would generate would not exceed either the daily permitted capacity or overall permitted capacities of nearby landfills. There is adequate capacity at the nearest landfill as well as in other landfills that serve the area (Mid Valley Sanitary Landfill, etc.). Any hazardous materials collected on the project site during construction of the Project will be transported and disposed of by a permitted and licensed hazardous materials service provider.

The proposed project is anticipated to generate minimal solid waste during operation because it will not require the presence of employees on a day to day basis to operate). Considering the availability of landfill capacity and the minimal amount of solid waste generation from the proposed project during both construction and operations, project solid waste disposal needs can be adequately met without a significant impact on the capacity of the nearest landfills. it is expected that the renovation of the MVWD Main Office project will be served by landfills with sufficient

[7] https://www.ocsd.com/Home/ShowDocument?id=19279
[8] http://www.calrecycle.ca.gov/SWFacilities/Directory/36-AA-0055/Detail/

permitted capacity to accommodate the project's solid waste disposal needs. Any impacts under this issue are considered less than significant. No mitigation is required.

e. *Less Than Significant With Mitigation Incorporated* – All collection, transportation, and disposal of any solid waste generated by the proposed project is required to comply with all applicable federal, state, and local regulations. As previously stated, solid waste produced in the City of Montclair where the proposed project is located is collected and transported by Burrtec Waste Industries. The area is served by several nearby landfills, though the closest is the Mid Valley Landfill in Rialto, which, as stated under issue XVIII(f) above, has adequate capacity to serve the project. Additionally, any hazardous materials collected on the project site during either construction or operation of the Project will be transported and disposed of by a permitted and licensed hazardous materials service provider, as stated under issue VIII, Hazards and Hazardous Materials above. The contract for this project will require that concrete, asphalt and base material be recycled by grinding, which allows reuse of these materials. All metals, woods and equipment that are reusable shall be salvaged and recycled.

Thus, due to the small size of this project and the limited amount of wastes that will be generated, potential impacts to the waste disposal systems are considered less than significant. To further reduce potential less than significant impacts, the following mitigation measure shall be implemented:

UTIL-1 The contract with demolition and construction contractors shall include the requirement that all materials that can feasibly be recycled shall be salvaged and recycled. This includes but not limited to wood, metals, concrete, road base and asphalt. The contractors shall submit a recycling plan to MVWD for review and approval prior to the construction of demolition/construction activities.

Therefore, with the above mitigation measure, the project is expected to comply with all regulations related to solid waste under federal, state, and local statutes. No further mitigation is necessary.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XX. WILDFIRE: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

SUBSTANTIATION

a-d. *No Impact* – The proposed project is not located in or near state responsibility areas or lands classified as very high fire hazard severity zone, therefore the proposed project can have no impacts to any wildfire issues. As stated in previous sections, according to the San Bernardino County Land Use Plan General Plan Hazard Overlay for the project area, the proposed project is not located within the fire safety overlay district (Figure VIII-9). The proposed project area is located in an urban area removed from the high fire hazard areas that are located adjacent to the San Gabriel Mountains. As such, no impacts under these issues are anticipated.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact or Does Not Apply
XXI. MANDATORY FINDINGS OF SIGNIFICANCE:				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

SUBSTANTIATION

The analysis in this Initial Study and the findings reached indicate that the proposed project can be implemented without causing any new project specific or cumulatively considerable unavoidable significant adverse environmental impacts. Mitigation is required to control potential environmental impacts of the proposed project to a less than significant impact level. The following findings are based on the detailed analysis of the Initial Study of all environmental topics and the implementation of the mitigation measures identified in the previous text and summarized following this section.

a. *Less Than Significant With Mitigation Incorporated* – The Project has no potential to cause a significant impact to any biological or cultural resources. The project has been identified as having no potential to degrade the quality of the natural environment, substantially reduce habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of a rare or endangered plant or animal. Based on the historic disturbance of the project footprint, especially given that the Wellhead Treatment Plant site currently contains the existing Well 30 and that the remainder of the project will occur within existing road rights-of-way and well sites, the potential for impacting biological resources is low; however, mitigation has been identified to protect nesting birds. The cultural resources evaluation concluded that the Project footprint does not contain historic resources, and as such, no impacts are anticipated. To ensure that any accidentally exposed subsurface cultural resources are properly handled, contingency mitigation measures will be implemented. With incorporation of Project mitigation measures all biology and cultural resource impacts will be reduced to a less than significant level.

b. *Less Than Significant With Mitigation Incorporated* – The Project has ten (10) potential impacts that are individually limited, but may be cumulatively considerable. These are: Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, Tribal Resources, and Utilities and Service Systems. The Project is not considered growth-inducing, as defined by *State CEQA Guidelines.* These issues require the implementation of mitigation measures to reduce impacts to a less than significant level

and ensure that cumulative effects are not cumulatively considerable. All other environmental issues were found to have no significant impacts without implementation of mitigation. The potential cumulative environmental effects of implementing the proposed project have been determined to be less than considerable and thus, would have a less than significant cumulative impact.

c. *Less Than Significant With Mitigation Incorporated* – The Project will achieve long-term community goals by providing a potable water with reduced 1,2,3-TCP, perchlorate, and nitrate at levels acceptable to DDW. The short-term impacts associated with the Project, which are mainly construction-related impacts, are less than significant with mitigation, and the proposed Project is compatible with long-term environmental protection. The issues of Air Quality, Geology and Soils, Hazards and Hazardous Materials, and Noise require the implementation of mitigation measures to reduce human impacts to a less than significant level. All other environmental issues were found to have no significant impacts on humans without implementation of mitigation. The potential for direct human effects from implementing the proposed project have been determined to be less than significant.

Conclusion

This document evaluated all CEQA issues contained in the latest Initial Study Checklist form. The evaluation determined that either no impact or less than significant impacts would be associated with the issues of Aesthetics, Agricultural and Forestry Resources, Energy, Greenhouse Gas Emissions, Land Use and Planning, Mineral Resources, Population/Housing, Public Services, and Recreation. The issues of Air Quality, Biological Resources, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Transportation, Tribal Resources, and Utilities and Service Systems require the implementation of mitigation measures to reduce impacts to a less than significant level. The required mitigation has been proposed in this Initial Study to reduce impacts for these issues to a less than significant impact.

Based on the findings in this Initial Study, Monte Vista Water District proposes to adopt a Mitigated Negative Declaration (MND) for the Monte Vista Water District Plant 30 Wellhead Treatment Project. A Notice of Intent to Adopt a Mitigated Negative Declaration (NOI) will be issued for this project by MVWD. The Initial Study and NOI will be circulated for 30 days of public comment because this project does involve state agencies as either a responsible or trustee agency. At the end of the 30-day review period, a final MND package will be prepared and it will be reviewed by Monte Vista Water District. MVWD will hold a future hearing for project adoption at the MVWD Main Office, the date for which has not yet been determined. If you or your agency comments on the MND/NOI for this project, you will be notified about the meeting date in accordance with the requirements in Section 21092.5 of CEQA (statute).

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; *Sundstrom v. County of Mendocino*,(1988) 202 Cal.App.3d 296; *Leonoff v. Monterey Board of Supervisors*, (1990) 222 Cal.App.3d 1337; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; San *Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

Revised 2019
Authority: Public Resources Code sections 21083 and 21083.09
Reference: Public Resources Code sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3/ 21084.2 and 21084.3

SUMMARY OF MITIGATION MEASURES

Aesthetics

AES-1 A facilities lighting plan shall be prepared and shall demonstrate that glare from operating and safety night lights that may create light and glare affecting adjacent occupied property are sufficiently shielded to prevent light and glare from spilling into occupied structures. This plan shall specifically indicate that the lighting doesn't exceed 1.0 lumen at the nearest residence to any lighting site within the project footprint. This plan shall be implemented by the MVWD to minimize light or glare intrusion onto adjacent properties.

Air Quality

AIR-1 Fugitive Dust Control. The following measures shall be incorporated into Project plans and specifications for implementation:

- Apply soil stabilizers or moisten inactive areas.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone.
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard.
- Sweep streets daily if visible soil material is carried out from the construction site.

AIR-2 Exhaust Emissions Control. The following measures shall be incorporated into Project plans and specifications for implementation:

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

Biological Resources

BIO-1 The State of California prohibits the "take" of active bird nests. To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal should be conducted outside of the the State identified nesting season (Raptor nesting season is February 15 through July 31; and migratory bird nesting season is March 15 through September 1). Alternatively, the site shall be evaluated by a qualified biologist prior to the initiation of ground disturbace to determine the presence or absence of nesting birds. Acitve bird nests MUST be avoided during the nesting season. If an active nest is located in the project construction area it will be flagged and a 300-foot avoidance buffer placed around it. No activity shall occur within the 300-foot buffer until the young have fledged the nest.

Cultural Resources

CUL-1 Should any cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist. Responsibility for making this determination shall be with MVWD's onsite inspector. The archaeological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

CUL-2 Should human remains or funerary objects be encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

Geology and Soils

GEO-1 Stored backfill material shall be covered with water resistant material during periods of heavy precipitation to reduce the potential for rainfall erosion of the material. If covering is not feasible, then measures such as the use of straw bales or sand bags shall be used to capture and hold eroded material on the project site for future cleanup.

GEO-2 Excavated areas shall be properly backfilled and compacted. Paved areas disturbed by this project will be repaved in such a manner that roadways and other disturbed areas are returned to as near the pre-project condition as is feasible.

GEO-3 All exposed, disturbed soil (trenches, stored backfill, etc.) will be sprayed with water or soil binders twice a day or more frequently if fugitive dust is observed migrating from the site within which the pipelines are being installed.

GEO-4 The length of trench which can be left open at any given time will be limited to that needed to reasonably perform construction activities. This will serve to reduce the amount of backfill stored onsite at any given time.

GEO-5 Should any paleontological or unique geological resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection should be performed immediately by a qualified paleontologist or geologist depending on the type of resource discovered. Responsibility for making this determination shall be with the MVWD's onsite inspector. The paleontological or geological professional shall assess the find, determine its significance, and make recommendations for appropriate mitigation measures within the guidelines of the California Environmental Quality Act.

Hazards and Hazardous Materials

HAZ-1 All spills or leakage of petroleum products during construction activities will be remediated in compliance with applicable state and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste will be collected and disposed of at an appropriately licensed disposal or treatment facility. This measure will be incorporated into the SWPPP prepared for the Project development.

Hydrology and Water Quality

HYD-1 MVWD shall require that the construction contractor prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater and with the intent of keeping all products of erosion from moving offsite into receiving waters. The SWPPP shall include a Spill Prevention and Cleanup Plan that identifies the methods of containing, cleanup, transport and proper disposal of hazardous chemicals or materials released during construction activities that are compatible with applicable laws and regulations. BMPs to be implemented in the SWPPP may include but not be limited to:

- The use of silt fences;
- The use of temporary stormwater desilting or retention basins;
- The use of water bars to reduce the velocity of stormwater runoff;
- The use of wheel washers on construction equipment leaving the site;

- The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;
- The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and
- Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.

Noise

NOI-1 No construction activities shall occur during the hours of 8 PM through 7 AM, on any given day; at no time shall construction activities occur on Sundays or holidays, unless a declared emergency exists.

NOI-2 MVWD shall establish a noise complaint response program and shall respond to any noise complaints received for this Project by measuring noise levels at the affected receptor site. If the noise level exceeds an Ldn of 60 dBA exterior or an Ldn of 45 dBA interior at the receptor, MVWD will implement adequate measures (which may include portable sound attenuation walls, use of quieter equipment, shift of construction schedule to avoid the presence of sensitive receptors, etc.) to reduce noise levels to the greatest extent feasible.

NOI-3 MVWD will require that all construction equipment be operated with mandated noise control equipment (mufflers or silencers). Enforcement will be accomplished by random field inspections by applicant personnel during construction activities.

NOI-4 Equipment not in use for five minutes shall be shut off.

NOI-5 Equipment shall be maintained and operated such that loads are secured from rattling or banging.

NOI-6 Construction employees shall be trained in the proper operation and use of equipment consistent with these mitigation measures, including no unnecessary revving of equipment.

NOI-7 No radios or other sound equipment shall be used at this site unless required for emergency response by the contractor.

NOI-8 During future initiation of construction activities with heavy equipment within 300 feet of occupied residences, vibration field tests shall be conducted at the nearest occupied residences upon receipt. To the extent feasible, if vibrations exceed 72 VdB, the construction activities shall be revised (smaller equipment, reduced activity) to reduce vibration below this threshold.

Transportation

TRAF-1 The construction contractor will provide adequate traffic management resources, as determined by the County of San Bernardino, City of Montclair, and, if required, the City of Ontario. MVWD shall require a construction traffic management plan for work in public roads that complies with the Work Area Traffic Control Handbook, or other applicable standard, to provide adequate traffic control and safety during excavation activities. The traffic management plan shall be prepared and approved by the City(s) and County prior to initiation of excavation or pipeline construction. At a minimum this plan shall include how to minimize the amount of time spent on construction activities; how to minimize disruption of vehicle and alternative modes of transport traffic at all times, but particularly during periods of high traffic volumes; how to maintain safe traffic flow on local streets affected by construction at all times, including through the use of adequate signage, protective devices, flag persons or police assistance to ensure that traffic can flow adequately during construction; the identification of alternative routes that can meet

the traffic flow requirements of a specific area, including communication (signs, webpages, etc.) with drivers and neighborhoods where construction activities will occur; and at the end of each construction day roadways shall be prepared for continued utilization without any significant roadway hazards remaining.

TRAF-2 MVWD shall require that all disturbances to public roadways be repaired in a manner that complies with the Standard Specifications for Public Works Construction (green book) or other applicable County of San Bernardino, City of Montclair, and, where required, the City of Ontario standard design requirements.

Tribal Cultural Resources

TRC-1 Retain a Native American Monitor/Consultant: The Project Applicant shall be required to retain and compensate for the services of a Tribal monitor/consultant who is both approved by the Gabrieleño Band of Mission Indians-Kizh Nation Tribal Government and is listed under the NAHC's Tribal Contact list for the area of the project location. This list is provided by the NAHC. The monitor/consultant will only be present on-site during the construction phases that involve ground disturbing activities. Ground disturbing activities are defined by the Gabrieleño Band of Mission Indians-Kizh Nation as activities that may include, but are not limited to, pavement removal, pot-holing or auguring, grubbing, tree removals, boring, grading, excavation, drilling, and trenching, within the project area. The Tribal Monitor/consultant will complete daily monitoring logs that will provide descriptions of the day's activities, including construction activities, locations, soil, and any cultural materials identified. The on-site monitoring shall end when the project site grading and excavation activities are completed, or when the Tribal Representatives and monitor/consultant have indicated that the site has a low potential for impacting Tribal Cultural Resources.

TRC-2 Unanticipated Discovery of Tribal Cultural and Archaeological Resources: Upon discovery of any archaeological resources, cease construction activities in the immediate vicinity of the find until the find can be assessed. All archaeological resources unearthed by project construction activities shall be evaluated by the qualified archaeologist and tribal monitor/consultant approved by the Gabrieleño Band of Mission Indians-Kizh Nation. If the resources are Native American in origin, the Gabrieleño Band of Mission Indians-Kizh Nation shall coordinate with the landowner regarding treatment and curation of these resources. Typically, the Tribe will request reburial or preservation for educational purposes. Work may continue on other parts of the project while evaluation and, if necessary, mitigation takes place (CEQA Guidelines Section15064.5 [f]). If a resource is determined by the qualified archaeologist to constitute a "historical resource" or "unique archaeological resource", time allotment and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, should be available. The treatment plan established for the resources shall be in accordance with CEQA Guidelines Section 15064.5(f) for historical resources.

TRC-3 Public Resources Code Sections 21083.2(b) for unique archaeological resources. Preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, they shall be offered to a local school or historical society in the area for educational purposes.

TRC-4 Unanticipated Discovery of Human Remains and Associated Funerary Objects: Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health

and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission (NAHC) and PRC 5097.98 shall be followed.

TRC-5 Resource Assessment & Continuation of Work Protocol: Upon discovery, the tribal and/or archaeological monitor/consultant/consultant will immediately divert work at minimum of 150 feet and place an exclusion zone around the burial. The monitor/consultant(s) will then notify the Tribe, the qualified lead archaeologist, and the construction manager who will call the coroner. Work will continue to be diverted while the coroner determines whether the remains are Native American. The discovery is to be kept confidential and secure to prevent any further disturbance. If the finds are determined to be Native American, the coroner will notify the NAHC as mandated by state law who will then appoint a Most Likely Descendent (MLD).

TRC-6 Kizh-Gabrieleno Procedures for burials and funerary remains: If the Gabrieleno Band of Mission Indians – Kizh Nation is designated MLD, the following treatment measures shall be implemented. To the Tribe, the term “human remains” encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. These remains are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects.

TRC-7 Treatment Measures: Prior to the continuation of ground disturbing activities, the land owner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. The Tribe will work closely with the qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be taken which includes at a minimum detailed descriptive notes and sketches. Additional types of documentation shall be approved by the Tribe for data recovery purposes. Cremations will either be removed in bulk or by means as necessary to ensure completely recovery of all material. If the discovery of human remains includes four or more burials, the location is considered a cemetery and a separate treatment plan shall be created. Once complete, a final report of all activities is to be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive diagnostics on human remains. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

TRC-8 Professional Standards: Archaeological and Native American monitoring and excavation during construction projects will be consistent with current professional standards. All feasible care to avoid any unnecessary disturbance, physical modification, or separation of human

remains and associated funerary objects shall be taken. Principal personnel must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a principal investigator working with Native American archaeological sites in southern California. The Qualified Archaeologist shall ensure that all other personnel are appropriately trained and qualified.

Utilities and Service Systems

UTIL-1 The contract with demolition and construction contractors shall include the requirement that all materials that can feasibly be recycled shall be salvaged and recycled. This includes but not limited to wood, metals, concrete, road base and asphalt. The contractors shall submit a recycling plan to MVWD for review and approval prior to the construction of demolition/construction activities.

REFERENCES

CRM TECH, "*Identification and Evaluation of Historic Properties Plant 30 Wellhead Treatment Plant and Pipeline Project, City of Montclair, San Bernardino County, California"* dated May 10, 2019

Giroux & Associates, *"Air Quality and GHG Impact Analysis, Monte Vista Water District Plant 30 Wellhead Treatment Project, City of Montclair, California"* dated April 9, 2019

Jericho Systems, Inc., *"CEQA Plus Biological Evaluation, Monte Vista Water District Plant 30 Wellhead Treatment Project, Montclair, CA"* dated May 3, 2019

Hazen and Sayer, *"Monte Vista Water District Plant 30 Wellhead Treatment Project, Final Basis of Design Report (BODR)"* dated February 26, 2019

City of Montclair General Plan

City of Montclair's Municipal Code

County of San Bernardino Congestion Management Program (CMP) Traffic Study Guidelines

Uniform Building Code (1994)

Websites

http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/

https://www.sce.com/about-us/reliability/meeting-demand

http://www.mvwd.org/download.cfm?ID=1716

http://www.ontarioca.gov/fire

https://www.cityofmontclair.org/city-government/fire-department/calls-for-service

https://www.wmwd.com/183/Inland-Empire-Brine-Line-SARI

https://www.ocsd.com/Home/ShowDocument?id=19279

http://www.calrecycle.ca.gov/SWFacilities/Directory/36-AA-0055/Detail/

FIGURES

FIGURE 1
Regional Location

FIGURE 2
Site Location

FIGURE 3
Well Locations

FIGURE 4
Pipeline Location

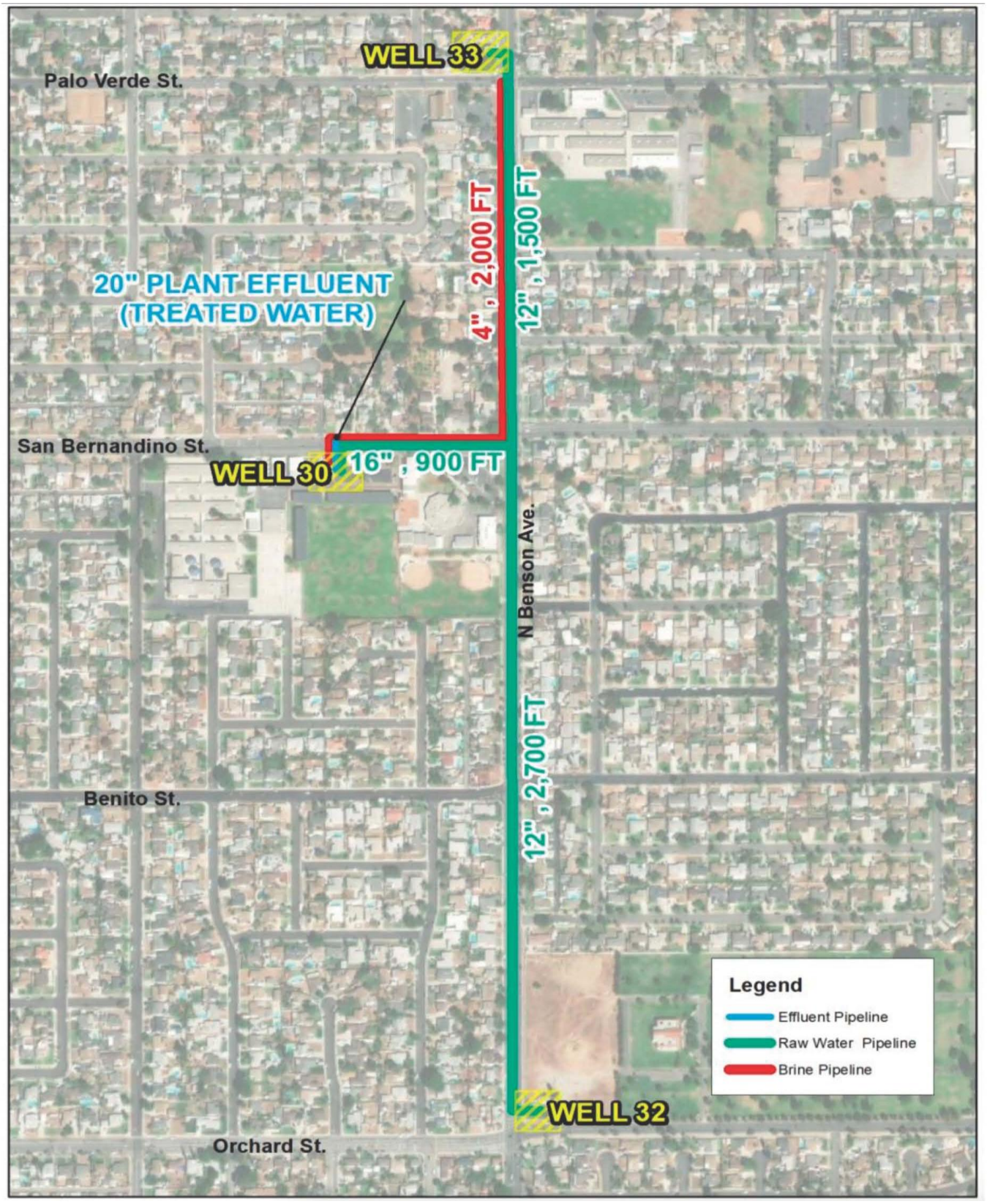
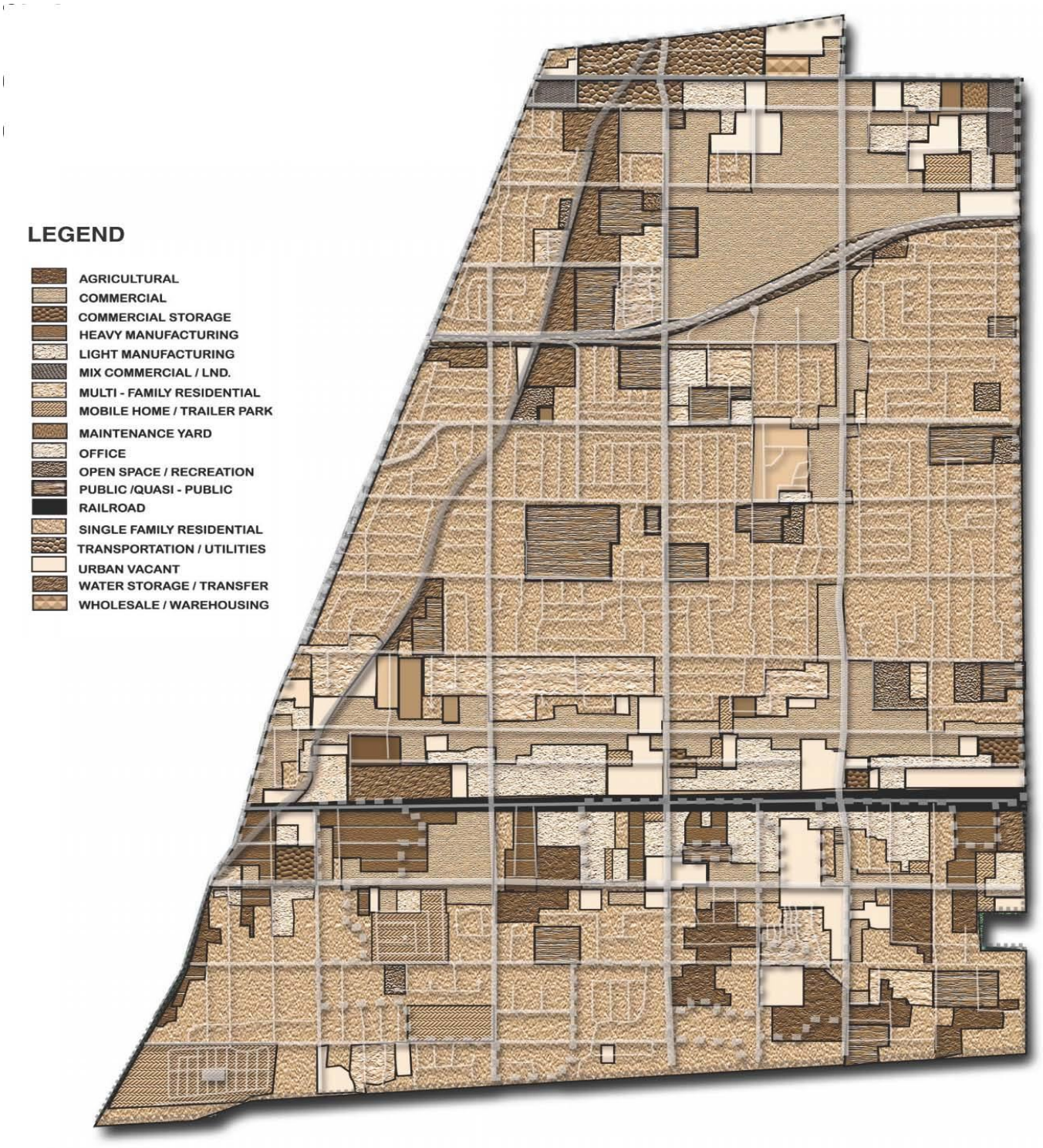
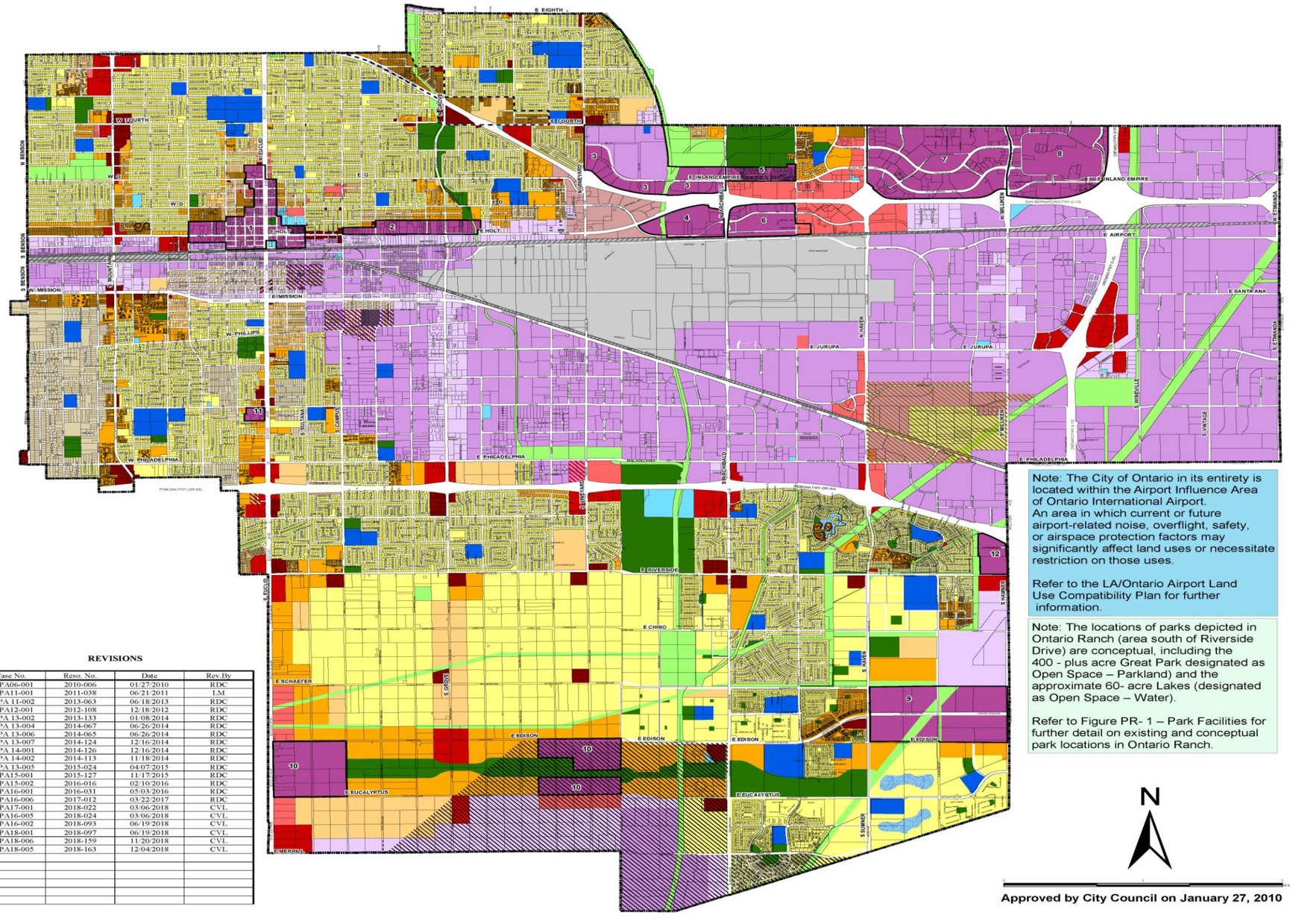


FIGURE 5
Land Use Map City of Montclair



Source: City of Montclair General Plan

FIGURE 6
Land Use Map, City of Ontario



Note: The City of Ontario in its entirety is located within the Airport Influence Area of Ontario International Airport. An area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restriction on those uses.

Refer to the LA/Ontario Airport Land Use Compatibility Plan for further information.

Note: The locations of parks depicted in Ontario Ranch (area south of Riverside Drive) are conceptual, including the 400 - plus acre Great Park designated as Open Space – Parkland) and the approximate 60- acre Lakes (designated as Open Space – Water).

Refer to Figure PR- 1 – Park Facilities for further detail on existing and conceptual park locations in Ontario Ranch.

N

Approved by City Council on January 27, 2010

THE ONTARIO PLAN
A FRAMEWORK FOR THE FUTURE
www.ontarioplan.org

LEGEND

Residential
- Rural (0 - 2 du/ac)
- Low Density (2.1 - 5 du / ac)
- Low-Medium Density (5.1 - 11 du / ac)
- Medium Density (11.1 - 25 du / ac)
- High Density (25.1 - 45 du / ac)

Mixed Use
- Mixed Use
  1. Downtown
  2. East Holt
  3. Meredith
  4. Multimodal Mixed Use
  5. Inland Empire Corridor
  6. Guasti
  7. Ontario Center
  8. Ontario Mills
  9. NMC East
  10. NMC West
  11. Euclid/Francis
  12. 60/Hamner

Retail/Service
- Neighborhood Commercial (0.4 FAR)
- General Commercial (0.4 FAR)
- Office Commercial (0.75 FAR)
- Hospitality (1.0 FAR)

Employment
- Business Park (0.6 FAR)
- Industrial (0.55 FAR)

Other
- Open Space - Non Recreation
- Open Space - Parkland
- Open Space - Water
- Public Facility
- Public School
- Airport
- Rail
- Landfill

Overlays
- Business Park
- Industrial
- Commercial
- I-10/Grove Interchange Area
- Landfill Impact Area
- Chino Airport Overlay

REVISIONS

Case No.	Reso. No.	Date	Rev.By
PGPA06-001	2010-006	01/27/2010	RDC
PGPA11-001	2011-038	06/21/2011	LM
PGPA 11-002	2013-063	06/18/2013	RDC
PGPA12-001	2012-108	12/18/2012	RDC
PGPA 13-002	2013-133	01/08/2014	RDC
PGPA 13-004	2014-067	06-26-2014	RDC
PGPA 13-006	2014-065	06/26/2014	RDC
PGPA 13-007	2014-124	12/16/2014	RDC
PGPA 14-001	2014-126	12/16/2014	RDC
PGPA 14-002	2014-113	11/18/2014	RDC
PGPA 13-005	2015-024	04/07/2015	RDC
PGPA15-001	2015-127	11/17/2015	RDC
PGPA15-002	2016-016	02/10/2016	RDC
PGPA16-001	2016-031	05/03/2016	RDC
PGPA16-006	2017-012	03/22/2017	RDC
PGPA17-001	2018-022	03/06/2018	CVL
PGPA16-005	2018-024	03/06/2018	CVL
PGPA16-002	2018-093	06/19/2018	CVL
PGPA18-001	2018-097	06/19/2018	CVL
PGPA18-006	2018-159	11/20/2018	CVL
PGPA18-005	2018-163	12/04/2018	CVL

Source: City of Ontario General Plan

FIGURE II-1
Farmland Map

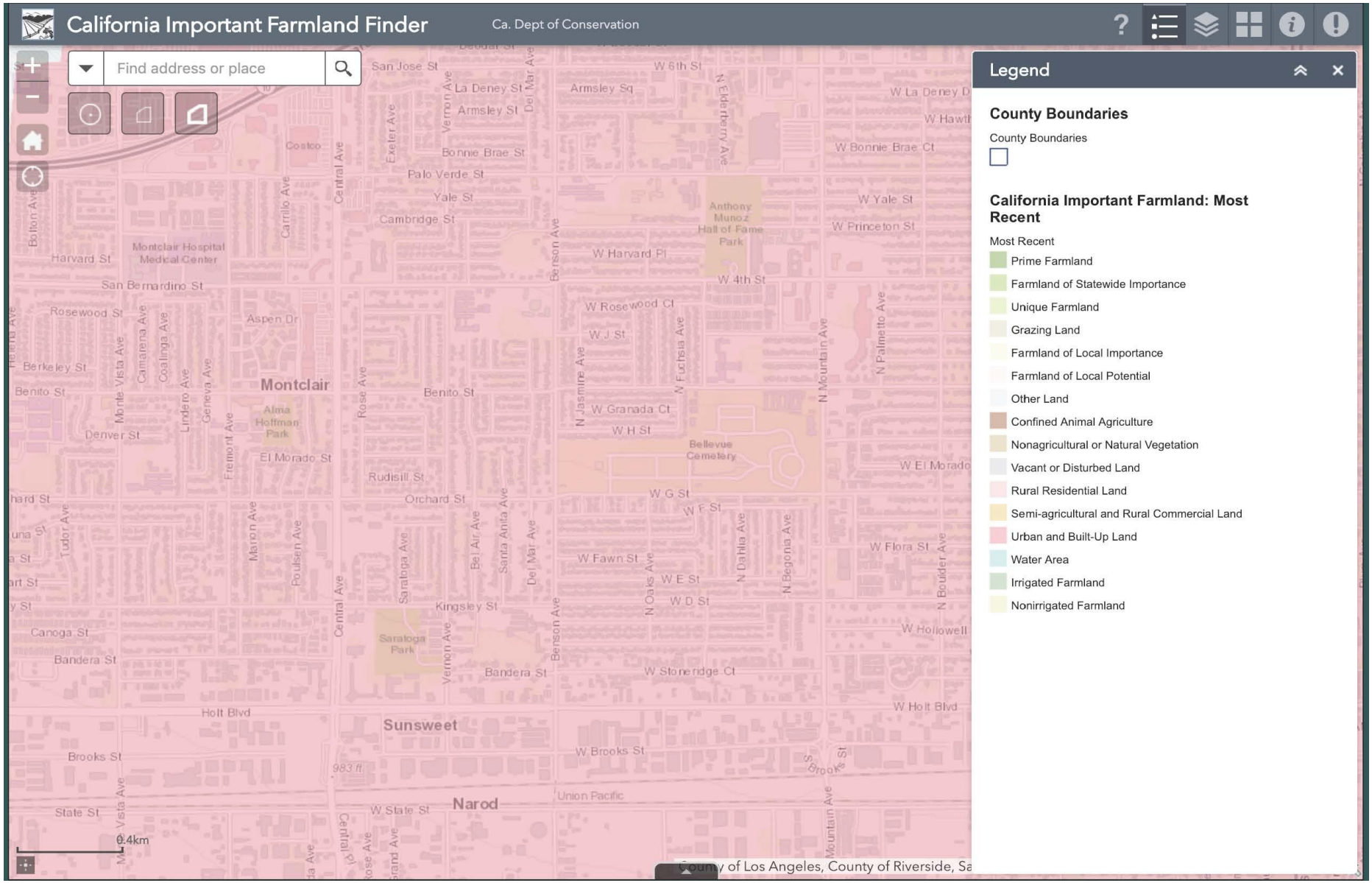


FIGURE VII-1
Alquist-Priolo Fault Zone

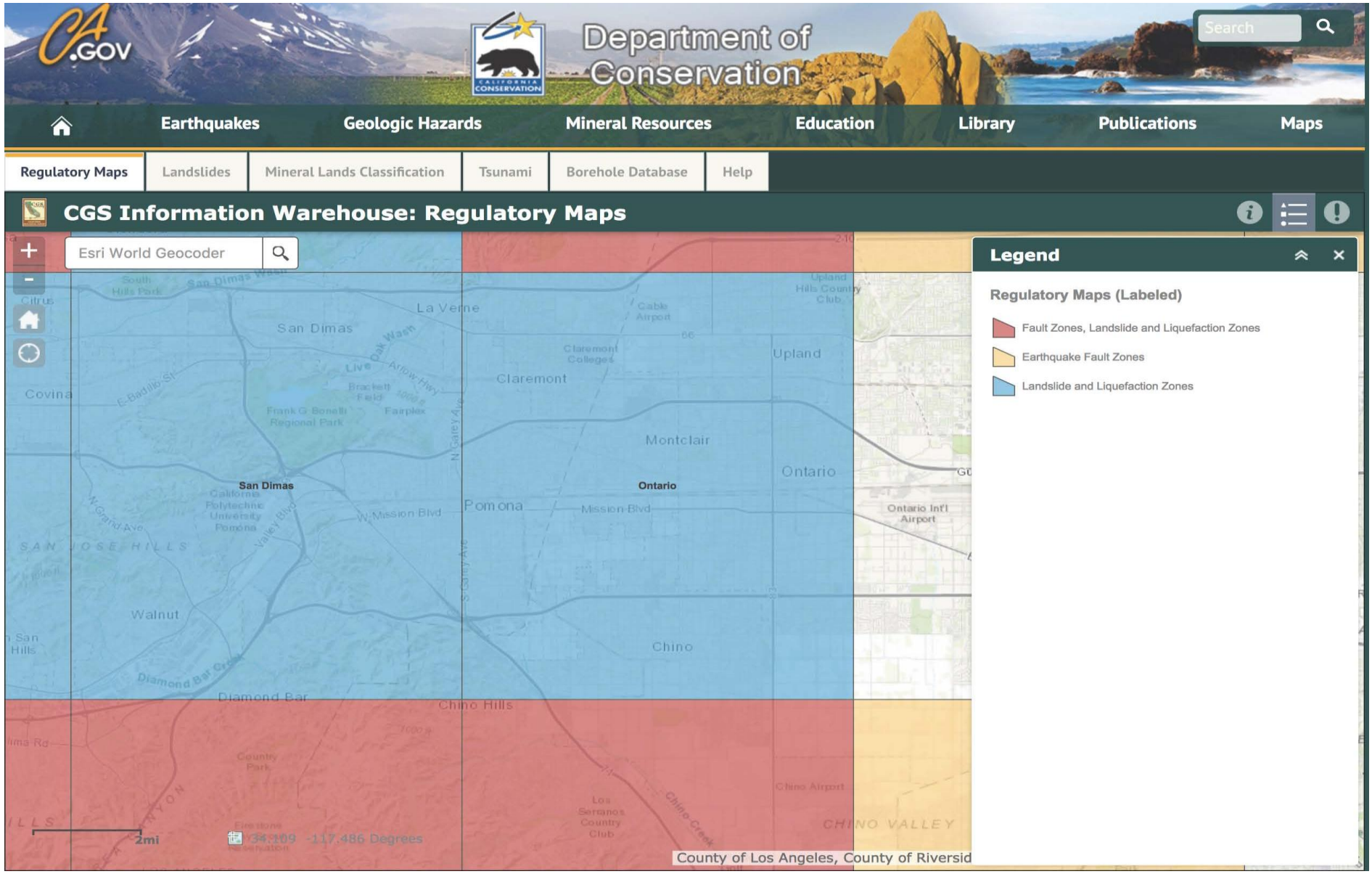
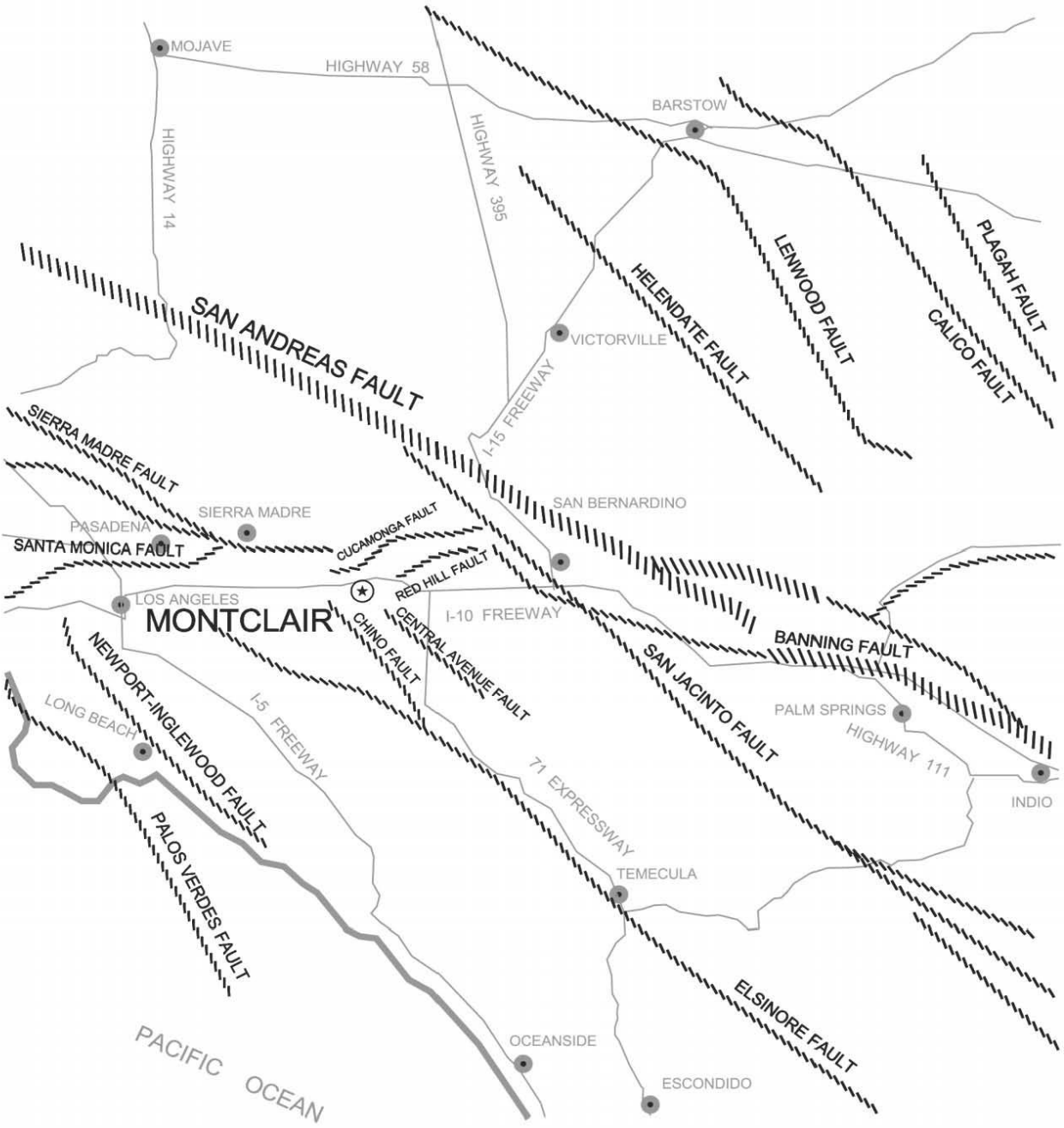
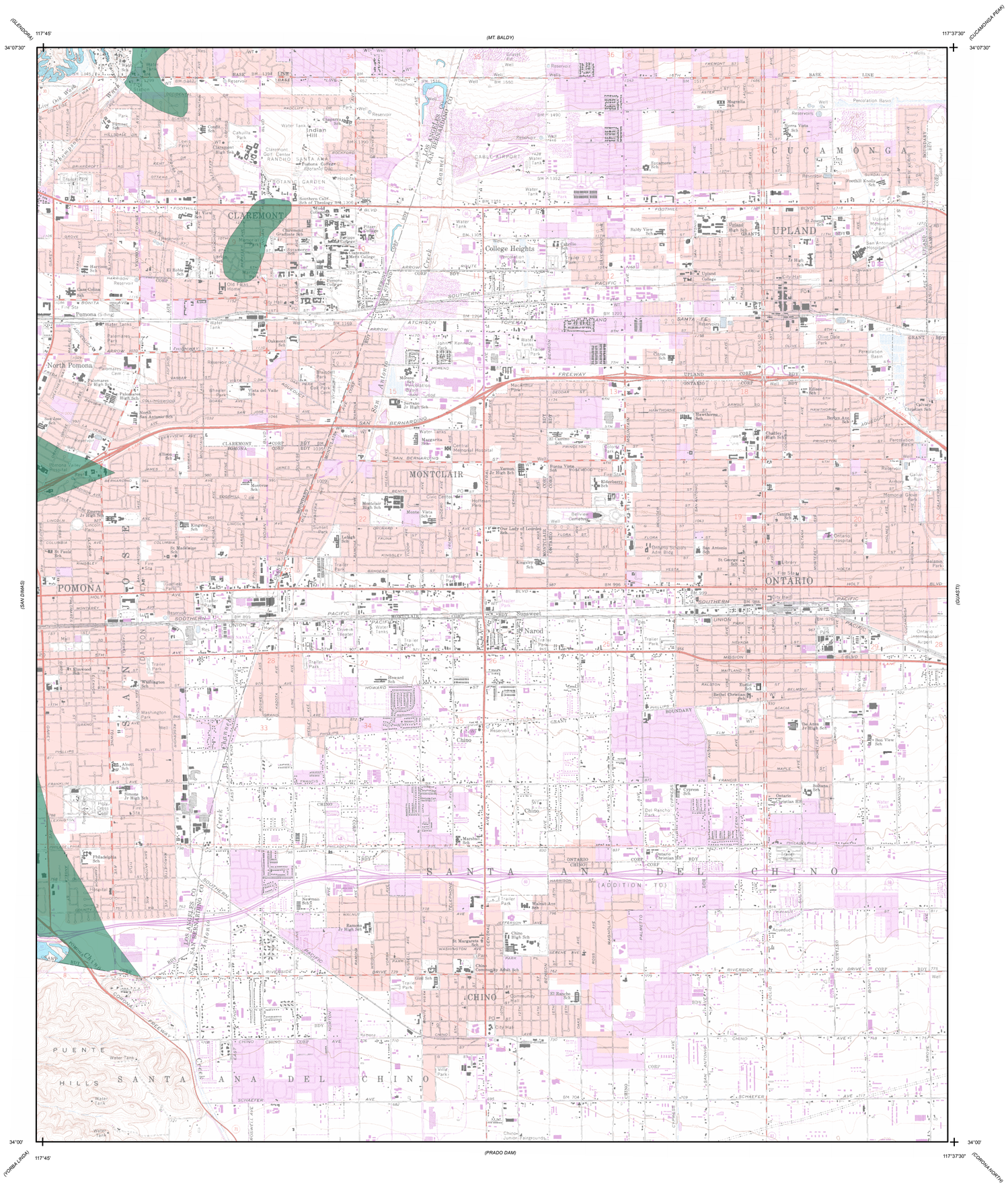


FIGURE VII-2
Regional Faults Map



CALIFORNIA DIVISION OF MINES AND GEOLOGY

NORTH



Earthquake Zones of Required Investigation
Ontario Quadrangle

California Geological Survey

**This Map Shows Seismic Hazard Zones for Soil Liquefaction and Earthquake-Induced Landslides.
Alquist-Priolo Earthquake Fault Zones Have Not Been Prepared for the Ontario Quadrangle.**

This map shows the location of Seismic Hazard Zones referred to here as Earthquake Zones of Required Investigation. The Geographic Information System (GIS) digital files of these regulatory zones released by the California Geological Survey (CGS) are the "Official Maps" GIS files are available at the GGS website http://maps.conservation.ca.gov/cgs/informationwarehouse/. These zones will assist cities and counties in fulfilling their responsibilities for protecting the public from the effects of earthquake-triggered ground failure as required by the Seismic Hazards Mapping Act (Public Resources Code Sections 2690-2699.6) and the Alquist-Priolo Earthquake Fault Zoning Act (Public Resources Code Sections 2621-2630). For information regarding the general approach and recommended methods for preparing these zones, see CGS Special Publication 118, *Recommended Criteria for Delineating Seismic Hazard Zones in California* and Special Publication 42, *Fault-Rupture Hazard Zones in California.*

For information regarding the scope and recommended methods to be used in conducting required site investigations refer to CGS Special Publication 117A, *Guidelines for Evaluating and Mitigating Seismic Hazards in California*, and CGS Special Publication 42, Appendix C *Guidelines for Evaluating the Hazard of Surface Rupture*. For a general description of the Seismic Hazards Mapping and Alquist-Priolo Earthquake Fault Zoning acts, the zonation programs, and related information, please refer to the website at www.conservation.ca.gov/cgs/.

MAP EXPLANATION

SEISMIC HAZARD ZONES

Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslide Zones
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

ADDITIONAL INFORMATION

For additional information on the zones of required investigation presented on this map, the data and methodology used to prepare them, and additional references consulted, please refer to the following:

Seismic Hazard Zone Report for the Ontario 7.5' Quadrangle, Los Angeles County, California.
California Geological Survey, Seismic Hazard Zone Report 040.
http://gmw.conservation.ca.gov/SHP/EZRIM/Reports/SHZR/SHZR_040_Ontario.pdf

For more information on the Seismic Hazards Mapping Act please refer to:
http://www.conservation.ca.gov/cgs/shzp/Pages/SHMPpginfo.aspx

Click the link below to learn how to take greater advantage of the GeoPDF format of this map after downloading.
http://gmw.conservation.ca.gov/SHP/EZRIM/Docs/TerragoUserGuide.pdf

ONTARIO QUADRANGLE

SEISMIC HAZARD ZONES

**Delineated in compliance with
Chapter 7.8 Division 2 of the California Public Resources Code
*(Seismic Hazards Mapping Act)***

OFFICIAL MAP

Released: November 17, 2000

STATE GEOLOGIST

Study area defined by USGS quadrangle boundaries using NAD 27, represented by the visible map extent. Data are maintained and distributed in California Albers (meters), NAD 83 [EPSG:3310], as shown by tics and coordinates.
Shaded topographic relief derived from USGS 10 meter NED (2013). Topographic base map from USGS1967, photorevised 1981.
Street data from US Census Bureau TIGER/Line, 2016.

Scale 1: 24000

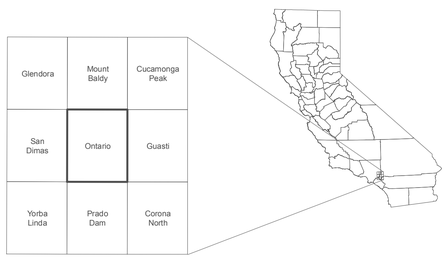
1 0.5 0 1 2 Miles
1,000 500 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 Feet
1 0.5 0 1 2 Kilometers
1000 500 0 1000 2000 Meters

Contour Interval 10 Feet

12° TRUE NORTH MAGNETIC NORTH
Approximate Declination, 2016

N

California Geological Survey
Geologic Information and Publications
801 K Street, MS 14-34
Sacramento, CA 95814-3532
www.conservation.ca.gov/cgs



IMPORTANT

PLEASE NOTE THE FOLLOWING FOR ZONES SHOWN ON THIS MAP

1) This map may not show all faults that have the potential for surface fault rupture, either within the Earthquake Fault Zones or outside their boundaries. Additionally, this map may not show all areas that have the potential for liquefaction, landsliding, strong earthquake ground shaking or other earthquake and geologic hazards. Also, a single earthquake capable of causing liquefaction or triggering landside failure will not uniformly affect the entire area zoned.

2) Faults shown are the basis for establishing the boundaries of the Earthquake Fault Zones.

3) The identification and location of these faults are based on the best available data. However, the quality of data used is varied. Traces have been depicted as accurately as possible at a map scale of 1:24,000.

4) Liquefaction zones may also contain areas susceptible to the effects of earthquake-induced landslides. This situation typically exists at or near the toes of existing landslides, downslope from rockfall or debris flow source areas, or adjacent to steep stream banks.

5) Landslide zones on this map were determined, in part, by adapting methods first developed by the U.S. Geological Survey (USGS). Landslide hazard maps prepared by the USGS typically use experimental approaches to assess earthquake-induced and other types of landslide hazards. Although aspects of these new methodologies may be incorporated in future CGS seismic hazard zone maps, USGS maps should not be used as substitutes for these Official SEISMIC HAZARD ZONES maps.

6) USGS base map standards provide that 90 percent of cultural features be located within 40 feet (horizontal accuracy) at the scale of this map. The identification and location of liquefaction and earthquake-induced landslide zones are based on available data. However, the quality of data used is varied. The zone boundaries depicted have been drawn as accurately as possible at this scale.

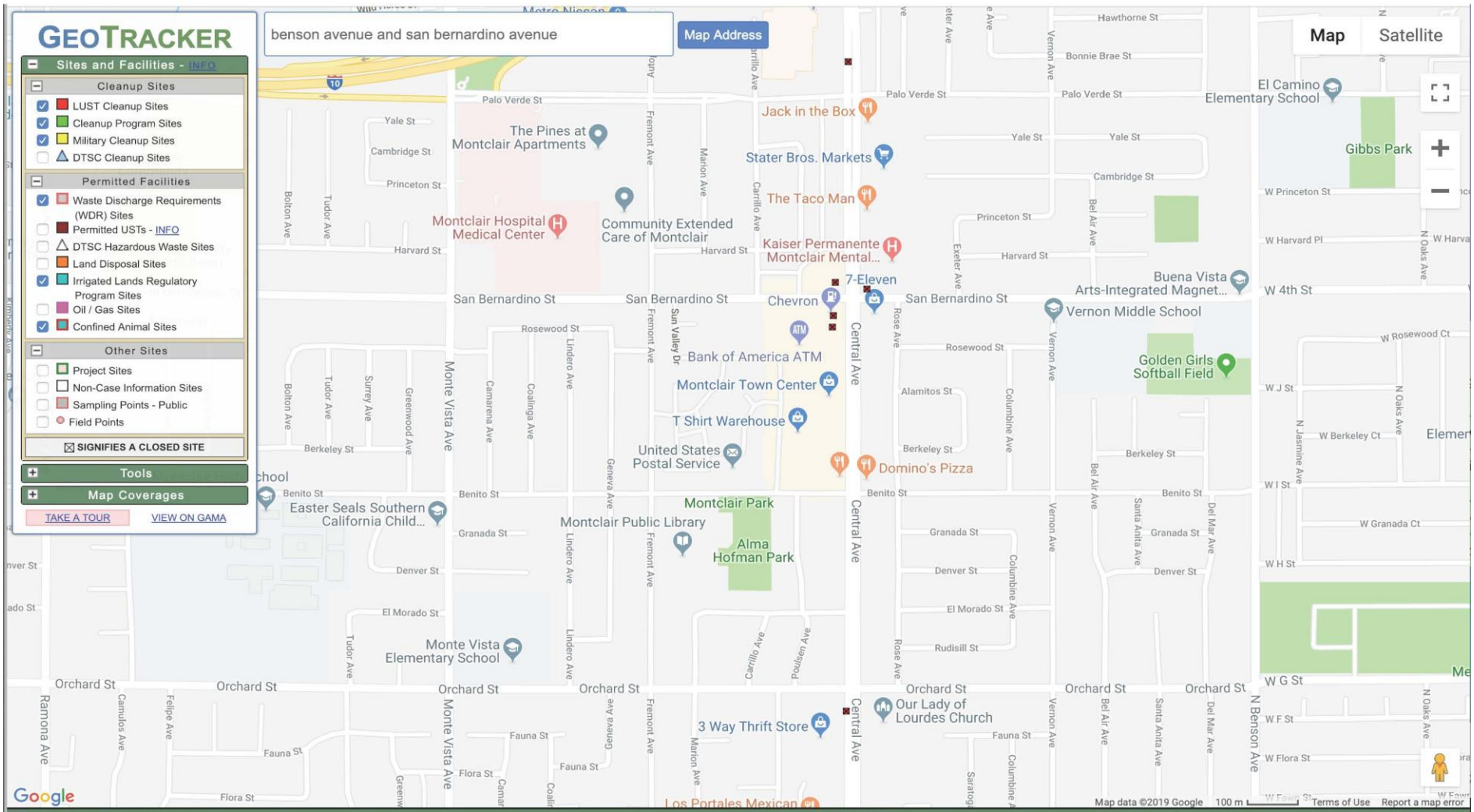
7) Information on this map is not sufficient to serve as a substitute for the geologic and geotechnical site investigations required under Chapters 7.5 and 7.8 of Division 2 of the California Public Resources Code.

8) Seismic Hazard Zones identified on this map may include developed land where delineated hazards have already been mitigated to city or county standards. Check with your local building/planning department for information regarding the location of such mitigated areas.

9) DISCLAIMER: The State of California and the Department of Conservation make no representations or warranties regarding the accuracy of the data from which these maps were derived. Neither the State nor the Department shall be liable under any circumstances for any direct, indirect, special, incidental or consequential damages with respect to any claim by any user or any third party on account of or arising from the use of this map.

FIGURE VII-3

FIGURE IX1
GeoTracker, page 1



SITES CURRENTLY VISIBLE ON MAP — 6 SITES LISTED — EXPORT THIS LIST TO EXCEL

SITE NAME	GLOBAL ID	STATUS	ADDRESS	CITY
ARCO #9687	T0607199296	COMPLETED - CASE CLOSED	9690 N CENTRAL AVENUE	MONTCLAIR
EXXON MOBIL #18-D6Q	T0607115668	COMPLETED - CASE CLOSED	9700 CENTRAL AVENUE	MONTCLAIR
MOBIL #11-D6Q	T0607100104	COMPLETED - CASE CLOSED	9700 CENTRAL AVE	MONTCLAIR
THRIFTY OIL #129	T0607100493	COMPLETED - CASE CLOSED	10120 CENTRAL AVE	MONTCLAIR
THRIFTY OIL #315	T0607100188	COMPLETED - CASE CLOSED	9690 CENTRAL AVE	MONTCLAIR
TOSCO/76 STATION #5263	T0607100478	COMPLETED - CASE CLOSED	9494 CENTRAL AVE	MONTCLAIR

FIGURE IX-2
GeoTracker, page 2

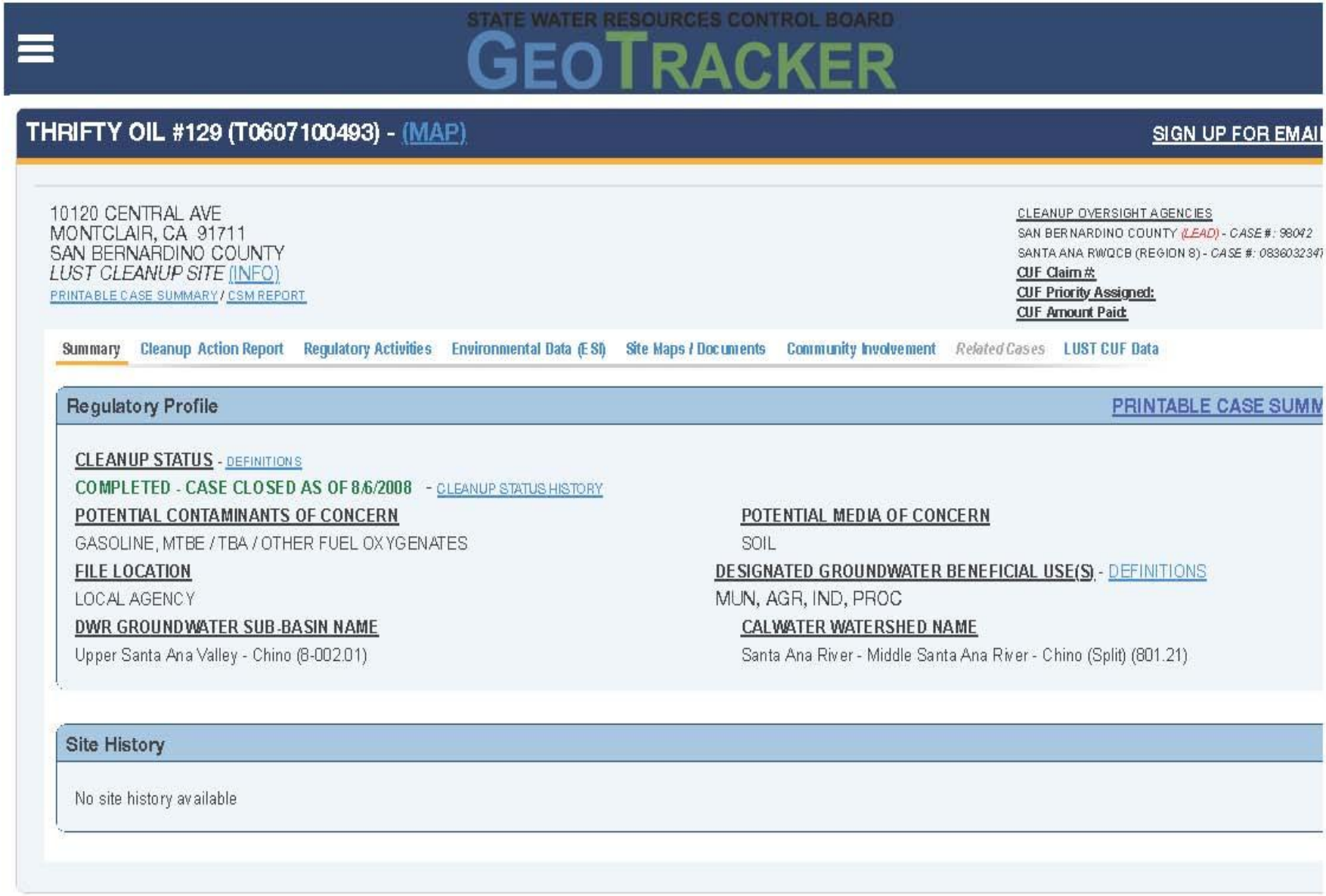
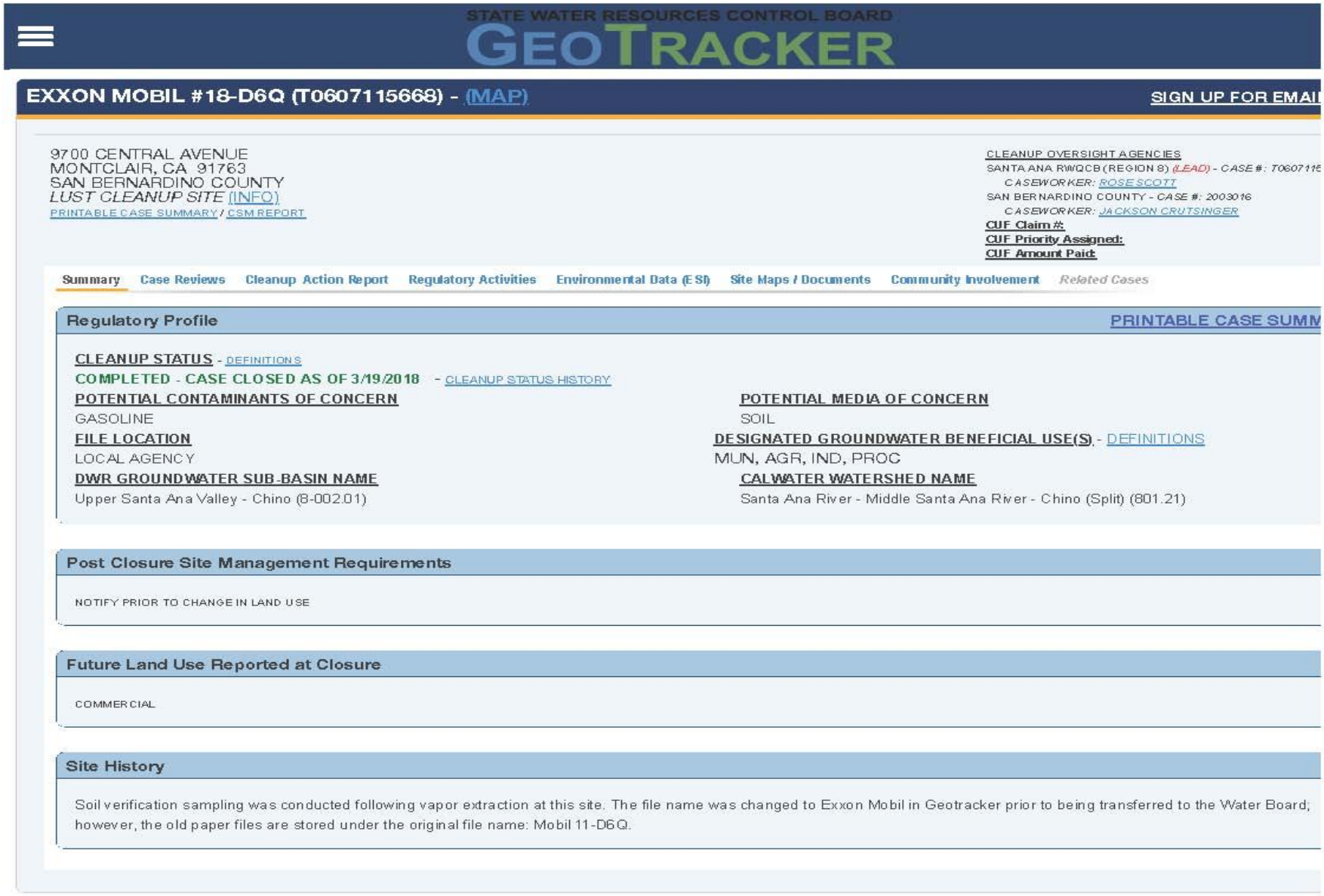


FIGURE IX-3
GeoTracker, page 3



STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER

EXXON MOBIL #18-D6Q (T0607115668) - (MAP) SIGN UP FOR EMAI

9700 CENTRAL AVENUE
MONTCLAIR, CA 91763
SAN BERNARDINO COUNTY
LUST CLEANUP SITE (INFO)
PRINTABLE CASE SUMMARY / CSM REPORT

CLEANUP OVERSIGHT AGENCIES
SANTA ANA RWQCB (REGION 8) (LEAD) - CASE #: T0607115
CASEWORKER: ROSE SCOTT
SAN BERNARDINO COUNTY - CASE #: 2003016
CASEWORKER: JACKSON CRUTSINGER
CUF Claim #:
CUF Priority Assigned:
CUF Amount Paid:

Summary | Case Reviews | Cleanup Action Report | Regulatory Activities | Environmental Data (ESI) | Site Maps / Documents | Community Involvement | Related Cases

Regulatory Profile PRINTABLE CASE SUMM

CLEANUP STATUS - DEFINITIONS
COMPLETED - CASE CLOSED AS OF 3/19/2018 - CLEANUP STATUS HISTORY

POTENTIAL CONTAMINANTS OF CONCERN
GASOLINE

POTENTIAL MEDIA OF CONCERN
SOIL

FILE LOCATION
LOCAL AGENCY

DESIGNATED GROUNDWATER BENEFICIAL USE(S) - DEFINITIONS
MUN, AGR, IND, PROC

DWR GROUNDWATER SUB-BASIN NAME
Upper Santa Ana Valley - Chino (8-002.01)

CALWATER WATERSHED NAME
Santa Ana River - Middle Santa Ana River - Chino (Split) (801.21)

Post Closure Site Management Requirements

NOTIFY PRIOR TO CHANGE IN LAND USE

Future Land Use Reported at Closure

COMMERCIAL

Site History

Soil verification sampling was conducted following vapor extraction at this site. The file name was changed to Exxon Mobil in Geotracker prior to being transferred to the Water Board; however, the old paper files are stored under the original file name: Mobil 11-D6Q.

FIGURE IX-4
GeoTracker, page 4

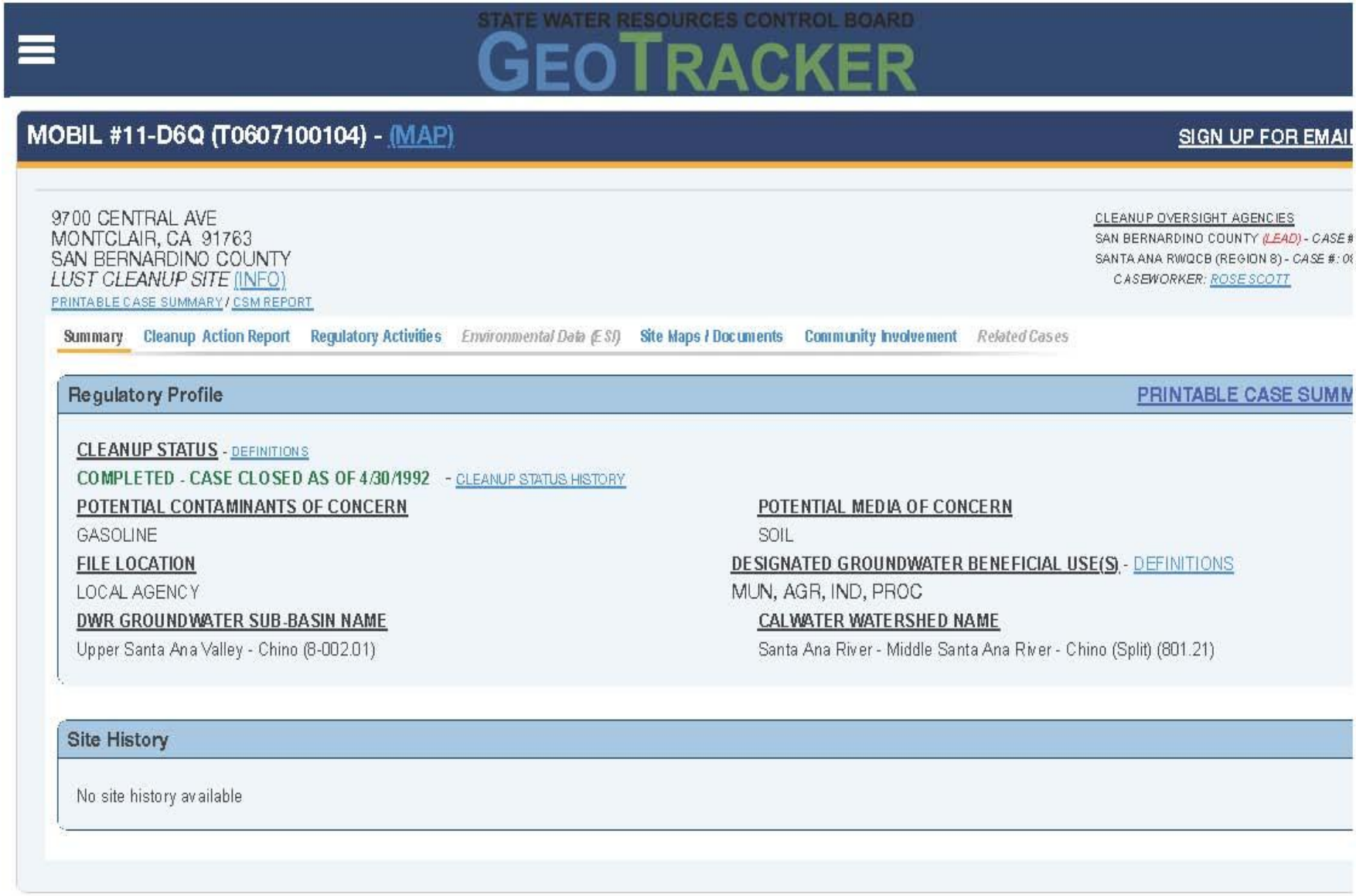


FIGURE IX-5
GeoTracker, page 5

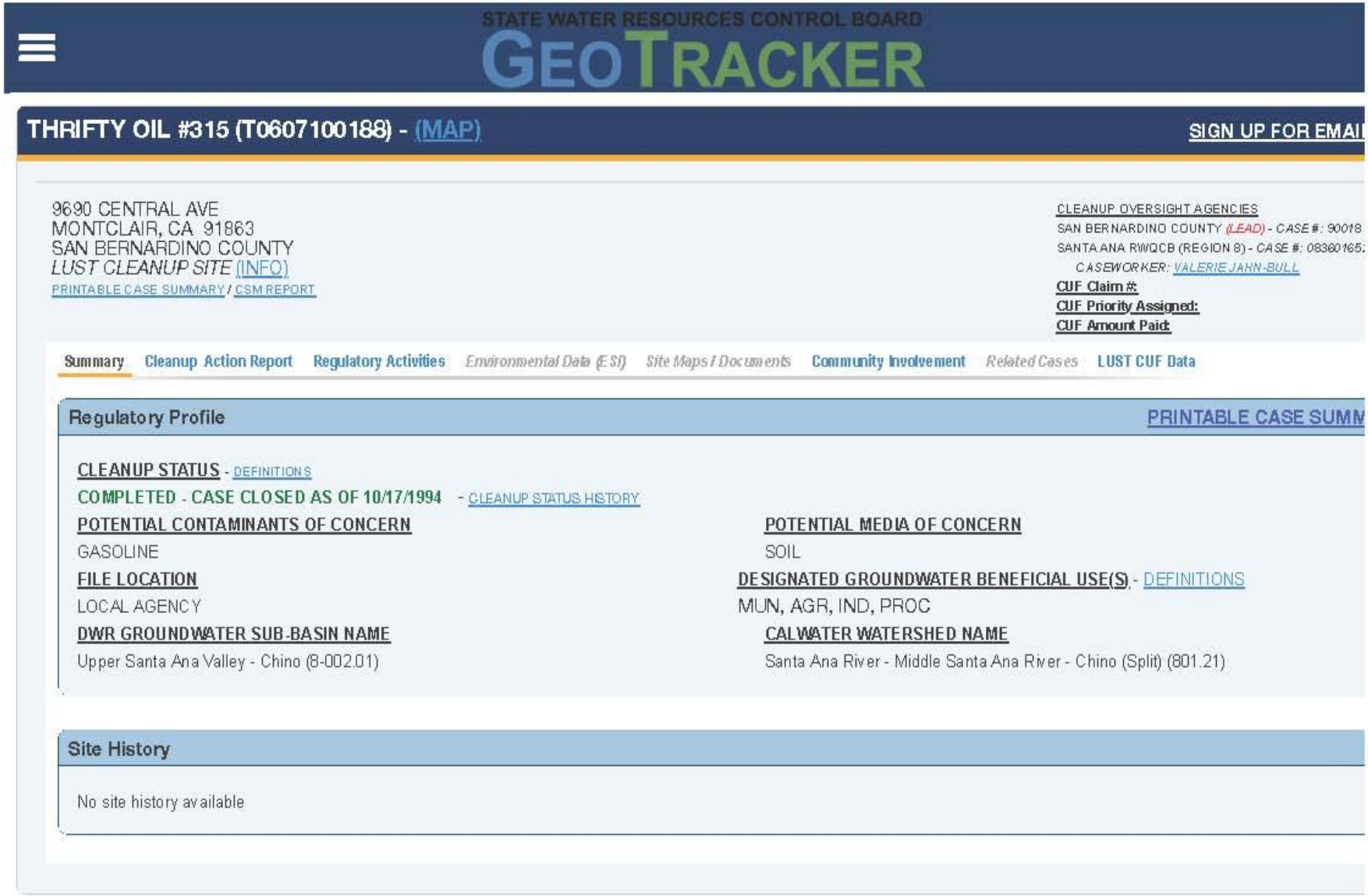


FIGURE IX-6
GeoTracker, page 6

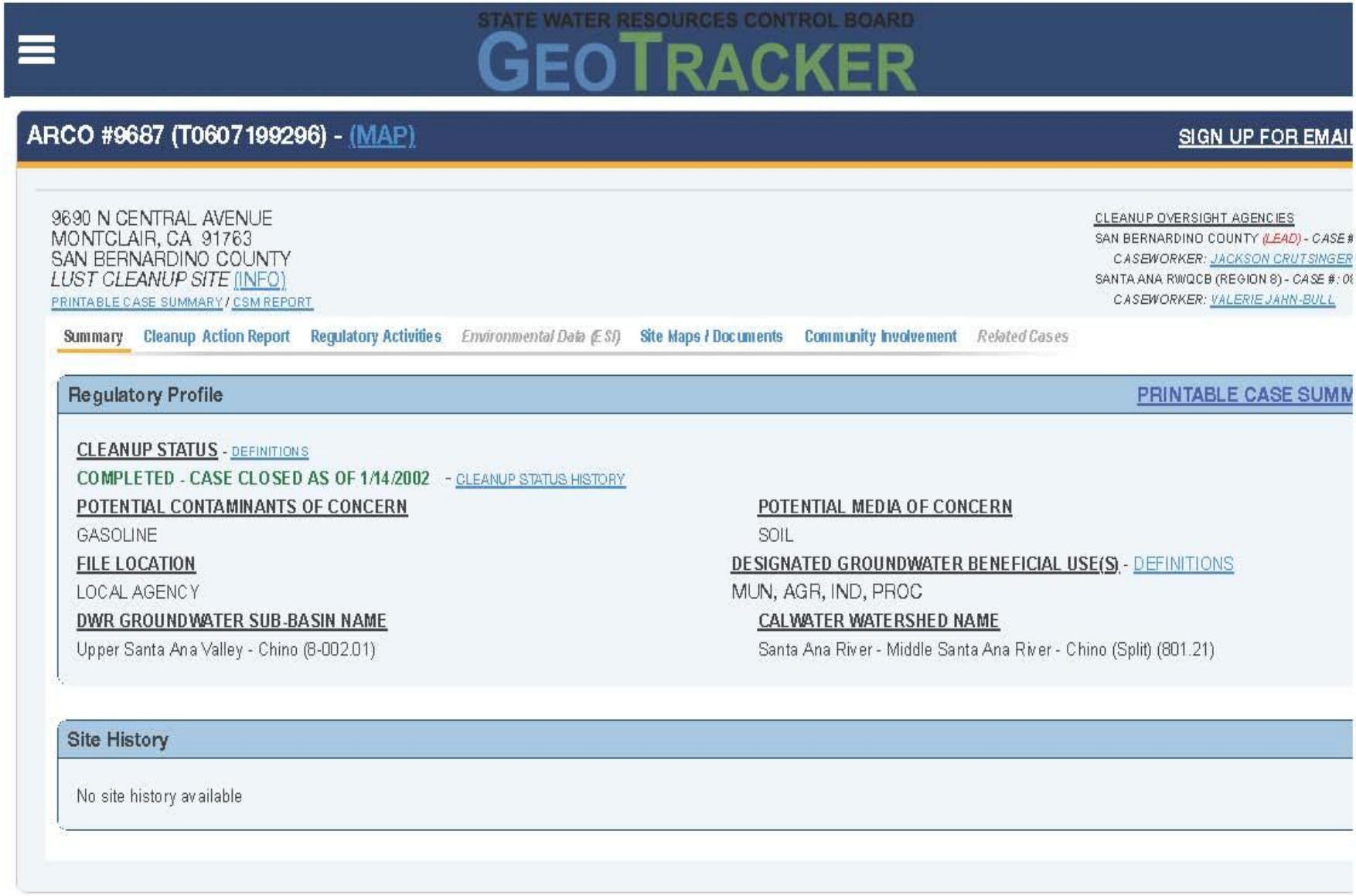


FIGURE IX-7
GeoTracker, page 7

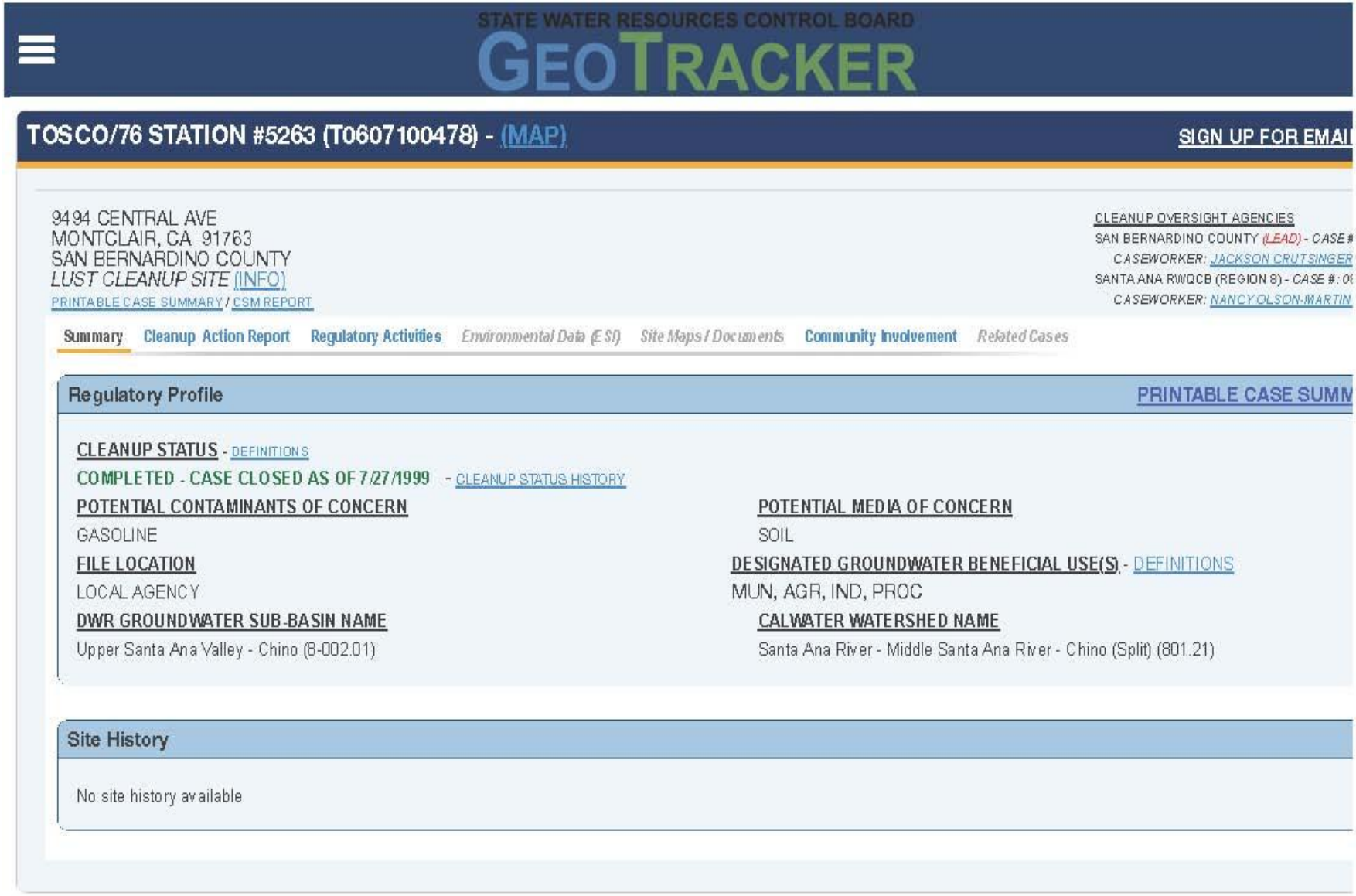
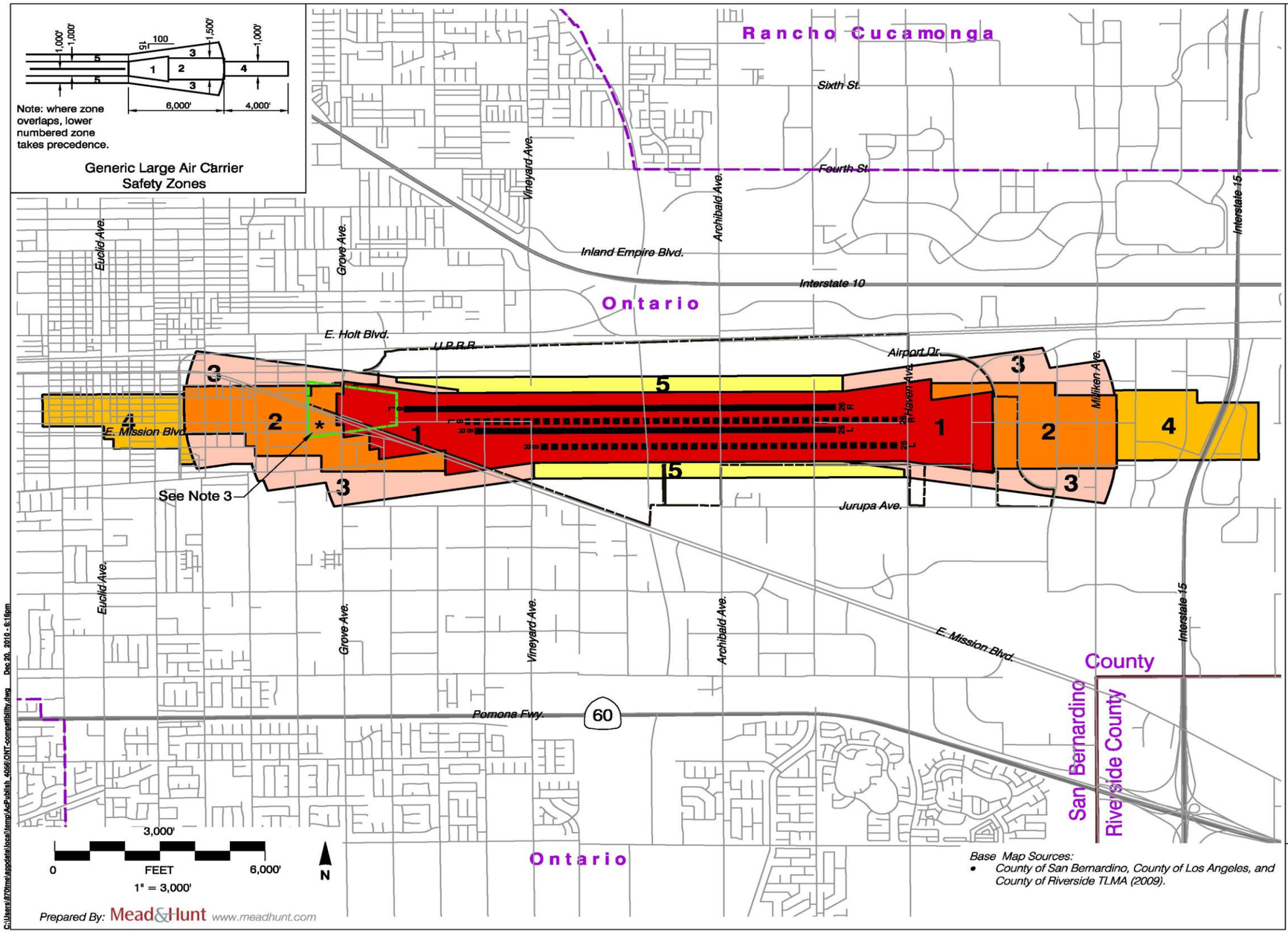


FIGURE IX-8
Compatibility Policy Map: Safety Zones



LEGEND

Boundary Lines

- Airport Property Line
- County Line
- City Limits
- Street
- Existing Runways } Runway 8L-26R
- Future Runways } Runway 8R-26L

Policy Boundaries

- Airport Influence Area (beyond map view)

Safety Zones[1]

- Zone 1 - Runway Protection Zone (RPZ)
- Zone 2 - Inner Approach/Departure Zone
- Zone 3 - Inner Turning Zone
- Zone 4 - Outer Approach/Departure Zone
- Zone 5 - Sideline Zone
- Overlay Safety Zone 1A[3]

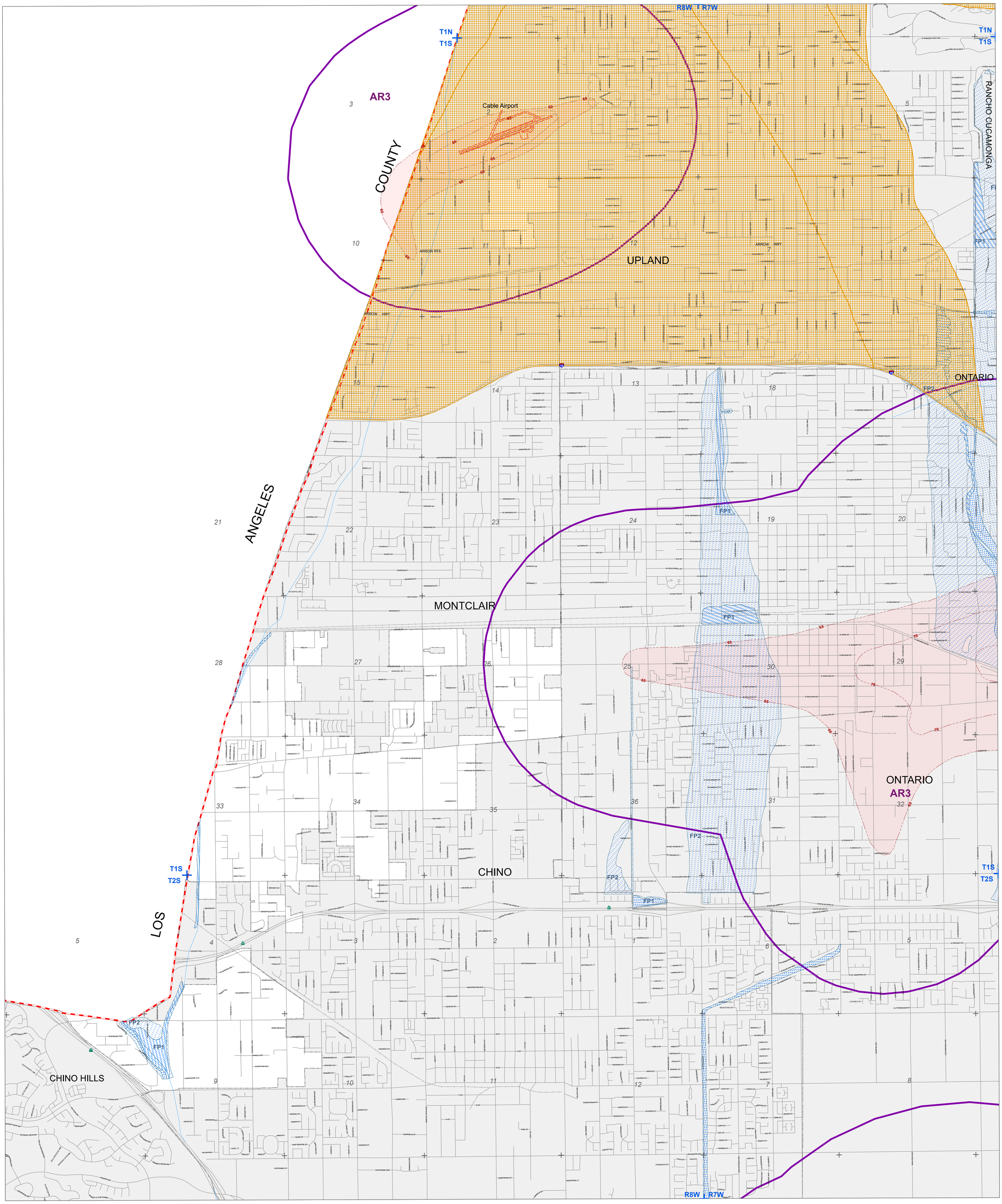
NOTES

1. See **Section 6.1** and **Table 2-2** for safety policies and criteria. Policies apply only to City of Ontario.
2. Avigation easement dedication required within all safety zones (see **Policy S7** and **SP1**).
3. See **Section 6.1.5 (c)** for Zone 1A explanation.

ONTARIO AIRPORT PLANNING

LA/Ontario International Airport
Land Use Compatibility Plan

See FH19 B



See FH28 B

Z:\Project\Work\Files\GenPlan\HazardMaps\Hazard_Detail2.mxd
Print Date: 05/29/2007, 04:39 PM

Dam Inundation
- Area of Inundation
- Limit of Inundation
- Dam
- Limit of Study

Map data compiled on 7 and 1/2 and 15 minute USGS quadrangle maps by various agencies, 1974.

Positional accuracy of map data is at best plus or minus 200 feet

Flood Plain Safety (FP) Overlay District

FEMA
- FP1 (Zone A - Inside 100 Year Flood Plain)
- FP2 (Zone X - Inside 500 Year Flood Plain)

Local Flood Hazard
- FP3 (Local Flood Data)

Map data manuscripted onto 7 and 1/2 minute USGS quadrangle maps from Flood Insurance Rate Maps of various scales, dated 1972 to 1988, and issued by the Federal Emergency Management Agency. Data also compiled from local flood sources.

Positional accuracy of map data is at best plus or minus 150 feet.

Noise Hazard (NH) Overlay District
- Noise Contour in LDN
- Runway Location

The Noise Hazard (NH) Overlay applies to noise contours 65 LDN or greater.

Map data compiled on 1:100,000 scale USGS quadrangle maps by J. J. VanHouton and Associates, Inc., 1988.

Positional accuracy of map data is at best plus or minus 750 feet

San Bernardino County Land Use Plan
GENERAL PLAN
Hazard Overlays

SCALE 1:14,400

1,250 625 0 1,250 2,500 3,750 5,000 Feet

0.5 0.25 0 0.5 1 Miles

Fire Safety (FS) Overlay District
- Fire Safety Boundary
- FS1 Fire Safety Area 1
- FS2 Fire Safety Area 2

Map data compiled on 7-1/2 and 15-minute USGS quadrangle maps by the California Department of Forestry (CDF).

Positional accuracy of map data is at best plus or minus 750 feet.

Airport Safety Review
- AR3 (Airport Safety Review Area 3)
- AR4 (Airport Safety Review Area 4)

AR4 map data compiled on 1:100,000 scale USGS quadrangle maps by the United States Air Force.

Positional accuracy of map data is at best plus or minus 750 feet.

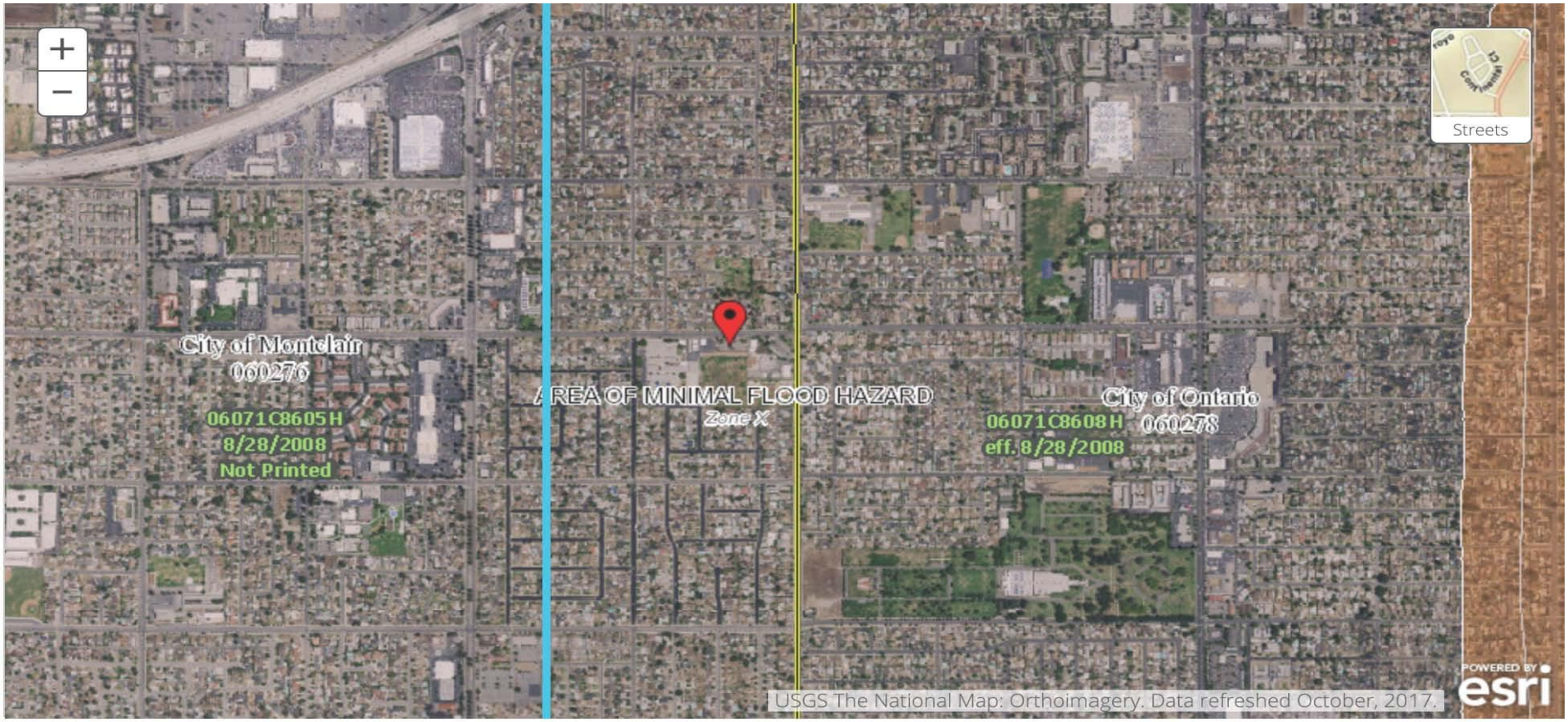
- Cities

SAN BERNARDINO COUNTY
MAP LOCATION

FH27 B
Ontario

FIGURE IX-9

FIGURE X-1
FEMA Map



PIN
- Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
- Selected FloodMap Boundary
- Digital Data Available
- No Digital Data Available
- Unmapped

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

FIGURE XIII-1
Existing Noise Contour Map

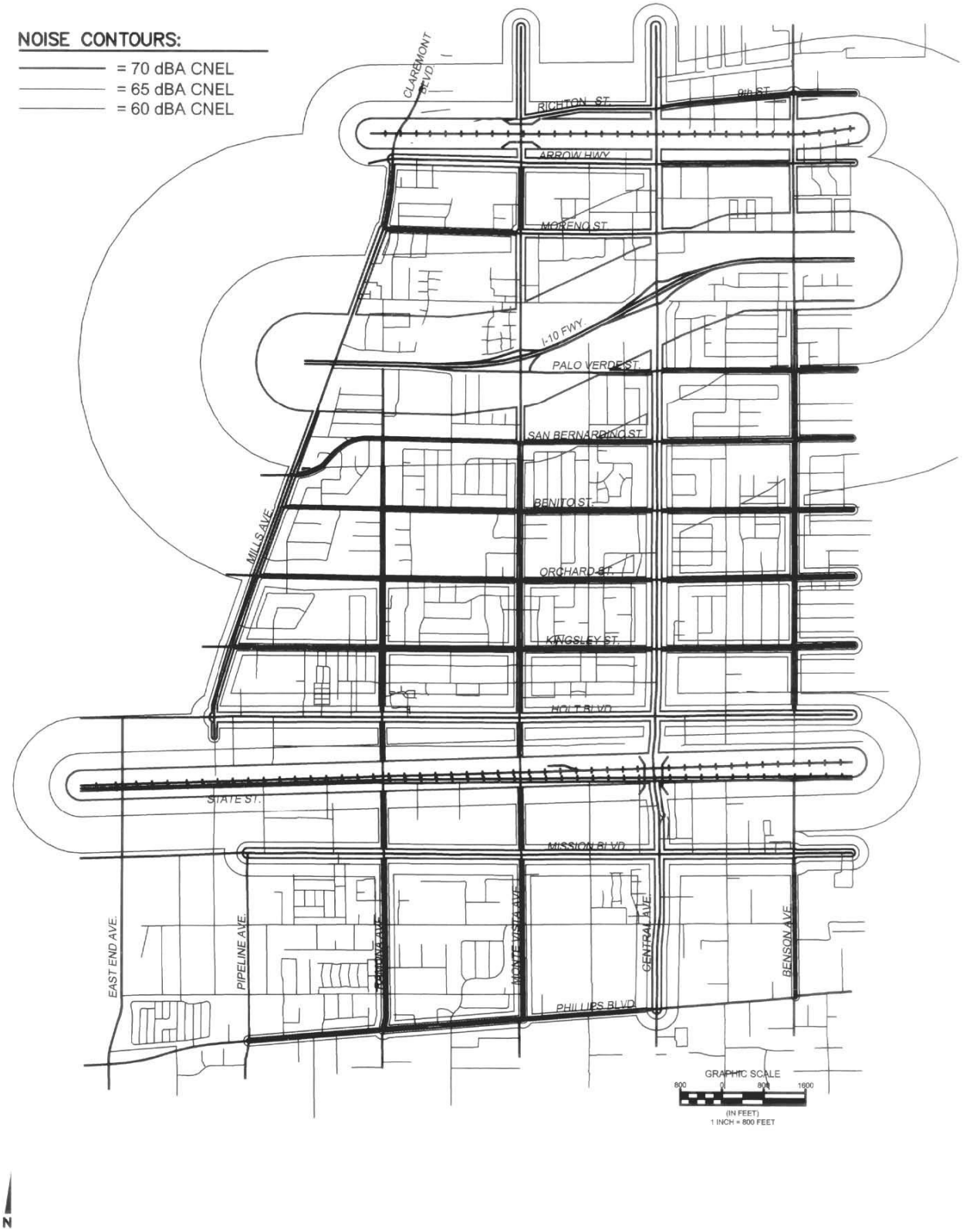


FIGURE XIII-2
General Plan Buildout Noise Contour Map

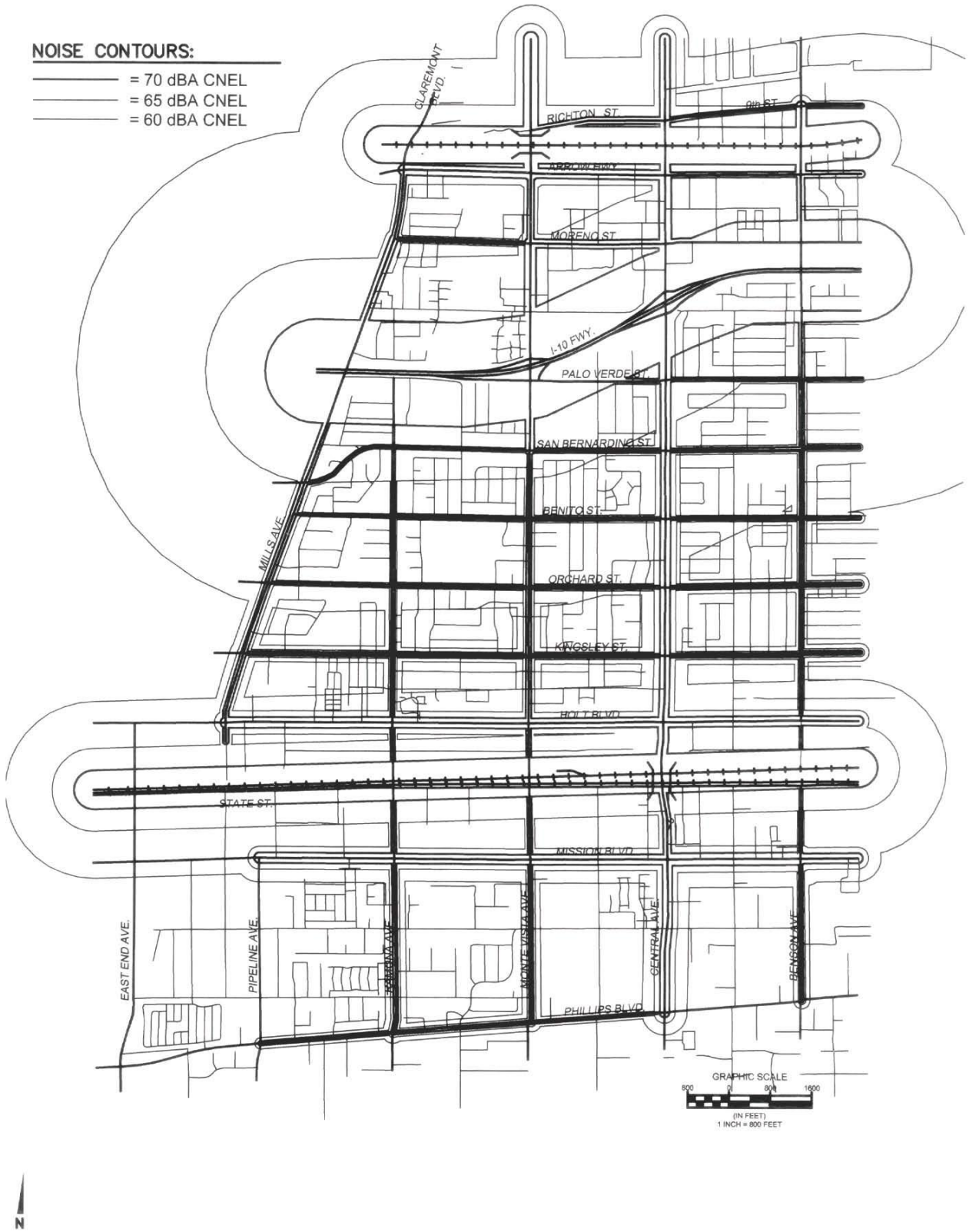
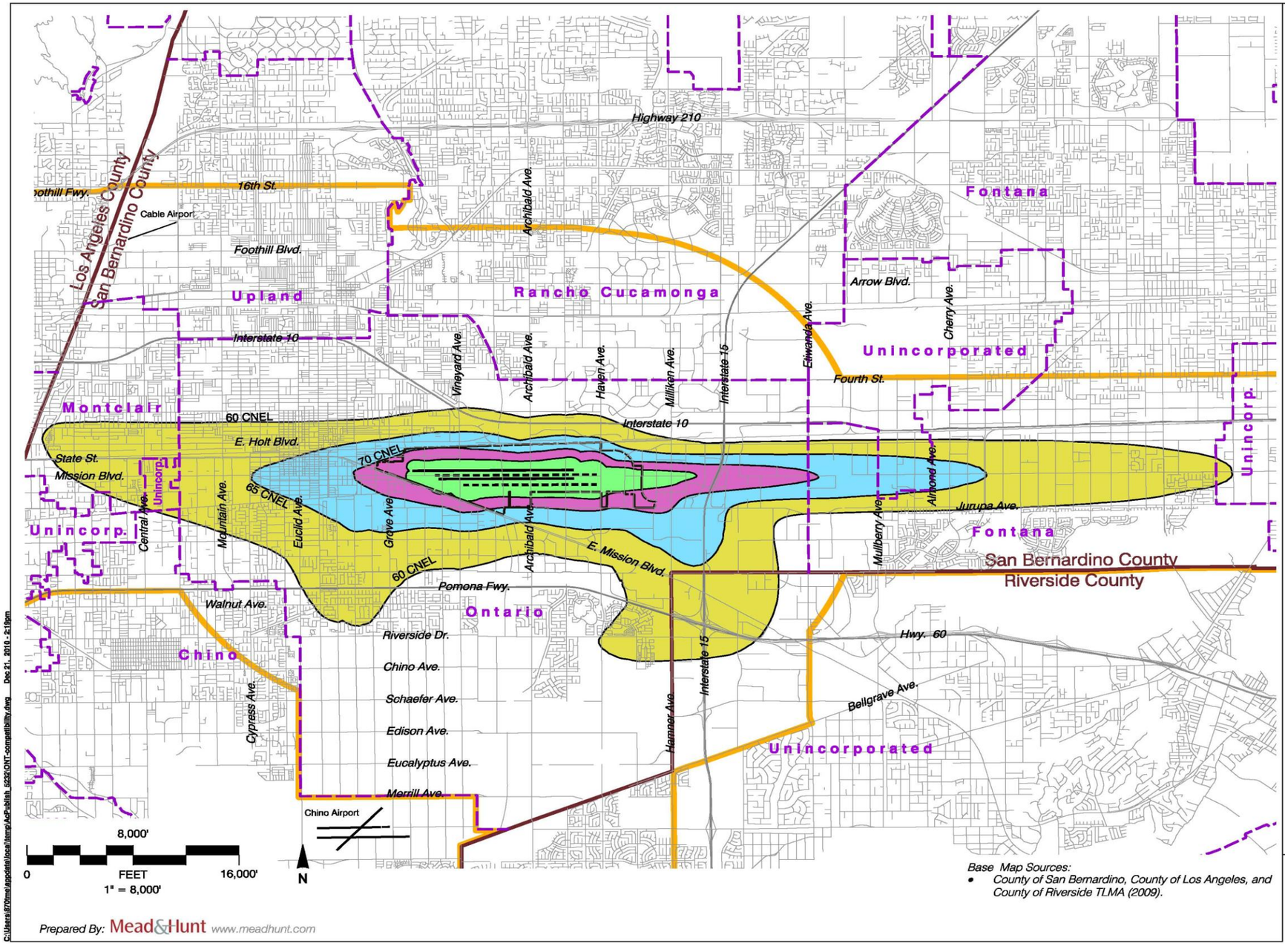


FIGURE XIII-3
Compatibility Policy Map: Noise Impact Zones



LEGEND

Boundary Lines

- Airport Property Line
- County Line
- City Limits
- Street
- Existing Runways } Runway 8L-26R
- Future Runways } Runway 8R-26L

Policy Boundaries

- Airport Influence Area (portions extend beyond map view)

Noise Impact Zones[1]

- 60 - 65 dB CNEL
- 65 - 70 dB CNEL
- 70 - 75 dB CNEL
- 75 + dB CNEL

NOTES

1. See **Section 6.2** and **Table 2-3** for noise policies and criteria.
2. Avigation easement and dedication required in areas exposed to noise of CNEL 65 dB or greater (see **Policy N5** and **SP1**).
3. Composite of No Project (343,000 annual operations) and Proposed Project (465,000 annual operations) contours.

Base Map Sources:
- *County of San Bernardino, County of Los Angeles, and County of Riverside TLMA (2009).*

ONTARIO AIRPORT PLANNING

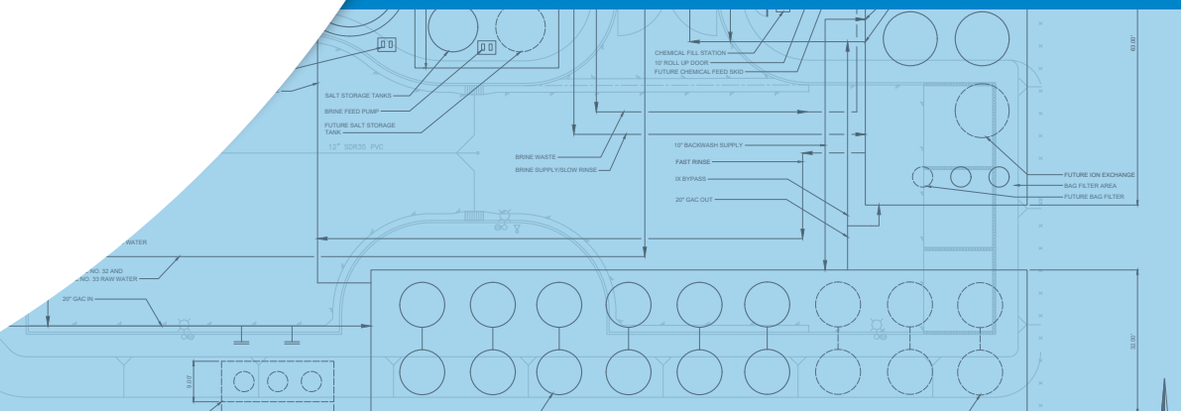
LA/Ontario International Airport
Land Use Compatibility Plan

APPENDIX 1

Hazen

Monte Vista Water District Plant 30 Wellhead Treatment Project Final Basis of Design Report (BODR)

February 26, 2019



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List of Acronyms

Abbreviation	Definition
%	Percent
µg/L	Microgram(s) Per Liter
1,2,3-TCP	1,2,3-Trichloropropane
AFF	Above Finished Floor
AFY	Acre Feet Per Year
ANSI	American National Standards Institute
ASTM	American Society of Testing and Materials
BAT	Best Available Technology
BEP	Best Efficient Point
bgs	Below Ground Surface
BV	Bed Volume
BW	Backwash
CAL/OSHA	State Department of Industrial Safety
CBC	California Building Code
CCPP	Calcium Carbonate Precipitation Potential
CEQA	California Environmental Quality Act
cfs	Cubic Foot/Feet Per Second
CMLS	Cement Mortar Lined Steel
DDW	California State Water Resources Control Board, Division of Drinking Water
DIC	Dissolved Inorganic Carbon
DIP	Ductile Iron Pipe
DLR	Detection limits for purposes of reporting
EBCT	Empty Bed Contact Time
EMT	Electrical Metallic Tubing
ft	Feet/foot
GAC	Granular Activated Carbon
gpm	Gallons per Minute
HI	Hydraulic Institute
HL	Headloss
HLR	Hydraulic Loading Rate
HMI	Human-Machine Interface
HVAC	Heating, Ventilation, and Air Conditioning
IEEE	Institute of Electrical and Electronic Engineers
IEUA	Inland Empire Utilities Agency
IPCEA	Insulated power Cable Engineers Association
IX	Ion Exchange
LSI	Langelier Saturation Index

Abbreviation	Definition
MCL	Maximum Contaminant Level
MDP	Main Distribution Panel
mg/L	Milligram(s) Per Liter
MOPO	Maintenance of Plant Operations
MVWD	Monte Vista Water District
NEC	National Electrical Code
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NFPA	National Fire Protection Association
ng/L	Nanogram(s) Per Liter
NL	Notification Limit
NO3-N	Nitrate as Nitrogen
NPDES	National Pollutant Discharge Elimination System
OIU	Operator Interface Unit
PCP	Pump Control Panel
PLC	Programmable Logic Controllers
psf	Pounds per Square Foot
Regen	Resin Regeneration
RWQ	Raw Water Quality
SARI	Santa Ana River Interceptor Line
SCADA	Supervisory Control and Data Acquisition
SCE	Southern California Edison
SES	Service Entrance Section
sf	Square Foot
SSR	Spread Spectrum Radio
SWRCB	State Water Resources Control Board
TDH	Total Dynamics Head
TDS	Total Dissolved Solid
UPS	Uninterruptible Power Supply
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
WFA	Water Facilities Authority

1. Introduction

Hazen and Sawyer was retained by the Monte Vista Water District (MVWD) to provide engineering services for the Plant 30 Wellhead Treatment Project. The Plant 30 Wellhead treatment project will provide groundwater treatment for Wells 30, 32, and 33. Wells 30 and 32 are owned by MVWD, and Well 33 is co-owned with the City of Chino. Due to space constraints at Wells 32 and 33, water from Wells 32 and 33 will be conveyed to the Well 30 site for treatment. Phase 1 of the project will provide the capacity to treat up to 4,000 gpm and Phase 2 expansion will facilitate the treatment of up to 6,000 gpm.

Water quality results for MVWD Wells 30, 32 and 33 show concentrations of 1,2,3-trichloropropane (1,2,3-TCP), nitrate, and perchlorate at levels above the respective maximum contaminant levels (MCLs) for these constituents. The California State Water Resources Control Board, Division of Drinking Water (DDW) established a MCL of 0.005 ug/L for 1,2,3-TCP in July of 2017 with granular activated carbon (GAC) as the best available technology (BAT) for treatment. 1,2,3-TCP has been detected in Wells 30, 32 and 33 at levels above the MCL. These wells have also shown detections 1,2-dibromo-3-chloropropane (DBCP) but at levels that could be handled with blending. GAC will also remove any DBCP concentrations as an ancillary benefit. MVWD wells also have elevated nitrate levels that exceed the 10 mg/L as N MCL and at times the perchlorate MCL of 6 ug/L. MVWD is currently utilizing blending with water from the water facilities authority (WFA) as the primary compliance strategy, limiting the water quantity that can be extracted from the basin. To mitigate the limitation associated with blending, MVWD selected GAC and ion exchange (IX) for compliance.

2. Water Quality and Design Treatment Capacity

This section summarizes the groundwater quality to be treated at the Well 30 Wellhead Treatment Plant, treatment plant location, design influent water quality, treatment goals, treatment capacity, and anticipated production rate.

2.1 Groundwater Wells to Be Treated

Treatment for 1,2,3-TCP, nitrate, and perchlorate is planned for Wells 30, 32, and 33. The locations of the wells are shown in **Figure 2.1**, and the anticipated water extraction rate from each well is 2,000 gpm. When the three wells are not being used for production, they are used as aquifer storage and recovery wells (ASR), injecting water into the Chino Groundwater Basin.

Well 33 is the only one of the three wells with current treatment consisting of more than disinfection. Treatment includes regenerable IX for nitrate and perchlorate removal. MVWD intends to bring the treated Well 33 water and untreated Well 32 water to the Well 30 site for GAC and partial IX treatment. It is noted that the treatment plant at Well 33 was not designed or constructed to treat the full 2,000 gpm through the IX system (i.e., a portion of the raw water bypasses treatment, and the total flow from the Well 33 treatment plant is 2,000 gpm). The future treatment plant at Well 30 will have the flexibility to treat the full capacity from the three wells (6,000 gpm).

The planned site will be located at the Well 30 wellhead site as shown in **Figure 2.2**. The facility will be referred to as the Plant 30 water treatment plant (WTP).

Figure 2.1. Locations of Wells 30, 32, and 33

Figure 2.2. Planned 1,2,3-TCP and Nitrate Treatment Plant Site

2.2 Design Influent Water Quality

Raw water quality is summarized in **Table 2.1** for Wells 30, 32, and 33. Since Well 33 already has an IX treatment system, the IX treated effluent water quality for Well 33 is also included in the table.

Table 2.1. Raw Water Quality for MVWD Groundwater Wells (09/2004 to 06/2018)

Parameter	Unit	MCL		W30 Raw	W32 Raw	W33 Raw	W33 IX Eff
1,2,3-Trichloropropane (1,2,3-TCP)	ug/L	0.005	Avg	**0.008**	**0.006**	**0.007**	-
			Range	**<0.005-0.039**	**<0.005-0.014**	**<0.005-0.011**	-
			95th Percentile	**0.031**	**0.014**	**0.011**	-
Alkalinity (Total) as $CaCO_3$	mg/L as $CaCO_3$	-	Avg	129	128.1	146	130
			Range	57-190	58-170	100-170	130-130
			95th Percentile	160	150	160	130
Calcium	mg/L as Ca	-	Avg	53	50	62	59
			Range	15-77	15-70	31-74	59-59
			95th Percentile	68	66	70.2	59
Chloride	mg/L	-	Avg	24	16	13	-
			Range	11-63	9.6-23	9-22	-
			95th Percentile	55	23	20	-
Dibromochloropropane (DBCP)	ug/L	0.2	Avg	0.17	0.10	0.19	-
			Range	<0.01-0.55	<0.01-0.23	<0.01-0.53	-
			95th Percentile	0.36	0.18	0.27	-
Hardness as $CaCO_3$	mg/L as $CaCO_3$	-	Avg	160	142	224	220
			Range	100-250	97-200	120-460	220-220
			95th Percentile	238	200	240	220
Iron	ug/L	300	Avg	< 100	< 100	< 100	-
			Range	< 100	0-360	< 100	-
			95th Percentile	< 100	269	< 100	-
Magnesium	mg/L as Mg	-	Avg	15	12	17	17
			Range	11-20	9-15	14-19	17-17
			95th Percentile	20	15	19	17
Manganese	ug/L	50	Avg	< 20	< 20	< 20	< 20
			Range	< 20	< 20	< 20	< 20
			95th Percentile	< 20	< 20	< 20	< 20
Nitrate	mg/L as N	10	Avg	**12**	**12.2**	**16**	1
			Range	**<0.4-20**	**<0.4-19**	**<0.4-19**	<0.4-8.1
			95th Percentile	**19**	**17**	**18**	5.1
Perchlorate	ug/L	6	Avg	4.0	3.1	**6.1**	0.7
			Range	**<4-6.5**	**<4-7**	**<4-8.3**	**<4-6.1**
			95th Percentile	**6.4**	**6.5**	**7.5**	4.0
Sulfate	mg/L	-	Avg	45	34	38	-
			Range	39-52	31-38	37-40	-
			95th Percentile	52	37	40	-
Total Dissolved Solids (TDS)	mg/L	1000	Avg	395	305	320	-
			Range	250-990	250-350	280-340	-
			95th Percentile	742	346	340	-

2.3 Treated Water Quality

The Plant 30 water treatment facility will produce finished water that complies with all State and Federal drinking water standards. The plant will remove 1,2,3-TCP to below the 0.005 ug/L MCL, nitrate to below 5 mg/L as N (50% of the MCL), and perchlorate to below 4.8 ug/L (80% of the MCL).

2.4 Design Capacity and Phasing

MVWD will develop this centralized treatment facility in two phases:

- Phase 1: treatment capacity of 4,000 gpm (treatment of any two groundwater wells)
- Phase 2 (future): acquire additional 2,000 gpm treatment capacity to accommodate total of 6,000 gpm (treatment of the three groundwater wells)

2.5 Raw and Treated Water Pipelines

Water from Plant 33 (treated and bypassed water combined) will be re-routed to Plant 30 centralized treatment. A raw water pipeline will be constructed to bring Well 32 untreated groundwater to this site.

3. Treatment Process

The proposed treatment process includes GAC for 1,2,3-TCP adsorption, bag filtration (future bag filters upstream of GAC if needed, future bag filters between GAC and IX if needed), and IX for nitrate and perchlorate removal (**Figure 3.1**). A new chemical building will be constructed to house the sodium hypochlorite storage and feed system and future caustic storage and feed system for the treated water pH adjustment if found to be necessary. Process and Instrumental Diagrams (P&IDs) for the treatment processes are provided in **Appendix A**.

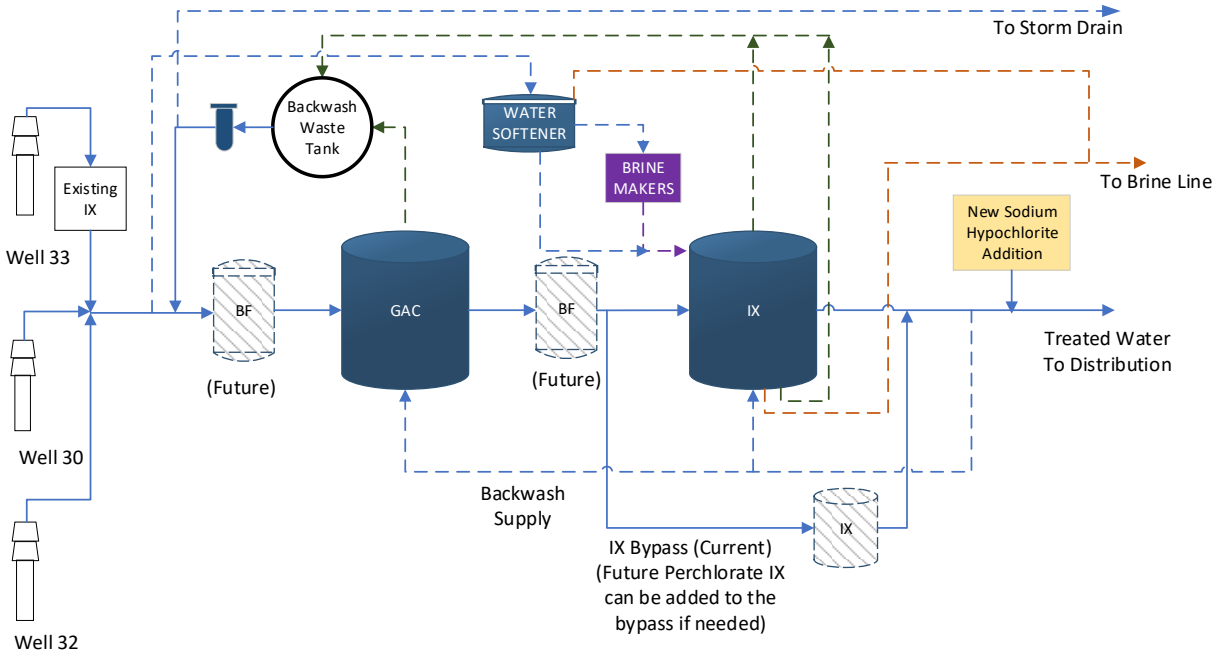


Figure 3.1. GAC and Ion Exchange Process Flow Schematic

The entire flow will be treated through GAC for 1,2,3-TCP to achieve the MCL. Nitrate will be partially treated by IX with a bypass to achieve a treatment target of 5 mg/L as N or less at the blended plant effluent. A nitrate mass balance for various well operations is shown in **Table 3.1**.

Table 3.1. Plant 30 Influent Water Quality for Various Treatment Scenarios Based on a Nitrate Mass Balance

	Wells 30 & 32		Wells 30 & 33		Wells 32 & 33		Wells 30, 32 & 33 (Future)	
	Flow (gpm)	Nitrate (mg/L as N)	Flow (gpm)	Nitrate (mg/L as N)	Flow (gpm)	Nitrate (mg/L as N)	Flow (gpm)	Nitrate (mg/L as N)
Well 30	2,000	19	2,000	19	-	-	2,000	19
Well 32	2,000	17	-	-	2,000	17	2,000	17
Well 33	-	-	2,000	5	2,000	5	2,000	5
IX In	3,240	18	2,800	12	2,680	11	4,400	13.7
IX Out	3,240	2	2,800	2	2,680	2	4,400	2
IX Bypass	760	18	1,200	12	1,320	11	1,560	13.7
Plant Effluent	4,000	5	4,000	5	4,000	5	6,000	5

Notes:
(1) 95th percentile nitrate concentrations are used for the mass balance.
(2) Well 33 is treated for nitrate prior to entering the centralized treatment system at Plant 30, and an IX effluent nitrate concentration of 5 mg/L-N (95 percentile value) was used for the mass balance.

Perchlorate is present in all three wells and exceeds the MCL at times. The current design basis includes a partial IX bypass to maintain 4.8 ug/L or less of perchlorate, which requires DDW confirmation. This approach is consistent with the way IX at Plant 33 currently operates. If the perchlorate MCL is decreased in the future, space is available to provide perchlorate ion exchange treatment, in lead-lag configuration, on the bypass line.

3.1 Pretreatment

Pretreatment is a physical process that removes particles that can interfere with downstream treatment processes and/or affect final water quality. Pretreatment with either bag or cartridge filters is recommended upstream of GAC and IX processes; however, some utilities (including MVWD Plant 33) with low particulate loads in the groundwater avoid use of pre-filters to minimize filter replacement and headloss.

For GAC, pretreatment minimizes GAC backwashing and therefore reduces the potential for disruption of the mass transfer zone. Alternatively, GAC can be operated without pretreatment; however, this operational strategy may result in more frequent backwashing. MVWD opted to forgo both GAC and IX pretreatment to avoid the associated headloss that may result in the need for a well pump upgrade.

Pretreatment is recommended for IX, as trapped particles are difficult to remove and can decrease the performance of IX resin. The low density of IX resins reduce the required backwash rates, and removal and replacement of resin media may be necessary to remove particles. Although small levels of particle accumulation may be acceptable for single pass resins with more frequent replacement schedules, consideration is being given here to prolong resin life.

MVWD selected to not install pre-filters at this time. The connections will be provided for the future bag filtration systems if pretreatment is determined to be needed, including upstream of GAC and between GAC and IX.

Table 3.2 provides an overview of the bag filter design criteria for future potential use.

Table 3.2 Bag Filter Design Criteria

Parameter	Unit	Pretreatment for GAC (Future)	Pretreatment for GAC (Future)	Pretreatment for Ion Exchange (Future)	Pretreatment for Ion Exchange (Future)
Treatment Flow Rate	gpm	4,000	6,000	4,000	6,000
Bypass Flow Rate	gpm	-	-	-	-
Number of Filters	-	2	3	2	3
Number of Bags per Filter	-	17	17	17	17
Design Flow Rate	gpm	2,000	2,000	2,000	2,000
Maximum Capacity	gpm	2,125	2,125	2,125	2,125
Nominal Pore Size	um	10	10	10	10
Normal Operating Differential Pressure	psi	8-10	8-10	8-10	8-10
Differential Pressure at Changeout	psi	15	15	15	15

3.2 Liquid Phase Granular Activated Carbon

GAC is an adsorbent material that removes a variety of natural organic compounds, taste and odor compounds, and synthetic organic compounds by adsorption. GAC is the only BAT approved by DDW for 1,2,3-TCP treatment; MVWD selected this approach to avoid longer lead times for a non-BAT technology. An example lead-lag configuration of GAC is shown in **Figure 3.2.** Several equipment vendors were identified as potential suppliers for the units (**Table 3.3)**.

Figure 3.2. Lead/lag GAC system with 10 ft diameter vessels

Table 3.3. GAC Pressure Filter Equipment Suppliers

GAC Contactor Supplier	Vessel Size Available	GAC Media Supplier
Evoqua	10’ or 12’	Evoqua
Calgon	10’ or 12’	Calgon
Hungerford and Terry	10’ or 12’	Norit
Tonka	10’ or 12’	Carbon Activated
WesTech	10’ or 12’	Jacobi
Carbon Activated	10’ or 12’	Carbon Activated
AqueoUS Vets	10’ or 12’	Options Available

For Phase 1, the GAC contactor system will consist of six trains for a total treatment capacity of 4,000 gpm. Each train will contain two vessels in series, which will be operated in a lead/lag configuration. Influent flow in the common feed header is evenly distributed through six trains, and the flow will be monitored for each train. For Phase 2 (future), three additional lead/lag trains will be added to expand the treatment capacity to 6,000 gpm. The GAC contactor system was designed incorporating the required empty bed contact time, vendor recommended hydraulic loading rate, lead/lag configuration, and standard carbon bed volume, as summarized in **Table 3.4**.

Table 3.4. GAC Contactor Design Criteria

Description	Units	Phase 1	Phase 2
Treatment Flow Rate	gpm	4,000	6,000
Number of Trains	--	6	9
Vessel Diameter	ft	10	10
Carbon Weight per Vessel[1]	lb	20,000	20,000
Adsorption Media[2]	--	Bituminous Coal or Coconut	Bituminous Coal or Coconut
GAC Media Mesh Size	-	12x40 or 12x30	12x40 or 12x30
Configuration	--	Lead/Lag	Lead/Lag
Design Capacity per Train	gpm	667	667
Empty Bed Contact Time per Train	min	13.3	13.3
Hydraulic Loading Rate	gpm/sf	8.5	8.5
Backwash Bed Expansion	%	30	30
Backwash Flow Rate at 25 °C[3]	gpm/sf	11-13	11-13
Backwash Duration	min	30	30
Backwash Frequency	--	As-needed	As-needed
Estimated Media Life[4]	months	9-24	9-24

Notes:

(1) Carbon volume varies per 20,000 lb bed due to various carbon specific gravity. Therefore, media height is not estimated in this report. Once carbon type is selected, media height will be estimated.

(2) Both bituminous and coconut carbons can be effective, and performance varies with background natural organic matter. Market conditions may also drive pricing. The District could perform bench-scale tests for comparison if desired during design phase, or request full-scale side-by-side comparison from DDW.

(3) GAC backwash requires water with 1,2,3-TCP less than 0.005 ug/L, therefore, treated water will be used for GAC backwash.

(4) The City of Chino has lead-lag GAC for 1,2,3-TCP removal in operation over a year without detection at the 25% sample port. It is anticipated the GAC may last longer than 9 months.

When virgin GAC media is installed, GAC media must be backwashed for proper stratification and removal of fines. The backwash system was sized based on media type and bed expansion requirements. Distribution system water may be used as GAC backwash water supply. The target bed expansion is 20%

to 30% for the initial backwash. Backwash waste water will be sent to an onsite backwash water recovery tank for reuse. The supernatant from the backwash recovery tank will be filtered through a bag filtration system and pumped to the upstream of the GAC system. The supernatant flow rate will be metered to maintain less than 10% of the plant feed flow.

3.3 Ion Exchange

IX is a contaminant removal process that exchanges one set of ions for another. Anion exchange can remove nitrate, perchlorate, hexavalent chromium, and other anions. IX is one of the approved BATs for nitrate and perchlorate treatment. Several equipment vendors and their resin suppliers are summarized in **Table 3.5**.

Table 3.5. IX Equipment Suppliers

Equipment Supplier	IX Resin Supplier
Evoqua	Dow or Purolite
Hungerford and Terry	Purolite
Tonka	Options Available
WesTech	Purolite
Carbon Activated	Purolite
AqueoUS Vets	Options Available

For Phase 1, the IX system will consist of four vessels with a nitrate selective resin. Influent flow in the common header will be evenly distributed, and the flow will be monitored for each train. For Phase 2, an additional vessel will be added to expand the treatment capacity. The IX system design incorporates the required empty bed contact time and vendor recommended hydraulic loading rate, as summarized in **Table 3.6**. The resin regeneration design criteria and procedure are further detailed in **Table 3.7**.

Table 3.6. IX Vessel Design Criteria

Description	Units	Phase I	Phase II
Plant Flow Rate	gpm	4,000	6,000
Treatment Flow Rate	gpm	3,240	4,440
Treatment Bypass	gpm	760	1,560
Number of Trains	--	4	5
Vessel Diameter	ft	12	12
Resin Volume per Vessel	cf	336 (8 of 42 cf Supersacks)	336 (8 of 42 cf Supersacks)
Configuration	--	Single	Single
Resin	--	Nitrate Selective Resin	Nitrate Selective Resin
Design Capacity/Vessel	gpm	1,080	1,110
Empty Bed Contact Time (All Vessel in Service)	min	3.1	2.8
Empty Bed Contact Time Required (One Out of Service)	min	2.3	2.3
Hydraulic Loading Rate (All Vessel in Service)	gpm/sf	7.2	7.9
Hydraulic Loading Rate (One Out of Service)	gpm/sf	9.6	9.9
Regeneration Frequency	BV[1]	300	300
Backwash Flow Rate	gpm	226	226
Brine Regeneration Flow Rate	gpm	84	84
Slow Rinse Flow Rate	gpm	84	84
Fast Rinse Flow Rate	gpm	810	880
Salt Usage	lb/cf Resin	13.8-16.8	13.8-16.8

Note:
(1) BV denotes bed volume or volume of the resin inside of the pressure vessel.

Table 3.7. Resin Regeneration Procedure with 10-12% Brine

Regeneration Sequence	Type	Duration (min)	Design Criteria	Value Used	Source
1	Backwash	20	1.5 – 2.0 gpm/sf	2 gpm/sf	Treated Water Prior to Disinfection[1]
2	Brine Regeneration	60	0.25 gpm/cf	0.25 gpm/cf	10-12% Brine
3	Slow Rinse	60	2 BV at 0.25 gpm/cf	0.25 gpm/cf	Softener
4	Fast Rinse	22	5 – 7 BV @ Service Flow	7 BV	Service Flow

Note:
(1) Backwashing resin with chlorinated water can produce NDMA; therefore, the resin backwash supply will be treated water prior to disinfection.
(2) The regeneration sequence duration for brine regeneration, slow rinse, and fast rinse represent bookend values recommended for one example resin (Purolite). Actual regeneration durations may be reduced upon plant commission and testing.

The briner system (brine maker) will consist of three 60-ton brine makers for Phase 1. For Phase 2, an additional briner will be added. Briner design criteria is summarized in **Table 3.8**.

Table 3.8. Brine Maker Storage

Type	Units	Value
Brine Tank Volume[1]	ton	60
Salt Consumption per Vessel	ton	2.3-2.8
Volume of 12% Brine per Regen	gal/regen	5,040
Number of Storage Days[2]	days	8-10
Brine Tank Diameter	ft	12
Number of Tanks	#	3
Brine Tank Material	-	XLHDPE

Note:
(1) If height restriction allows, 12 ft diameter brine maker can be sized to a height which hold up to 75 tons of salt.
(2) Number of storage days is estimated assuming 80% usable brine tank volume with a salt level maintained above water inside the briner to produce a saturated 26% brine.

3.4 Softening System

The softener system is designed to provide softened water for brine make up water and also to provide slow rinse water for the IX system. Slow rinse with soft water will minimize scaling during the regeneration sequence. A skidded pre-packaged duplex system (**Figure 3.3**) is proposed for this facility that has the capacity to meet the additional softened water demand for Phase 2. Water softener system design criteria are detailed in **Table 3.9**. Based on the estimated salt usage in Phase 1, one softener vessel will be regenerated every two days.

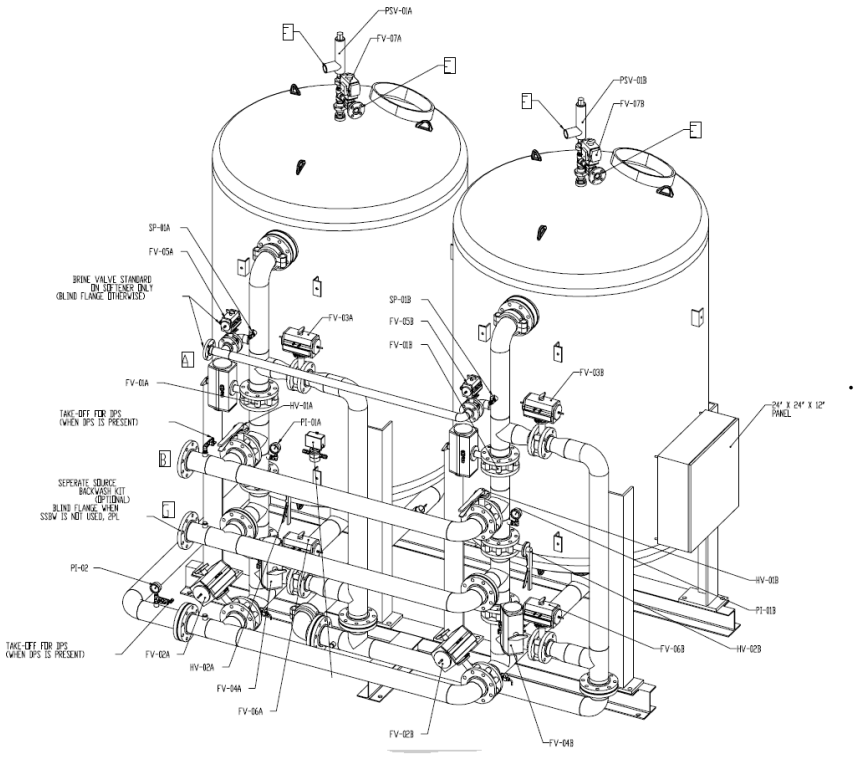


Figure 3.3. Duplex cation removal system with 5 ft diameter softeners

Table 3.9. Water Softener Design Criteria

Parameter	Unit	Value
Vessel Diameter	ft	5
Vessel Overall Height	ft	6
Number of Vessels	-	2
Vessel Configuration	-	Parallel
Resin per Vessel	cf	56
Design Treatment Flow Loading Rate	gpm/cf	3
Duplex Product Flow Rate	gpm	336
Feed Water Pressure	psi	45-90
Feed Water Temperature	°F	45-95
Feed Water and Backwash Supply	-	Well Water
Backwash Flow Rate (12 min)	gpm/sf	5.5
Rinse Flow Rate (15 min)	gpm/cf	1.5
Regeneration (30 min)	lb salt/cf	15
Regeneration Frequency (approximately)	hour	48

3.5 Waste Holding Tank

An aboveground welded steel tank will be utilized to store and recover GAC backwash, IX backwash, and IX fast rinse waste. MVWD selected a welded steel tank to minimize leaks and lengthen useful life of the tank. The recovered water would be filtered through a bag filtration system and pumped to the upstream of the GAC for reuse with the option to send water to the storm drain. The holding tank is detailed in **Table 3.10**.

Table 3.10. Waste Holding Tank

Parameter	Unit	Value
Water Recovery Tank Volume	gal	50,000
Diameter	ft	21'6"
Height	ft	21'
Material	-	Welded Steel
GAC Backwash to the 50,000 Gal Tank	gpm	785 to 1,200
Ion Exchange Backwash to the 50,000 Gal Tank	gpm	226
Ion Exchange Fast Rinse to the 50,000 Gal Tank	gpm	810-880

3.6 Residuals Handling (Brine Line)

The treatment facility is designed for a water recovery rate above 99%. The waste streams that require disposal include:

- Storm water disposal: During GAC changeout, GAC backwash water will be filtered through bag filters and sent to the existing onsite storm drain connection.
- Brine line disposal: IX brine waste and slow rinse, along with waste from the IX softener system will be sent to the brine line.

3.6.1 Brine Line

A new brine connection line will be constructed to connect to the Inland Empire Brine Line Santa Ana Regional Interceptor (SARI). IX brine regeneration waste (84 gpm) and slow rinse (84 gpm), as well as all waste from the water softening operation (backwash, brine regeneration, slow rinse and fast rinse with flow rate ranging from 12 to 108 gpm) will be directly sent to the brine line for disposal. The waste streams that will be sent to the brine line are summarized in **Table 3.11**.

Table 3.11. Waste Streams Connected to Brine Line

Parameter	Unit	Value
IX Vessel Brine Waste Flow	gpm	84
IX Vessel Slow Rinse Waste Flow	gpm	84
Softener System Waste Flow	gpm	12-108
Brine Line Diameter	in	4

3.6.2 Storm Drain Connection

An existing storm drain connection is available on site. A new line will be constructed to discharge the water from the backwash recovery tank into the storm drain if needed.

3.7 Bulk Sodium Hypochlorite Storage and Feed

Bulk sodium hypochlorite will be used for free chlorine disinfection of the treated water. MVWD has an existing sodium hypochlorite storage and feed system that will be removed and replaced to accommodate up to a 6,000 gpm flow with a target chorine dose of 1.5 mg/L. The chlorine injection point will be relocated to post-IX treatment. The City has requested comparison of onsite sodium hypochlorite generation and bulk sodium hypochlorite storage, which are discussed in this section.

3.7.1 Comparison of OSG and Bulk Sodium Hypochlorite

For treated water disinfection, both bulk sodium hypochlorite and on-site generation (OSG) of sodium hypochlorite were evaluated. MVWD expressed a preference for minimizing tank volume as a design priority. **Table 3.12** provides a comparison of the benefits and risk associated with bulk sodium hypochlorite versus OSG.

Table 3.12. A Comparison of OSG and Bulk Sodium Hypochlorite

Criteria	OSG Hypochlorite	Bulk Hypochlorite
System Safety	Non-hazardous product, hydrogen gas formed and controlled	Human health hazard if spilled, corrosive liquid
Transportation Risk	Non-hazardous salt transported	Corrosive liquid transported locally
Equipment Requirements	Requires larger storage tank and chemical feed pumps due to low trade strength (0.8%) of OSG	Use existing and/or procure additional storage tanks and chemical feed pumps
Power Outages	Higher power requirements for generators and equipment	Lower power requirements for pumps
Building/Risk Management	Low risk	Medium risk
Delivery Requirements	Monthly deliveries on average	Monthly deliveries on average
Product Quality	Stable, low strength hypochlorite	Unstable, high strength hypochlorite with possible impurities
Regulatory Outlook	Oxyhalide and perchlorate decomposition products may become regulated	Oxyhalide and perchlorate decomposition products may become regulated
Maintenance	Pump maintenance and additional maintenance due to generator	Pump maintenance

3.7.2 Anticipated Chlorine Demand and Dose

To determine the expected chlorine demand for Plant 30, chlorine demand tests were performed for Wells 30 and 33. Results from Well 33 indicated a chlorine demand of 0.5 mg/L after 24 hours. Results from Well 30 indicated a significant chlorine demand (greater than 5 mg/L). Discussion with MVWD revealed that chloraminated water is injected into Well 30 for aquifer recharge, and that the anomalous demand may be associated with breakpoint chlorination of ammonia.

Operations reported that Plant 33 typically doses 1.5 mg/L of chlorine with an average demand of 0.5 mg/L, resulting in a free chlorine residual of 1.0 mg/L. Based on this experience, MVWD opted for a design dose of 1.5 mg/L rather than excess capacity to cover the potential for ammonia in the groundwater. It was noted that if higher demand is observed (like that during the well testing), the usage rate will be higher. For these reasons, pumps will be selected to accommodate the potential higher dose, but storage volume would not be sufficient for a two weeks supply. Design criteria for these scenarios are provided in **Table 3.13**.

Table 3.13. OSG and Bulk Sodium Hypochlorite Design Calculations

Parameter	Phase 1[1]		Phase 2[2]		Phase 2 (High Demand)[3]
Disinfectant	Sodium Hypochlorite	On-site generation	Sodium Hypochlorite	On-site generation	Sodium Hypochlorite
Flow rate, gpm	4000	4000	6000	6000	6000
Flow rate, mgd	5.76	5.76	8.64	8.64	8.64
Chlorine dose, mg/L	1.5	1.5	1.5	1.5	8
Feed rate, lb/day	72	72	108	108	576
Trade strength, %W/V	12.5%	0.8%	12.5%	0.8%	12.5%
Feed rate, gal/day	69	1080	104	1620	553
Storage duration, days	14	1	14	1	14
Storage volume, gallons	968	1080	1452	1620	7741
Number of meeting pumps	2	2	2	2	2
Average feed rate, gph	2.9	45.0	4.3	67.5	23.0

Notes:
(1) Assuming Cl_2 demand similar to Well 33
(2) Assuming Cl_2 demand similar to Well 33
(3) Assuming Cl_2 demand to breakpoint NH_3

Of the two systems, bulk sodium hypochlorite requires a smaller tank volume for 14 days of storage at 12.5% trade strength compared to the 1 day of storage at 0.8% trade strength from on-site generation. Because the tank volume required for both options was larger than the maximum tank size for Well 30's existing well house building, a new chemical feed building will be constructed. MVWD preference is for multiple smaller tanks; therefore, three 500 gallon storage tanks (two installed and one future) were selected. A design basis of 14 days storage at 6,000 gpm was preferred by MVWD (similar to current operations). Since the OSG system did not offer smaller tank sizes, bulk sodium hypochlorite was selected for MVWD based on their preference for minimizing tank volume and simplified operations. Two diaphragm metering pumps (one duty and one standby) will be provided for chorine feed.

Note that if higher chlorine doses are required, the delivery frequency or storage volume will need to be increased. For example, with a chlorine dose of 8 mg/L (demand test for Well 30), bulk deliveries would be required every two to three days with a total tank capacity of approximately 1,500 gallons.

3.8 Caustic Chemical Storage and Feed System

The requirement for a caustic feed system was evaluated due to the potential for IX removal of alkalinity (bicarbonate) for approximately 80 bed volumes following regeneration. To predict this potential impact on some of the treated water parameters relevant to corrosion (calcium, alkalinity, dissolved total inorganic carbon concentration (DIC), pH, Langelier Saturation Index (LSI), and Calcium Carbonate Precipitation Potential (CCPP), a spreadsheet model called the TrusselTech2.0 $CaCO_3$ Indices Modeling Spreadsheet was used. The model calculates equilibrium constants and activity coefficients for $CaCO_3$ saturation (adjusting for temperature and ionic strength), determines the saturation pH, calculates the impact of adding chemicals on water quality parameters (alkalinity, DIC, calcium, and TDS), and performs iterations to estimate the CCPP. A negative CCPP would indicate that caustic should be added post IX to stabilize the water prior to distribution.

Table 3.14 and **Table 3.15** provide an overview of the water quality assumptions and the resulting final water quality at groundwater pH values of 7.5 and 8.0, respectively. For both scenarios, it was assumed that half of the IX vessels were recently regenerated, and that the blended IX effluent (65% of the total flow) was blended with IX bypass water (35% of the total flow).

Table 3.14. IX Impacts of Water Quality – Assuming Groundwater at pH 7.5

Parameter	Value	Value	Value	Value	Value
Water Source	Water A	Water B	IX Bypass	Blended	Cl_2 Addition with 2.0 mg/L of Caustic
Blend Ratio	32.5%	32.5%	35.0%	N/A	N/A
pH	7.5	6.5	7.5	7.4	7.7
TDS	340	340	340	340	342
Hardness, mg/L as $CaCO_3$	175	175	175	175	175
Alkalinity, mg/L as $CaCO_3$	134	5	134	92	96
Sulfate, mg/L	40	40	40	40	40
Chloride, mg/L	18	110	18	48	49
Calcium, mg/L as Ca	55	55	55	55	55
CCPP, mg/L as $CaCO_3$	**-1**	**-8**	**-1**	**-6**	0.2

Notes:
(1) Water A denotes IX effluent from vessels in operation that have reached steady state pH and alkalinity.
(2) Water B denotes IX effluent from vessel right after regeneration that have lower pH and alkalinity.

Table 3.15. IX Impacts of Water Quality – Assuming Groundwater at pH 8.0

Parameter	Value	Value	Value	Value	Value
Water Source	Water A	Water B	IX Bypass	Blended	Cl_2 Addition
Blend Ratio	32.5%	32.5%	35.0%	N/A	N/A
pH	8	6.5	7.7	7.9	8.0
TDS	340	340	340	340	342
Hardness, mg/L as $CaCO_3$	175	175	175	175	175
Alkalinity, mg/L as $CaCO_3$	134	5	134	92	96
Sulfate, mg/L	40	40	40	40	40
Chloride, mg/L	18	110	18	48	49
Calcium, mg/L as Ca	55	55	55	55	55
CCPP, mg/L as $CaCO_3$	9	**-8**	**-1**	**2**	3.4

A hypochlorite dose of 1.5 mg/L and a caustic dose of 2.0 mg/L were included in the calculation to achieve a positive CCPP for groundwater with a pH of 7.5. The models suggest that caustic will not be required for groundwater with a pH of 8.0. **Table 3.16** provides the caustic feed system design calculations if groundwater pH is 7.5.

Table 3.16. MVWD Caustic Feed and Storage Calculations

Parameter	Phase 1	Phase 2
Chemical	Caustic (25%)	Caustic (25%)
Flow rate, gpm	4000	6000
Flow rate, mgd	5.8	8.6
Caustic dose, mg/L	2	2
Feed rate, lb/day	96	144
Caustic strength, %W/W	25%	25%
Caustic density, lb/gal	10.425	10.425
Feed rate, gal/day	37	55
Storage duration, days	14	14
Storage volume, gallons	516	774
Number of metering pumps	2	2
Average feed rate, gph	1.5	2.3

The results suggest that caustic may be required under certain water conditions (e.g., pH 7.5), and therefore space has been provided for a caustic storage tank and feed system located in the chemical feed/disinfection building. Assuming a desired dose of 2.0 mg/L and 14 days of storage, an 800-gallon tank will be required for Phase 2. MVWD opted to leave space for caustic, but not include the storage and feed equipment in the initial construction. A pH of approximately 8 has been observed in the groundwater during testing, which would not necessitate caustic; however, ASR operations can impact pH and monitoring with continued ASR well operation is recommended. Further, MVWD has not noted negative corrosion impacts from operation of the Plant 33 IX facility, which does not have caustic feed.

3.9 Analyzers

Table 3.17 provides an overview of the recommended probes and analyzers for MVWD.

Table 3.17. Probes and Analyzers Recommended for MVWD

Probe	Purpose	Recommended Units	Location(s)
Nitrate	Control blending and ensure MCL compliance for nitrate	2	IX bypass line and IX treated water line
pH	Monitor pH for caustic requirements and dosing	1	Combined blend and treated water line
Free chlorine	Measure free chlorine residual and monitor disinfection	1	Treated water line
Conductivity	Used to monitor IX regeneration	5	Brine tanks supply line (1), IX regeneration process (4)

3.10 Ancillaries

Safety showers will be provided in the process area near the chemical storage and feed building. In addition, fire sprinklers will be installed in all rooms in the office space. These provisions will be supplied with potable water from the existing water main.

4. Hydraulics

4.1 Benson Feeder Overview

MVWD conveys flow to Chino Hills through a system of large diameter transmission mains. Beginning at the WFA Agua de Lejos Treatment Plant, a 30-inch transmission main extends south into MVWD's service area near Arrow Highway and Benson Avenue, where it splits into two transmission mains: the Ramona Feeder, a 30-inch main that heads west and then south in Ramona Avenue, and the Benson Feeder, which continues south down Benson Avenue. These two feeders convey WFA and MVWD well water and eventually rejoin at the State Street Metering Facility, located at the southeast intersection of State Street and Ramona Avenue. From this point, the flow again splits into two transmission mains that connect to the Chino Hills distribution system: a 42-inch main that heads west then south down End Avenue, and a 30-inch main that continues down Ramona Avenue.

While the Benson Feeder begins as a 20-inch main where Well 33 is connected, it splits into parallel 12-inch and 18-inch mains before rejoining into a 24-inch main upstream of the State Street Metering Facility. Well 30 currently pumps into the 18-inch main, while Well 32 currently pumps into the 12-inch main. **Figure 4.1** provides an overview of the MVWD feeder system.

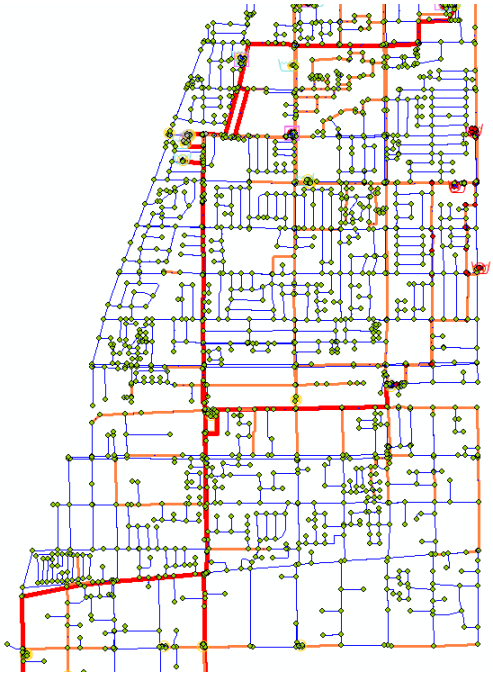


Figure 4.1. MVWD Feeder System

When the Well 32 and 33 supplies are relocated from their current Benson Feeder connection points to the proposed connection point at Well 30, the dynamics of the Benson Feeder will change. Under proposed conditions, flows delivered from Plant 30 into the Benson Feeder in excess of 4,000 gpm will have a tendency to cause reverse flow in the 18-inch portion of the Benson Feeder between Well 30 and Well 33, flowing north instead of south (**Figure 4.2**). Pressures in the Benson Feeder are also expected to be increased by approximately 5 psi under future conditions where all three wells are flowing.

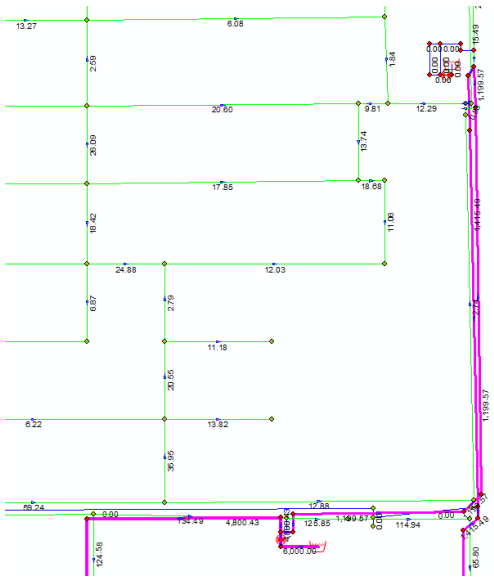


Figure 4.2. Benson Feeder Impacts

4.2 Well Pump Impacts

Well 33 currently pumps through an existing treatment system while Wells 30 and 32 pump directly into the Benson Feeder, as described in the previous section. The proposed clustering of wells and addition of treatment will increase the total dynamic head (TDH) requirement of each pump. Increasing the TDH of existing pumps will cause them to pump further to the left on their pump curves at reduced capacity and efficiency. Reductions in MVWD well capacity may need to be supplemented by WFA capacity depending on the City of Chino Hills supply needs.

In general, MVWD Wells 30, 32, and 33 are medium capacity wells that are high horsepower and deep set. The well pumps were installed 9 and 13 years ago. **Table 4.1** provides a summary of well parameters.

Table 4.1. Well Parameters

Well No.	Pump Age (yrs)	Design Flow (gpm)	Design TDH (ft)	Impeller Setting (ft bgs)	HP
30	13	2,000	685	602.95	450
32	9	2,000	713	603	500
33	10	2,000	794	625	500

4.2.1 Pump Operational Impacts

A well pump evaluation was performed by developing system curves for high and low head loss ranges for each pump, and comparing these ranges to the manufacturer pump curve and field test points to estimate proposed operating flows and efficiencies (**Figure 4.3** through **Figure 4.5**). Three system curves were developed for conditions without any bag filters, and one additional future system curve including two sets of bag filters in attempt to cover the full range of potential hydraulic impacts should MVWD choose to install up to two sets of bag filters in the future. Because no field information was available for headloss across the existing Well 33 treatment system, assumptions were made based on as-built drawings.

The American National Standard Institute (ANSI) / Hydraulic Institute (HI) Standard 9.6.3 specifies a preferred operating region (POR) between 70 percent and 120 percent of the best efficiency point (BEP) for pumps with specific speeds less than 4500. These criteria were used in the evaluation of pump impacts. Specific manufacturer recommended operating regions could be more expansive or more restrictive.

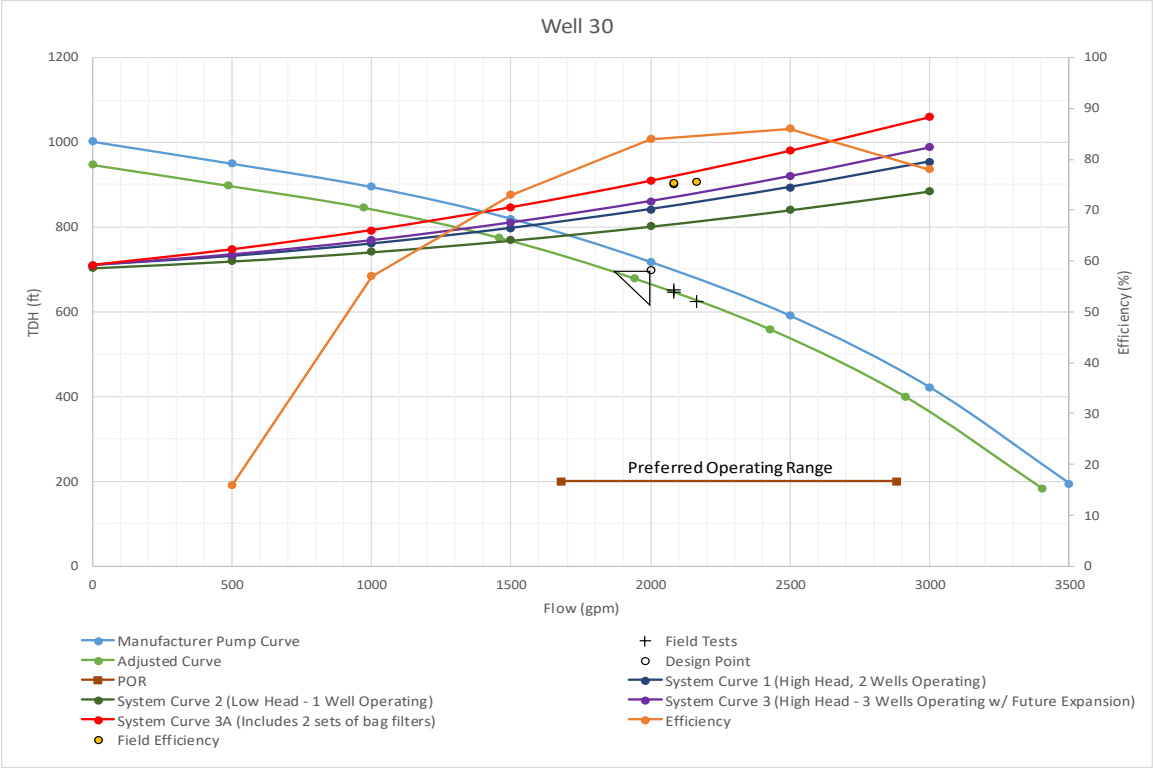


Figure 4.3. Well 30 Pump Operation

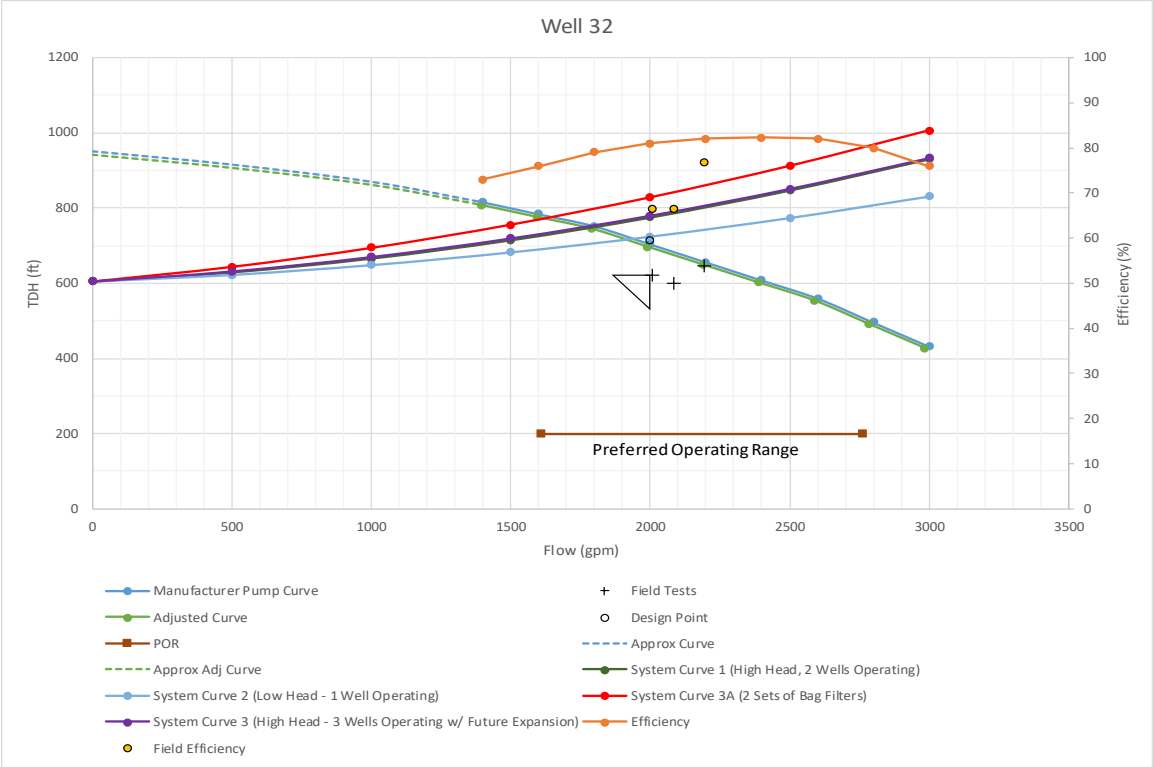


Figure 4.4. Well 32 Pump Operation

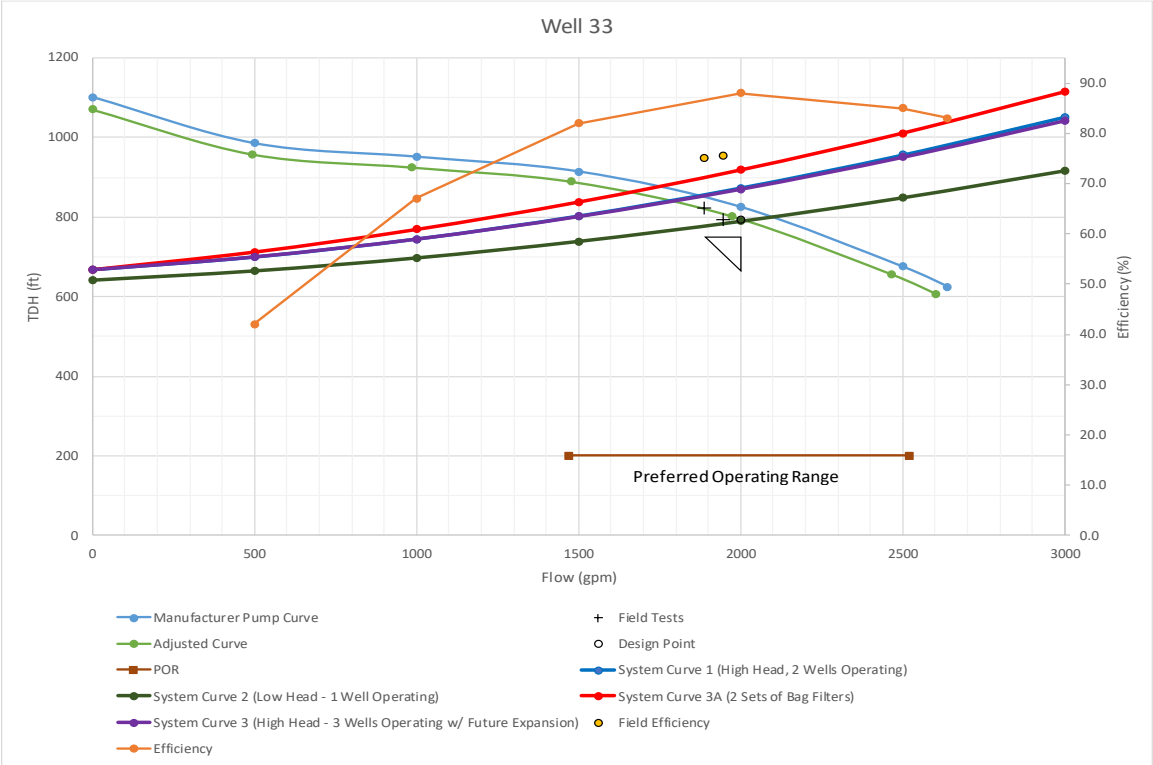


Figure 4.5. Well 33 Pump Operation

4.2.2 Pump Shaft Stretch and Available Lateral

In addition to whether the pumps are operating within the POR, it must be confirmed that the pumps have sufficient lateral clearance to operate at the higher discharge pressures. Wells 30 and 32 both have 585 foot long line shafts, and Well 33 has a 615 foot long shaft. With long line shafts, shaft stretch becomes an important concern when shifting the pump operating point further left on the pump curve. As the operating point shifts to the left, the pressure in the pump column increases, which increases the stretching of the line shaft and column pipe. There must be enough lateral clearance in the pump bowls to account for the net stretch, which is the difference between the line shaft stretch and column stretch, plus the running clearance recommended by the manufacturer.

An analysis of each well was performed to determine the how far left on the curve the pumps can operate assuming they are set per the recommended lateral setting provided in the shop drawings. Wells 30 and 32 have a recommended lateral setting of 0.87" per the shop drawing, and Well 33 has a recommended lateral setting of 0.49" per the shop drawing. It should be noted that at the time of preparation of this BODR, it is unknown if the lateral was set as recommended in the shop drawing. To maintain the recommended running clearance of 0.125" for Wells 30 and 32, Well 30 cannot operate at less than 1,665 gpm (see **Figure 4.6**) and Well 32 cannot operate at less than 1,585 gpm (see **Figure 4.7**). Adjusting the current lateral setting to the maximum available setting would allow a pumping rate down to 1,600 gpm for Well 30 and 1,500 gpm for Well 32. To maintain the recommended running clearance of 0.25", Well 33 cannot operate at less than 1,500 gpm (see Figure 4.8), however it has sufficient available lateral to operate at shutoff without the impellers contacting the bowls.

Possible methods to increase the available lateral include machining the existing bowls, or by replacing the existing bowls with bowls that have been machined to provide greater lateral.

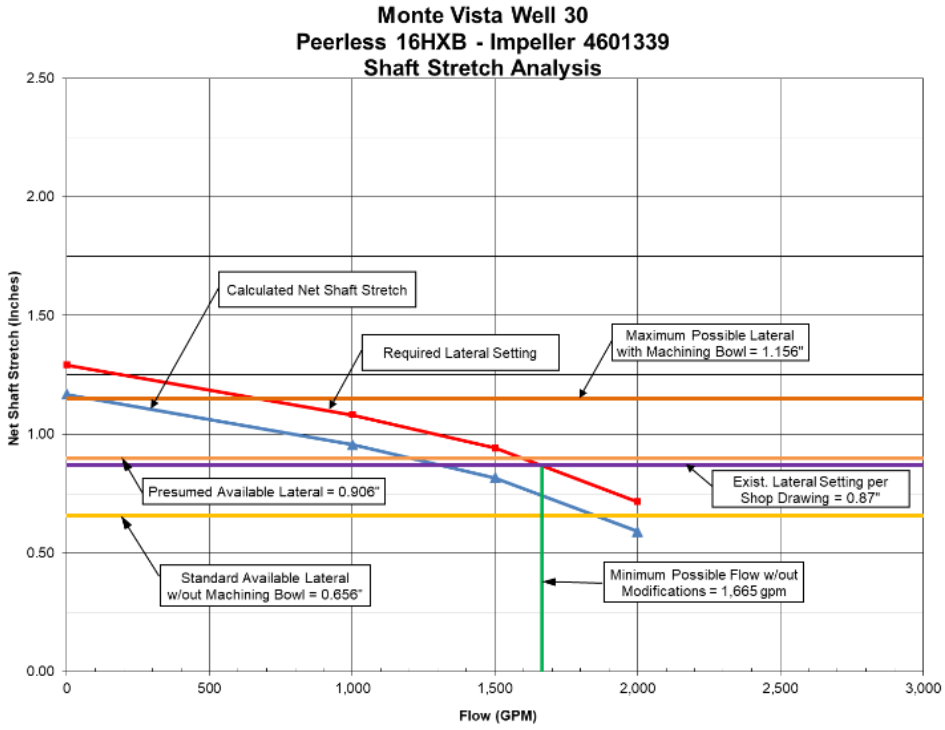


Figure 4.6. Well 30 Shaft Stretch Analysis

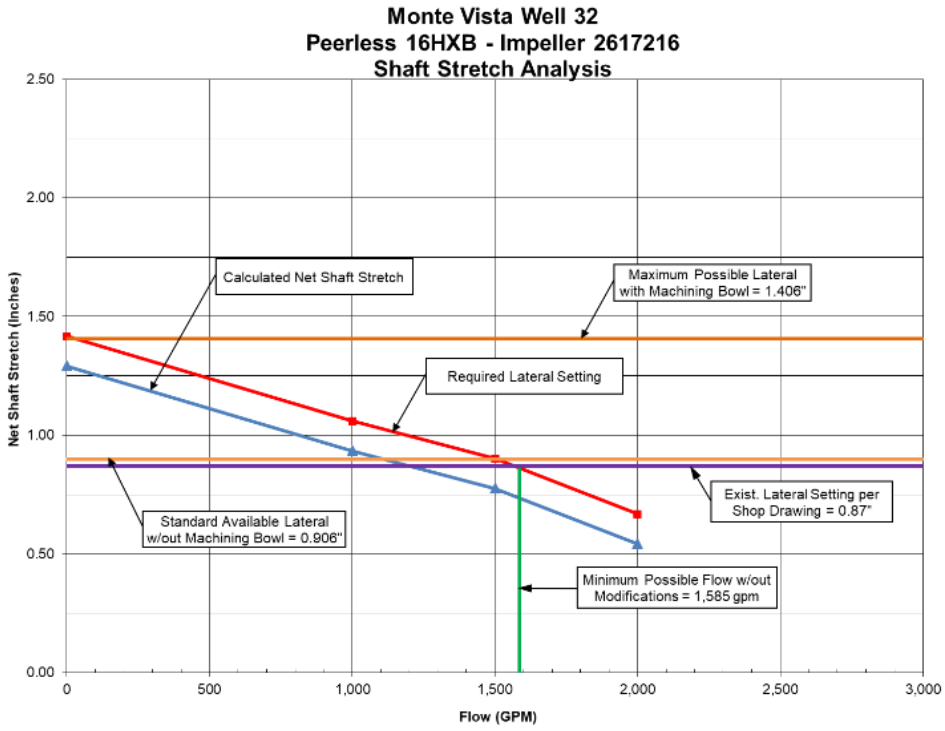


Figure 4.7. Well 32 Shaft Stretch Analysis

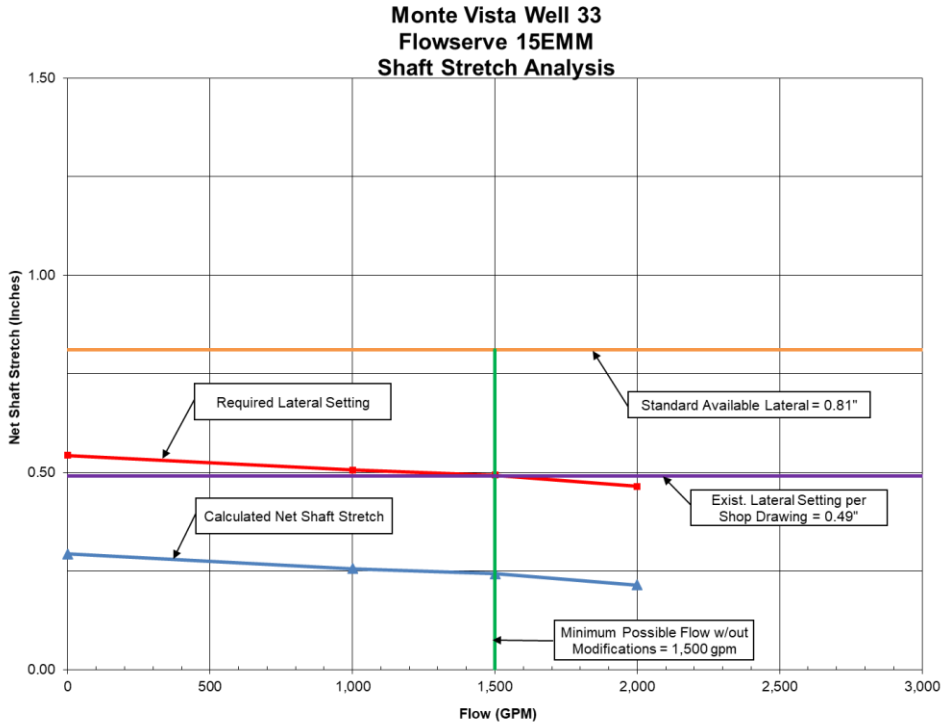


Figure 4.8. Well 33 Shaft Stretch Analysis

4.2.3 Well Pump Summary and Recommendations

A summary of the well pump analysis is presented in **Table 4.2**. Note that the efficiencies listed in Table 4.2 correspond to bowl efficiency for the high headloss system curve without any bag filters. Overall wire-to-water efficiencies obtained in the field tests are measurably lower than bowl efficiency due to mechanical and motor efficiency losses.

Table 4.2. Hydraulic Results

Well No.	Current Bowl Efficiency	Estimated New Bowl Efficiency	Percent Flow Reduction	Operating in POR?	Bowl Lateral Sufficient?	Improvements Recommended?
30	84%	67%	35%	No	No	Yes
32	82%	78%	13%	Yes	Yes	No[1]
33	86%	85%	13%	Yes	Yes	No[1]

Notes:
(1) While the pumps do not require modification, it is recommended to reset the pump lateral to ensure proper running clearance for the proposed pumping conditions.
(2) Results correspond to System Curve 3, high headloss conditions with three wells in operation under future expansion with no bag filters.

The following recommendations are made:

- MVWD should confirm that the well pump capacity reductions are acceptable in terms of their commitments to deliver water to the City of Chino Hills

- MVWD should confirm the actual lateral as installed for Well 30, 32, and 33
- MVWD should confirm the actual headloss across the existing Well 33 treatment system, if possible.
- No improvements are recommended for Well 32 and 33; however, the pump lateral should be reset to ensure proper running clearance for the proposed pumping conditions.
- MVWD should conduct a separate analysis to identify the necessary improvements for Well 30 to ensure that it is operating within the POR and has sufficient lateral. Potential options may include installing larger impellers, installing a new bowl assembly with increased TDH, replacing the pump with the same motor size and reduced capacity, or replacing the pump with a larger motor and same capacity as originally designed. For any increase in motor size, the electrical infrastructure capacity should also be evaluated.

5. Civil

Civil design associated with this project includes both on-site and off-site improvements. On-site improvements include demolition of portions of the existing site and site civil improvements including paving and grading, and yard piping. Off-site pipelines include raw water pipelines from Well 32 and 33, the treated water pipeline (plant effluent), and the brine pipeline. The purpose of this section is to summarize the civil design components including:

- Design Criteria
- Demolition
- Site Civil
- Yard Piping (On-Site Pipelines)
- Off-Site Pipelines

5.1 Design Criteria

Design criteria for demolition, paving, and grading will follow Standard Specifications for Public Works Construction ("Greenbook") industry best practices and recommendations from the civil design team, and the recommendations from the geotechnical report being prepared by Converse for this project.

Design criteria will also adhere to MVWD's Standard Specifications and Standard Drawings for both on-site and off-site piping, as well as requirements from the local City for off-site pipelines (Montclair and Ontario), and Inland Empire Utilities Agency (IEUA) for the brine line pipeline and connection.

Pipe materials, isolation valves, and other pipeline appurtenances generally follow the MVWD Standards for both on-site and off-site pipelines. Raw water and treated water pipelines will be ductile iron pipe (DIP) pressure class 350. Brine lines, waste lines, and other process pipeline materials were selected based on requirements for each process fluid type.

5.2 Demolition

Demolition of portions of the site are required to provide space for the proposed treatment improvements. The existing perimeter fencing and access entrance from San Bernardino Avenue will be protected, but the majority of the remaining site east of the Well 30 building will be cleared and demolished for the proposed improvements.

Existing components being removed that require replacement include the catch basin and parts of the drainage piping that parallels San Bernardino Street on the northerly portion of the site, as well as the catch basins in the middle of the site. Where feasible, the existing drainage piping will be protected and integrated into the proposed improvements. These systems drain to the air gap catch basin between the wellhouse and transformer, where they flow to the existing 66" storm drain in San Bernardino Street. An existing yard hydrant on the southerly side of the site that will require relocation.

The approximate limits of demolition are shown in **Figure 5.1. Demolition Limits**. Additional demolition may be required for yard piping and other ancillary site improvements beyond these proposed limits.

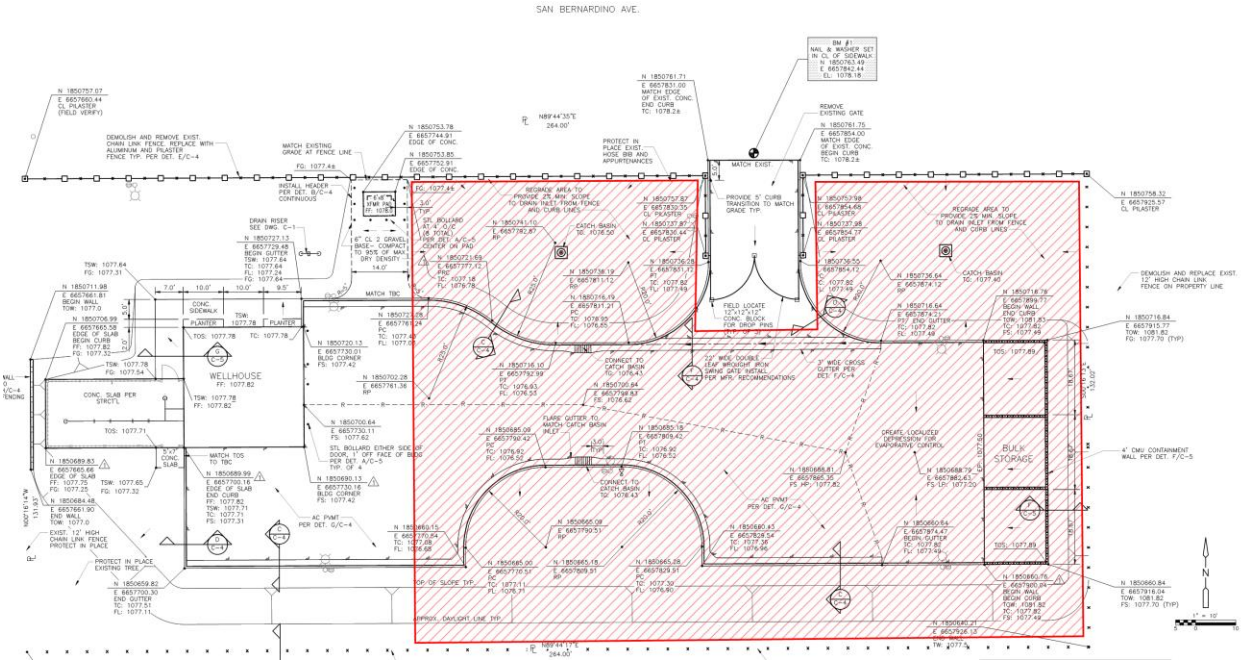


Figure 5.1. Demolition Limits

5.3 Site Civil

Site civil improvements primarily consist of paving and grading. New asphalt concrete pavement will be specified throughout the site to provide adequate access to all treatment facilities. The pavement section

will follow the recommendations from the geotechnical report. The access entrance from San Bernardino Avenue will remain.

A combination of surface and below grade drainage systems will be provided. The overall grade of the site from east to west and towards the existing catch basins will be maintained. The existing pump-to-waste discharge structure and catch basin will be the primary on-site collection point, with the existing connection to the 66" storm drain in San Bernardino Street being protected.

From the southerly edge of the existing pavement, the existing grade slopes down to the perimeter wall. In order to grade this area to be relatively flat to accommodate the proposed treatment facilities (GAC treatment), a new retaining wall will be required that parallels the southerly perimeter wall. The retaining wall will run the length of the GAC pad. Beyond the retaining wall, the grading will transition to match the existing grades.

5.4 Yard Piping (On-Site Pipelines)

Yard piping includes all on-site pipelines outside of the individual treatment processes including raw water pipelines, the treated water pipelines, and the brine pipeline. Pipe size recommendations are based on a hydraulic pipe sizing analysis.

Below-grade piping will be installed in a trench per MVWD Standards and recommendations from the geotechnical report. Below-grade ductile iron pipe will be encased in polyethylene. Above grade piping will be epoxy coated or painted. **Table 5.1** includes a yard piping summary of process pipe type, size, and material.

Table 5.1. Yard Piping Summary

Pipe Description	Nominal Diameter (in)	Pipe Type	Pressure Class
Well 33	12	DIP	350
Well 32 + Well 33	16	DIP	350
GAC In	20	DIP	350
GAC Out	20	DIP	350
IX In	16	DIP	350
IX Out	16	DIP	350
IX Bypass	12	DIP	350
Plant Effluent	20	DIP	350
GAC Backwash Supply	10	DIP	350
IX Backwash	4	DIP	350
Brine Waste/ Slow Rinse	4	PVC	165
Fast Rinse	6	PVC	165
Recovered Water	3	PVC	165
Waste Water to Storm Drain	8	PVC	SDR 35
Slow Rinse Waste	3	PVC	165

Yard piping is shown graphically on the site plan exhibit. Note, locations are approximate, the primary purpose is to show how each treatment process is interconnected with the process pipelines. Final design layout of yard piping will prioritize an efficient layout to minimize unnecessary crossings and maximize clearance for future maintenance.

5.5 Off-Site Pipelines

The off-site pipelines include the raw water pipelines from Well 32 and Well 33, treated water pipeline (plant effluent), and the brine line from the Plant 30 site to their respective connection points in San Bernardino Avenue. A summary of the off-site pipelines is included in **Table 5.2** and shown graphically in **Figure 5.2**. Further description on the off-site pipelines and associated requirements is included below.

Table 5.2. Off-Site Pipelines Summary

Pipe Description	Nominal Diameter (in)	Pipe Type	Pressure Class	From	To
Well 33	12	DIP	350	Well 33	Plant 30
Well 32	12	DIP	350	Well 32	Plant 30
Plant Effluent	20	DIP	350	Plant 30	Benson Feeder (San Bernardino Ave)
Brine Waste/ Slow Rinse	4	PVC	165	Plant 30	IEUA Brine Line (Palo Verde St)

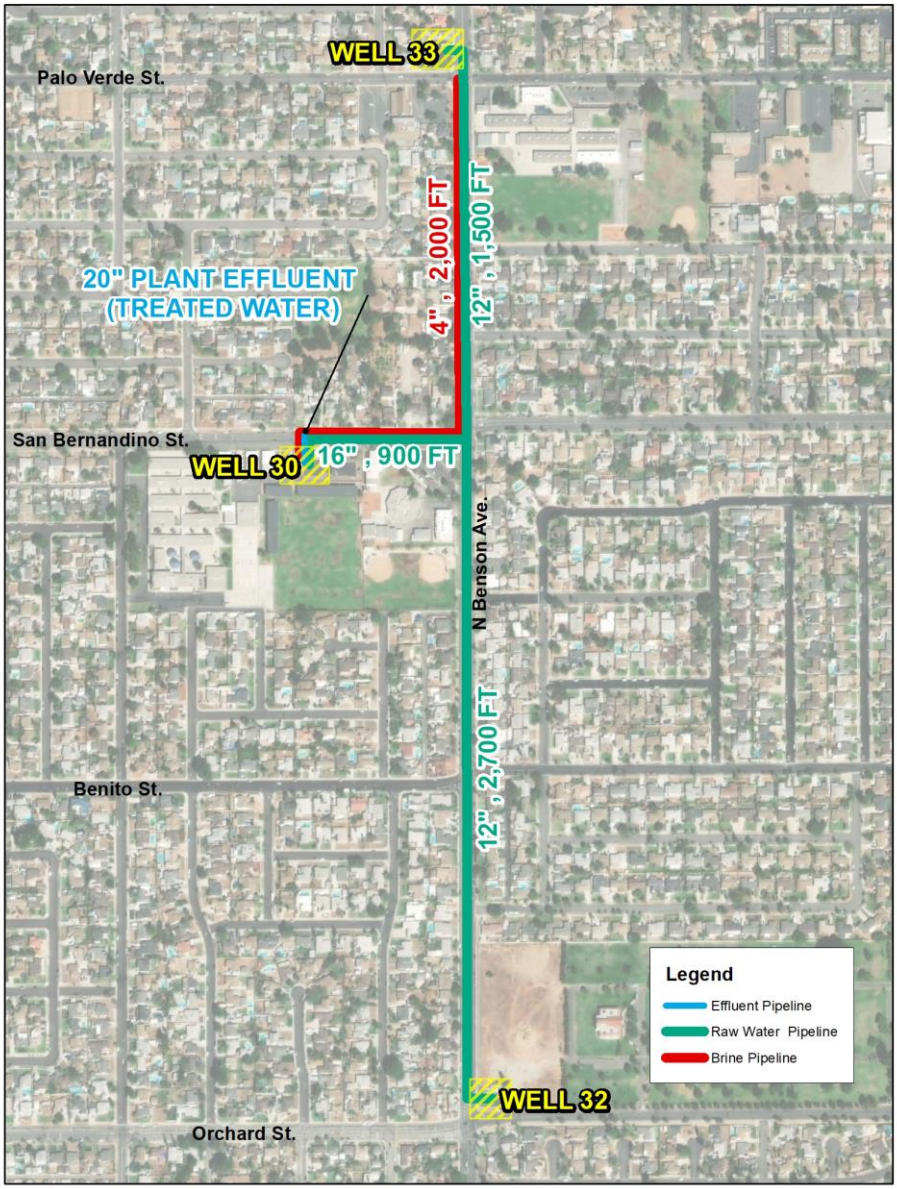


Figure 5.2. Off-Site Pipelines

5.5.1 City Requirements

The City of Montclair provided initial requirements for this project, particularly for work in San Bernardino Avenue since street rehabilitation was recently completed. The initial requirements provided by the City of Montclair include:

- 1-1/2” grind and cap for the full width of San Bernardino from Plant 30 site through the Benson Avenue intersection
- Replace all striping

- Adjust all sewer and storm drain manholes to grade

Final requirements from the City of Montclair and the City of Ontario will be confirmed through coordination during final design.

5.5.2 Well 32 Raw Water Pipeline

Well 32 is located at the northeast corner of Benson Avenue and G Street/Orchard Street. The existing well discharge line heads southwest from the site across the intersection in a steel casing 12 feet below grade and connects to the existing City pipeline at Orchard Street and Del Mar Avenue. This existing pipeline will be isolated by closing the existing valve at Del Mar Avenue.

The proposed raw water pipeline will intercept the existing discharge pipeline on site and run north to Plant 30. Benson Avenue has a multitude of existing utilities in the street in the vicinity of Well 32. There appears to be a small corridor on the western side of the street. The recommended alignment will be confirmed in detailed design.

5.5.3 Well 33 Raw Water Pipeline

Well 33 is located at the northwest corner of Benson Avenue and Palo Verde Street. The existing well discharge line splits into two lines and connects to both a City of Chino transmission main and MVWD transmission main (20” Benson Feeder). Both of those connections will be isolated by closing existing valves near their connections.

The proposed raw water pipeline will connect to the existing discharge line that is currently connected to the MVWD transmission main and run south to Plant 30. In the vicinity of Well 33, Benson Avenue has a multitude of existing utilities in the street. The new raw water pipeline will most likely be located on the eastern side of the street. The final recommended alignment will be confirmed in final design.

5.5.4 Treated Water Pipeline (Plant Effluent)

The treated water pipeline (plant effluent) will connect to the existing 18” Benson Feeder pipeline in San Bernardino Avenue. Due to the size and material (CML&C welded steel), a hot-tap connection is not preferred. A cut-in tee connection is proposed due to the size and material of the existing pipeline; however, this requires this portion of the line to be isolated by closing a valve. If there is not a nearby existing valve to isolate the line, a line stop will be required on the existing 18” Benson Feeder.

Isolation valves will be provided on-site and above grade for easier access, rather than locating valves in the street.

5.5.5 Brine Line

A new brine line is required from the Plant 30 ion exchange system to the existing 21” brine line at Palo Verde Street and Benson Avenue near Well 33. The brine line is owned and maintained by IEUA. The line will flow by pressure from the Plant 30 site to the connection point. Conditions for the connection will follow IEUA requirements.

6. Electrical

6.1 General

The Plant 30 project work will be done in accordance with the following codes and standards:

- National Electrical Code (NEC), 2014 Edition.
- State Department of Industrial Safety (CAL/OSHA).
- Local authorities having lawful jurisdiction pertaining to the work
- American Society of Testing and Materials (ASTM)
- National Electrical Manufacturers Association (NEMA)
- National Fire Protection Association (NFPA)
- American National Standards Institute (ANSI)
- Institute of Electrical and Electronic Engineers (IEEE)
- Insulated power Cable Engineers Association (IPCEA).

6.2 Electric Utility Service

The existing electrical service is by Southern California Edison (SCE) and the primary service is routed underground from a utility pole to a pad mounted utility transformer, which steps down the voltage to 3 phase, 480/277 VAC. The pad mounted transformer is in the northwest corner of the well site and the electrical system incorporates an indoor service entrance section (SES) with utility metering, 1000A main circuit breaker and attached motor control center sections including a 3 phase 208Y/120 VAC lighting panel with an associated 45kva transformer. This SES has the capacity to add 100Amps at 480VAC assuming the main breaker is 100% rated for continuous loads.

Figure 6.1. Existing SES/RVAT/MCC lineup

6.3 Standby Power Generation

A new 3 phase 1000Amp, 480vac, NEMA 3R or 4 non-fused disconnect switch shall be installed, location TBD in detailed design, with the load side of the switch having 2-4”C with parallel 3-500MCM

& GND wire/cable terminated into the electrical buss of the main switch board. A standard operating procedure shall be prepared for the use and operation of the portable generator connection and service.

The general steps to connect the portable generator into service:

1. Open and Lock-Out the Main 1000A breaker that feeds the main switchboard.
2. Connect Portable Generator to the Line side of the Genset Disconnect Switch.
3. Start the Genset (Warmup)
4. Close the Genset Disconnect Switch and energize the main switch board.
5. Start loads as required.
6. Once power is restored follow the reverse order to return to normal service.

Table 6.1. Power List

SES Power List		
Description	**Horsepower/kva**	**Full Load Amps**
Well Pump	450	515
XFMR30-1	30 Kva	36
XFMR30-2	45 Kva	54
EF-1	2	3.4
EF-2	2	3.4
25% of largest load		128
New Site Treatment System	**Estimate of available power with existing SES (@90% of Full load rating of Main Circuit Breaker)**	**100**
TOTAL		**894**

6.4 Power Distribution

The Main Switchboard (MCC/SES) will supply a new 3 phase, 100A, power panel (PP-1) located in the electrical room. The panel will distribute power to the various new equipment and loads throughout the proposed treatment system. The power panel will be provided with surge protection and lock out features.

The panel will supply 480 volt, 3-phase, 3-wire power to motor operated valves as well as other small 480 volt loads. If required, a new 25kva transformer will be added along with a potential Lighting Panel LA. This panel will distribute 120/208-volt power to loads such as lighting, receptacles, chemical feed pumps, and instruments.

6.5 Lighting

General Lighting should be provided for general illumination throughout the added facility including but not limited to the following:

- General treatment areas
- Electrical and control room (if required)
- Walkways

Task lighting should be provided at the following areas where additional lumens are required:

- Control panels
- Testing/sampling locations
- Instrument readout locations

Additional lights will be installed at strategically located areas around the site to provide sufficient lumens for security and safety. Light fixtures will utilize LED technology for long life and energy efficiency. Exterior light fixtures will be equipped with photo cells for dusk to dawn operation.

7. Instrumentation and Controls

7.1 Supervisory Control System

The existing Well No. 30 control system consists of a main pump control panel (PCP-30) that includes a Modicon Quantum Programmable Logic Controller (PLC), an operator interface unit (OIU), uninterruptible power supply (UPS), and a spread spectrum radio (SSR) with antenna. These control panel devices are originally installed equipment and are over 10 years old. PCP-30 communicates directly with the main Operations Center over the SSR link.

The Modicon Quantum PLC product line has reached the End-of-Commercialization milestone as well as the “Last Buy” recommendation milestone. Even though there are still 7 years left before the End-of-Service milestone is reached, it is recommended that the Well No. 30 PLC be replaced with the latest Modicon M580 PLC product line as part of this project. It is also recommended that the UPS and OIU be replaced as well. **Figure 7.1** includes an updated System Architecture Diagram.

Control panels required by vendor supplied equipment will be provided by the vendor; however, any PLCs required to control a vendor supplied system will be specified to be a Modicon M580 or M340 PLC. If multiple PLCs end up being installed as part of this project, then they will be networked together through an Ethernet switch.

7.2 Communication System

The Plant 30 site and Operation Center communicate via an SSR link. The SSR device located in PCP-30 is over 10 years old. It is recommended that the SSR be replaced as part of this project. If the receiving radio located at the Operations Center is also over 10 years old, it is recommended that it be replaced as

well. It is anticipated that the existing communication protocol be maintained unless there is an overall desire by MVWD to move to a different communication protocol.

7.3 Instrumentation

Initial identification of the instruments required to monitor and control the Plant 30 process will include the following:

- Magnetic flow meters to each reaction tank, on each filter discharge (by the filter manufacturer), on the backwash supply line, and to the backwash holding tanks
- Pressure transmitters
- Level transmitter for each backwash tank
- Residual chlorine analyzer
- Turbidity analyzer
- Online nitrate analyzer

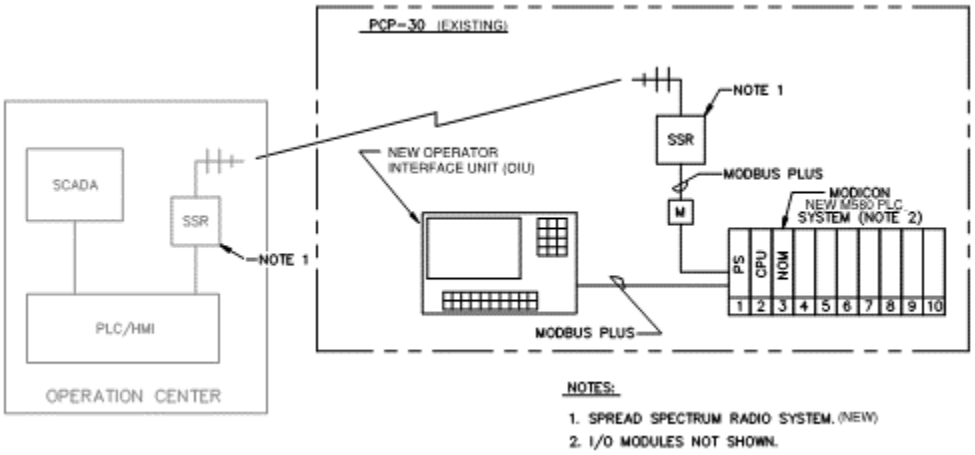


Figure 7.1. System Architecture Diagram

8. Structural Requirements

The basis of the structural design used for the process equipment and bulk storage foundations, welded steel rinse storage tank foundation and masonry building for sodium hypochlorite storage are presented in this section, including the governing codes and standards, the applicable design loads, and the design requirements of all construction materials.

8.1 General Description of Structural Systems

The GAC and pretreatment filter areas will be supported on a conventionally reinforced cast-in-place concrete mat slab foundation. Due to the natural grade of the site that slopes toward the south, the GAC mat slab will be deeper along the southern edge to retain soil. The approximate sizes of the completed (Phase 1 and 2) mat slabs for the GAC and pretreatment filter areas are 146 feet x 32 feet and 30 feet x 12 feet respectively.

The IX system and pretreatment filter areas will be supported on a conventionally reinforced cast-in-place concrete mat slab foundation with a footprint measuring approximately 63 feet x 36 feet.

The bulk salt storage tanks with water softener system will pretreatment be supported on a conventionally reinforced cast-in-place concrete mat slab foundation with a footprint measuring approximately 41 feet x 35 feet.

A 50,000-gallon welded steel tank will be used to store GAC backwash water and IX fast rinse waste. The tank foundation is assumed to be either a reinforced concrete ring footing or mat slab and will be confirmed with the recommendations of a geotechnical report.

A new sodium hypochlorite storage and feed system will be installed and housed in a reinforced concrete block building with a roof constructed of hot-rolled steel sections and flexible metal deck diaphragm. The building shall have similar texture, color and aesthetics of existing buildings on site and will measure approximately 24 ft long x 20 ft wide.

The geotechnical investigation by Converse will inform the detailed design phase to determine design parameters and foundation requirements for structural design. If confirmed by the geotechnical investigation, foundation requirements will consist of mat slab foundations for process equipment supported at grade and shallow continuous footings for the building structure and storage tank. The geotechnical investigation will also address issues such as impact of groundwater on design and construction, excavation support and backfill recommendations, potential soil corrosivity, and potential for soil liquefaction.

8.1.1 Governing Code

The strength, serviceability, and quality standards shall not be less than the stipulations required by the governing code. The governing code used for the proposed design is the 2016 California Building Code.

Materials and construction shall be designed in accordance with the California Building Code, and other codes as presented within this report. The California Building Code consists of the 2015 International Building Code as adopted and amended by the State of California.

8.1.2 Supplemental Design Codes

- ASCE 7 – Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers
- AISC – Manual of Steel Design, 14th Edition, American Institute of Steel Construction
- ACI 350.4 – Design Considerations for Environmental Engineering Concrete Structures, latest edition, American Concrete Institute
- ANSI/AWWA D103 – Factory-Coated Welded Carbon Steel Tanks for Water Storage

8.1.3 Codes and Standards for Specific Materials

Design of specific materials will be performed in accordance with the standards, codes, and specifications adopted by the governing code as listed below.

8.1.4 Concrete

- ACI 318 – Building Code Requirements for Structural Concrete, 2014 Edition, American Concrete Institute.
- ACI 301 – Specifications for Structural Concrete, Latest Edition, American Concrete Institute.
- ACI 350 – Code Requirements for Environmental Engineering Structures and Commentary, 2006 Edition, American Concrete Institute.

8.1.5 Masonry

- ACI 530/530.1 – Building Code Requirements and Specification for Masonry Structures, 2013 Edition, American Concrete Institute.

8.1.6 Steel

- AISC 360 – Specification for Structural Steel Buildings, 2010 Edition, American Institute of Steel Construction.
- AISC 303 – Code of Standard Practice for Steel Buildings and Bridges, 2010 Edition, American Institute of Steel Construction.
- AISC 341 – Seismic Provisions, 2010 Edition, American Institute of Steel Construction.
- AISC 348 –Specification for Structural Joints Using High Strength Bolts, 2010 Edition, American Institute of Steel Construction.
- AWS D1.1 – Structural Welding Code - Steel, 2010 Edition, American Welding Society.

8.2 Design Loads

8.2.1 Dead Loads

Dead loads are those resulting from the weight of all permanent non-removable stationary construction, such as floors, roofs, framing and permanent fixed equipment and piping. Loads from process liquids within the structure and from soil and groundwater outside the structure will not be considered as dead loads. Dead loads will be in accordance with the governing code.

8.2.2 Live Loads

Live loads technically include all nonpermanent loadings that can occur, in addition to the dead loads. Live loads are those resulting from occupancy and equipment. Live loads will be used in accordance with the governing code.

8.2.3 Equipment Loads

Process area operating floors are designed for the load case resulting in the maximum stresses from the following live load conditions:

- 300 psf on the entire floor area, with no additional load from equipment included
- 150 psf on the areas not directly under equipment, plus actual equipment loads

Equipment loads obtained from tank manufacturers will be used when available, and other equipment loads will be assumed for the preliminary design. These loads will be confirmed prior to completion of design. In addition to the equipment's operating weight (including any fluids contained), other loads due to moving parts, malfunction, and maintenance will be designed for.

8.2.4 Piping Loads

For preliminary design, the live loads will be considered to include the loads from process piping that are supported by the floor below the piping. On floors and roofs that will support process piping suspended below, an additional live load allowance will be included for the preliminary design. This allowance ranges from 25 psf to 100 psf, depending on the size and quantity of piping.

8.2.5 Wind Loads

Wind loads on any above grade structures will be in accordance with the governing code and ASCE 7.

8.2.6 Seismic Loads

Seismic loads resulting from seismic acceleration of the structure dead and live loads, including permanent fixed equipment and piping, will be determined in accordance with the governing code and ASCE 7 requirements using the values given in the appropriate code formulas, and applicable codes for seismic design.

8.3 Concrete Design

All portions of the structure that are in contact with soil or that contain process liquids (including slabs over process liquids) will be designed based on the following method:

- Ultimate Strength Design, per ACI 318 with revised load factors and durability coefficients recommended in ACI 350.

Portions of the structure not included above may be designed per ACI 318 in lieu of ACI 350.

Minimum required amounts of reinforcing would be determined per ACI 318 recommendations depending on the spacing of movement joints provided. Amounts of reinforcing used will be as required for structural strength, but not less than these minimum amounts.

Finishes on concrete surfaces will be provided in accordance with ACI 301, and as is appropriate for their use and exposure. Interior exposed walls in habitable spaces will receive a smooth rubbed finish. Interior walls above the water surface of open tanks and any exterior exposed walls above grade will receive a grout-cleaned finish. Floors of tanks and floors in areas likely to be intermittently wet due to washdown or maintenance of equipment will receive a floated finish. Floors in habitable areas intended to be dry at all times will receive a steel troweled finish.

8.4 Masonry Design

Masonry will be designed in accordance with ACI 530 and ACI 530.1. Minimum required amounts of reinforcing for seismic loads would be provided in accordance with ACI 530 and ACI 530.1. Amounts of reinforcing used will be as required for structural strength, but not less than these minimum amounts. All cells containing reinforcing steel will be grouted. Maximum spacing of horizontal joint reinforcing will be 16 inches on-center vertically.

8.5 Structural Metals Design

Structural steel will be designed in accordance with ANSI/AISC 360 Specification for Structural Steel Buildings.

Steel decking will be designed in accordance with the Steel Deck Institute (SDI) Design Manual for Composite Decks, Form Decks, Roof Decks, and Cellular Deck Floor Systems with Electrical Distribution. Diaphragm action of steel decks will be designed in accordance with the SDI Diaphragm Design Manual.

9. Maintenance of Plant Operations

Maintaining existing plant operations (MOPO) during construction and commissioning is important to maintaining a potable water supply to the distribution system. The construction of new treatment processes will be on a new space on the existing site that does not directly impact operations of Well 30. Access will be maintained during construction to allow the Monte Vista operators access for operations. Access to the site will be through the North side gate. During construction of the Well 32 and 33 influent pipeline and plant effluent pipeline, access to the site will be disrupted. The contractor will be required to maintain temporary roadway access or develop temporary alternative access points for site access. The project specifications will include specific details for the general contractor outlining MOPO requirements.

The primary impacts to MOPO are the interface connection points:

- Well Pipeline Connection
- Treated Water Pipeline Connection
- Waste Pipeline Connection

Plant shutdowns during construction of these pipelines is unavoidable. To reduce the impact, the pipelines can be constructed and blank flanged at each connection point. The shutdown can be planned, and multiple connections can occur during a single shutdown.

Additionally, a shutdown will be required to integrate the new electrical infrastructure to the existing system and transformer.

Planning for commissioning during the design phase will help minimize impacts to operations during construction. Feed and waste connection point locations will be considered and allowed for as the system design is developed. Each GAC and IX unit will be commissioned individually to minimize disruption to existing operations.

10. Cost Estimation

The probable bid cost based on this preliminary design for Phase 1 is $14,771,000 including contingency as shown in **Table 10.1**. The estimate serves for feasibility/evaluation and is considered to be an AACE Class 4 level. Class 4 has a typical accuracy range of -30% on the low side and +50% on the high side. A 25% design contingency has been added to the estimate based on current status of the design documents, the nature of the project, and the estimate classification.

Table 10.1. Cost Estimate

Item	Description	Probable Bid Cost
1	General Conditions	$744,675
2	GAC	$2,554,572
3	Ion Exchange	$1,445,919
4	Chemical Systems	$279,043
5	Water Softener	$150,170
6	Brine Storage	$327,985
7	Backwash Recovery Storage	$321,309
8	Site Civil and Yard Piping	$351,209
9	Electrical and Instrumentation	$528,693
10	Pipeline from Well 32	$636,906
11	Pipeline from Well 33	$473,814
12	Brine Line to Palo Verde	$294,854
13	Pipeline to Benson Feeder	$82,276
14	IEUA Brine Line Capacity Fee[1]	$1,290,000
	Subtotal:	**$9,481,426**
	Contractor Overhead at 10%	$948,143
	Subtotal:	**$10,429,568**
	Construction Profit at 10%	$1,042,957
	Subtotal:	**$11,472,525**
	Bonding/Insurance at 3%	$344,176
	Subtotal:	**$11,816,701**
	Contingency at 25%	$2,954,175
	TOTAL (ROUNDED):	**$14,771,000**

Notes:
(1) IEUA connection fee was based on IX regeneration instantaneous peak flow to the brine line.

10.1 Estimate and Planning Basis

The project work is to be performed in San Bernardino County, California. This estimate is for demolition of existing process equipment, installation of new yard piping and other site improvements. The general scope is listed below:

- GAC – 12 vessels, slab-on-grade
- IX – 4 vessels, slab-on-grade, waste metering pump
- Chemical Systems – CMU block building, slab-on-grade, 2 double-wall storage tanks, pump skid, recirculation pump, fill station
- Water Softening – 2 units, slab-on-grade
- Brine Storage – 3 storage tanks, 2 brine feed pumps, 2 transfer pumps, slab-on-grade
- Backwash Water and Fast Rinse Storage – 1 storage tank, slab-on-grade
- Site Civil and Yard Piping
    - Site prep/grading
    - Excavation and installation of yard pipes
    - Removal and replacement of pavement for piping excavation
    - Site finishing (landscaping, misc. curb/cutter, etc.)
- Electrical and Instrumentation – as a percentage of project cost
- Pipeline from Well 32 – 3,200 lf of 12-inch DIP

- Pipeline from Well 33 – 2,000 lf of 12-inch DIP
- Brine Line to Palo Alto – 2,00 lf of 2-inch DIP

Estimate costs are derived from the following:

1. Site plan dated February 2019
2. Pipeline routing sketch

Base Assumptions are the following:

1. Construction NTP is assumed to be November 2019.
2. Construction Duration is assumed to be 10 months.
3. The project is assumed to be procured as a single prime contract through a traditional design/bid/build process.

10.2 Cost Basis

1. Wage rates utilized are based on prevailing wages published for San Bernardino County current to June 30, 2019.
2. A 40-hour work week is assumed, no overnight, shift, weekend or other premium time is provided.
3. Wherever possible, equipment rates are based on current published rental rates as listed in the AED Blue Book, supplemented by RS Mean's data, the AED Green Book and local rental suppliers.
4. Crews, equipment and productivity used for work items are based mostly on standards specific to each trade. Some information was supplemented by RS Mean's data modified where necessary by estimator judgment.
5. Vendor budgetary quotes were procured for the following equipment:
    - Briner
    - GAC vessels
    - IX vessels
    - Softener

10.3 Itemized Estimate Notes

Estimated scope is as follows:

- GAC
    - Concrete slab (32'x146'x2')
    - 12 GAC vessels
    - Allow for piping between tanks (on slab only)
- Ion Exchange
    - Concrete slab (36'x54'x2')
    - 4 IX vessels
    - 2 waste metering pump (100 gpm)
    - Allow for piping between tanks (on slab only)
- Chemical Systems

  - Concrete slab (12’x27’x1’)
  - CMU building
  - 2 double-wall storage tanks
  - Chemical feed skid
  - 1 recirculation pump
  - Chemical fill station
  - 3 Equipment pads (7’x7’x1’)
  - Allow for piping between tanks (on slab only)
  - Include interior coating and painting
- Water Softening
  - Concrete slab (9’x20’x2’) (Portion within the salt storage slab)
  - 2 water softeners
  - Allow for piping between units (on slab only)
- Brine Storage
  - Concrete slab (32’x34.5’x2’) (Portion excluding the water softeners)
  - 3 briner units (60 ton)
  - 2 brine feed pumps (200 gpm)
  - 2 transfer pumps
  - 3 Equipment pads (13’x13’x1’)
  - 4 Equipment pads (3’x5’x 0.5’)
  - Allow for piping between units (on slab only)
- Backwash Recovery Water Storage
  - Concrete slab (32’x32’x2’)
  - 1 waste storage tank (50,000 gallon welded steel)
  - Allow for piping (on slab only)
  - 2 bag filters and 2 feed pumps
- Site civil and yard piping
  - Site demolition
  - Site paving
  - Site prep/grading
  - Excavation and installation of yard pipes
    - GAC Influent, 80 lf, 20-inch DIP
    - GAC to IX, 25 lf, 20-inch DIP
    - Brine supply, 70 lf, 4-inch PVC
    - IX and backwash recovery, 215 lf, 4-inch DIP
    - Well 32/33 Influent (within site only), 220 lf, 16-inch DIP
    - Well 30 Influent (within site only), 100 lf, 12-inch DIP
    - To Chino Hills (within site only), 100 lf, 20-inch DIP
    - Brine waste (within site only), 10 lf, 4-inch PVC
    - Chemical piping (double-contained)
  - Removal and replacement of pavement for piping excavation
  - Site finishing (landscaping, misc. curb/cutter, etc.)
  - Site drainage (above and below grade)
  - Relocating/replacing the existing yard hydrant and piping
- Electrical and Instrumentation

    - Take as a percent of project cost
        - Electrical 15%
        - Instrumentation 5%
- Pipeline from Well 32
    - Assume 4-ft cover
    - 3,200lf of 12-inch DIP
    - Allow for excavation, backfill, gravel, sawcut/remove/replace pavement, traffic control, valves, and appurtenances (blow offs and air vacs)
- Pipeline from Well 33
    - Assume 4-ft cover
    - 2,300lf of 12-inch DIP
    - Allow for excavation, backfill, gravel, sawcut/remove/replace pavement, traffic control, valves, and appurtenances (blow offs and air vacs)
- Brine Line to Palo Alto
    - Assume 4-ft cover
    - 2,300lf of 4-inch PVC or HDPE
    - Allow for excavation, backfill, gravel, sawcut/remove/replace pavement, traffic control valves, and appurtenances (blow offs and air vacs)
- To Benson Feeder
    - Assume 5-ft cover
    - 200 lf of 20-inch DIP
    - 18" line stop
    - Allow for excavation, backfill, gravel, sawcut/remove/replace pavement, traffic control valves, and appurtenances (blow offs and air vacs)

10.4 Below Line Adders

Adders are detailed in **Table 10.2**.These factors are generally in-line with recent estimated projects in this location and of this size and conform to the AACE Class of each scope.

Table 10.2. Adders used

Below the Line Adders	
Item	**%**
General Conditions	10
Contractor Overhead	10
Contractor Profit	10
Insurance and Bonding	3
Contingency	25

10.5 Present Worth Estimate

Based on the preliminary capital cost estimate provided in **Table 10.1** and preliminary calculations of Operation and Maintenance (O&M) cost estimate, the present worth of the annualized costs was calculated for the following treatment scenarios to determine a preliminary range for the water unit cost ($/AF).

1- GAC and IX Treatment Systems: $350-$440/AF

2- GAC Treatment Only: $120-$150/AF

3- IX Treatment Only: $230-$290/AF

The following main assumptions were used for the calculations of the present worth estimate:

- Power Cost: $0.13/kWh
- Sodium Hypochlorite Cost: $1.0/lb (active chlorine)
- GAC Media Cost: $1.9/lb
- IX Resin Cost: $176/ft^3
- Salt Cost: $160/ton
- Brine Disposal Cost: $2,900/month
- Life Cycle Period: 25 years
- Discount (Interest Rate): 4%
- Contingency: 25%

10.6 Other Assumptions

Additional assumptions to the estimate include:

1. It is assumed that all process equipment to be demolished is not in operation and will be cleaned prior to being turned over to the Contractor.
2. No bypass or temporary treatment is provided, all work is assumed to be done without impacting plant processes.
3. It is assumed that excavations will not be impacted by high groundwater.

10.7 Risks and Opportunities

Some risk items and opportunities need to be considered in the process of reviewing estimated costs. These include:

1. No hazardous materials have been identified; however, when demolishing existing equipment, there is the risk that the work will uncover unforeseen hazardous materials that will require abatement. This would increase the cost and duration of the job.
2. Rehabilitating an existing structure carries the risk that demolition or modification to the existing structure will reveal defects or compliance issues that would increase the cost and duration of the work.
3. The current political situation with regards to tariffs and potential trade wars makes forecasting future construction bids more uncertain. As a hedge, MVWD may want to include specification language that provides relief to Contractors if material prices rise by tying escalation to

government indices. This would reduce Contractor's risk and hopefully result in lower bids.

4. Whenever underground work is required, there is the danger of delays resulting from unmarked utilities, cultural artifacts or other unforeseen conditions.

11. Permitting

This section discusses environmental requirements and relevant permits necessary for the construction and operation of this project. Permits are enforced at the state and regional level. A summary of anticipated permits is included in **Table 11.1.**

Table 11.1. Required Permits

Governing Organization	Permit
State	
State Water Resources Control Board	NPDES General Construction Permit
	NPDES Stormwater Permit (existing)
	Operating Permit Amendments – DDW (Amendment)
	California Regional Water Quality Control Board, Colorado River Basin Region
Cal OSHA	Trenching and Excavation Permit
Regional	
Montclair	Planning Permit: Administrative Approval or Site Approval or Special Conditional Use Permit
	Building Permit
	Industrial Waste Discharge to Sewers
	Grading Permit
	Water Quality Management Plan
Montclair Fire Department	Montclair Plan Review Application
	Montclair Fire District Permit
Inland Empire Utilities Agency	Sewer Connection Permit
	Joint Industrial Wastewater Discharge Permit

11.1 State Permits

11.1.1 SWRCB NPDES General Construction Permit

The State Water Resources Control Board (SWRCB) requires a National Pollutant Discharge Elimination System (NPDES) general construction permit due to construction activity and land disturbances part of a "common plan of development" as well as for more than one acre of disturbances. Items required to obtain a permit include a notice of intent form, risk assessment, post-construction calculations, a site map, storm water pollution prevention plan, certification statement, and a fee.

11.1.2 SWRCB NPDES Stormwater Permit

MVWD falls within the San Bernardino County MS4 Phase 1 NPDES permit. Jurisdiction for Chino does not require San Bernardino oversight. The City will continue to adhere to the requirements of this permit.

11.2 Regional Permits

MVWD is located within San Bernardino County, which necessitates the same MS4 Phase 1 permit. MVWD falls outside San Bernardino County jurisdiction and local Montclair ordinances apply to this Study. The following permits could be applicable:

- Construction Waste Management Plan
- Drainage Study
- Erosion Control
- Plumbing – for work on existing building/structure
- Non-Residential New Construction
- Water Quality Management Plan/Post Construction Management Plan

11.3 Brine Line Permits

For brine disposal MVWD will require a Joint Industrial Permit to IEUA and County Sanitation Districts of LA County Non-Reclaimable Wastewater System Connection.

11.4 CEQA

The Plant 30 Wellhead Treatment Project must comply with the California Environmental Quality Act (CEQA) prior to approval by MVWD, the CEQA Lead Agency for this proposed project. MVWD envisions the following process to achieve CEQA compliance for the proposed project:

- Based on the information provided in the Basis of Design Report (BODR), a complete description of the proposed project will be drafted. The project description is presently underway. Once complete it will be submitted to the engineer and MVWD for review and comment. A final draft project description will be compiled and used to initiate the technical studies and the AB 52 (Native American) consultation.

- The Initial Study (IS) will be drafted with appropriate substantiation and presented to the engineer and MVWD for review and comment. The IS is anticipated to result in distribution and a proposed Mitigated Negative Declaration (MND) for a 30-day public review.

- Once the 30-day public review period is completed, a Final IS/MND package will be assembled and provided to the MVWD Board for adoption. Assuming the IS/MND is adopted, a Notice of Determination (NOD) will be filed with San Bernardino County and other appropriate jurisdictions.

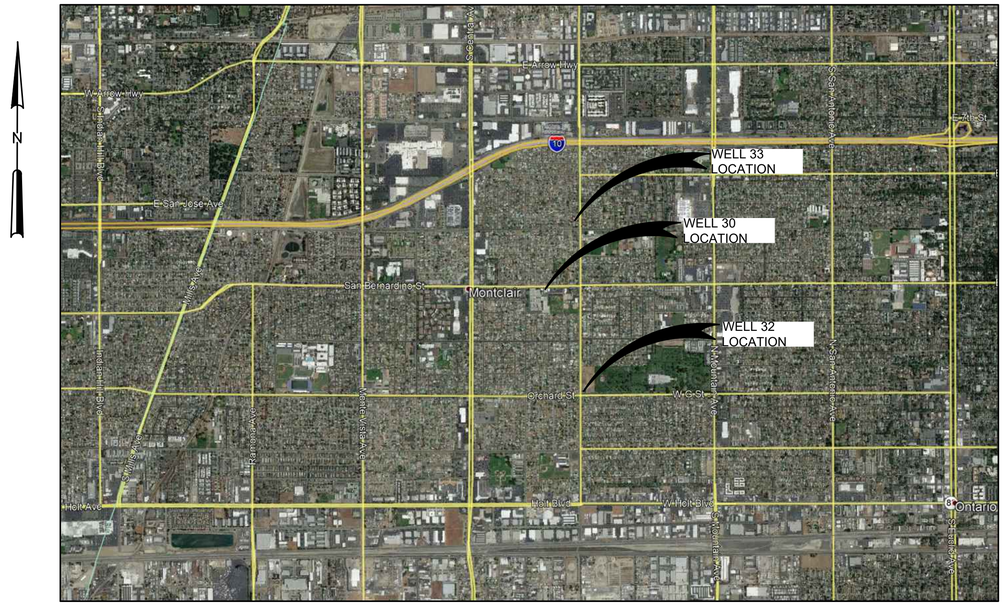
This will complete the CEQA review process other than implementation of mitigation measures during project implementation.

Appendix A
Preliminary Drawings

MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30 WELLHEAD TREATMENT

HAZEN CONTRACT NO. 20133-000
FEBRUARY 2019



LOCATION MAP
NOT TO SCALE

Hazen

HAZEN AND SAWYER
7700 IRVINE CENTER DRIVE, SUITE 200
IRVINE, CALIFORNIA 92618

PRELIMINARY DESIGN - DO NOT USE FOR CONSTRUCTION

SHEET INDEX

ABBREVIATIONS

GENERAL

A/C	AIR CONDITIONER
AB	ANCHOR BOLT
AD	AREA DRAIN
ADH	ADHESIVE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AGGR	AGGREGATE
ALT	ALTERNATE
APPROX	APPROXIMATE
AR	AIR RECEIVER
ARCH	ARCHITECTURAL
ASPH	ASPHALT
B	BORING
B	BASELINE
BL	BUILDING LINE
BLDG	BUILDING
BLK	BLOCK
BM	BENCH MARK
BOC	BACK OF CURB
BOM	BOTTOM OF MASONRY
BOT	BOTTOM
BRG	BEARING
BRK	BRICK
BT	BOLT
CE	CONSTRUCTION EASEMENT
CF	CUBIC FEET
CFM	CUBIC FEET PER MINUTE
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONTR	CONTRACTOR
CPT	CONTROL POWER TRANSFORMER
CTJ	CONTROL JOINT
CY	CUBIC YARD
DET	DETAIL
DIA OR Ø	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DISC	DISCONNECT
DISCH	DISCHARGE
DN	DOWN
DOZ	DOZEN
DP	DISTRIBUTION PANEL
DS	DISCONNECT SWITCH
D/S	DOWNSTREAM
DT	DAY TANK
DWG(S)	DRAWING(S)
DWL	DOWEL
EA	EACH
ECC	ECCENTRIC
EEW	EMERGENCY EYE WASH
EF	EACH FACE OR EXHAUST FAN
EFF	EFFLUENT
EL	ELEVATION
ELEC	ELECTRICAL
EOG	EDGE OF GRAVEL
EOP	EDGE OF PAVEMENT
EPX	EPOXY
EQ	EQUAL
EQPT	EQUIPMENT
ES/EEW	EMERGENCY SHOWER AND EYEWASH
EXIST/EX	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FCO	FLOOR CLEANOUT
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FDN	FOUNDATION
FEF	FUME EXHAUST FAN
FH	FIRE HYDRANT
FIG	FIGURE
FIN	FINISH
FIX	FIXTURE
FL	FLOOR
FLXC	FLEXIBLE CONNECTION
G	GATE
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERATOR
GPM	GALLONS PER MINUTE
GR	GRADE
GRTG	GRATING
HORIZ	HORIZONTAL
HP	HORSEPOWER OR HEAT PUMP
HPT	HIGH POINT
HW	HEADWALL
HWL	HIGH WATER LEVEL
HWP	HEATING WATER PUMP
HWY	HIGHWAY
HYD	HYDRAULIC
I&C	INSTRUMENTATION AND CONTROLS
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCH
INCL	INCLUDED
INF	INFLUENT
INSUL	INSULATION
INT	INTERIOR
INV	INVERT
JCT	JUNCTION
JT	JOINT
L	LENGTH/ANGLE
LG	LONG
LI	LEVEL INDICATOR
LPT	LOW POINT
LWL	LOW WATER LEVEL
MAINT	MAINTENANCE
MANUF	MANUFACTURER
MECH	MECHANICAL
MET	METAL
MFR	MANUFACTURER
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
NA	NOT APPLICABLE
NAD '83	NORTH AMERICAN DATUM OF 1983
NAVD '88	NORTH AMERICAN VERTICAL DATUM OF 1988
No.	NUMBER
NO	NORMALLY OPEN
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER OR OVERHEAD DOOR
OF	OUTSIDE FACE
OPNG	OPENING
OPP	OPPOSITE
ORF	OIL REMOVAL FILTER
ORIG	ORIGINAL
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PAC	PACKAGED AIR CONDITIONING UNIT
PAR	PARALLEL
PC	POINT OF CURVE OR PIECE OR PERSONAL COMPUTER
PCC	POINT OF COMPOUND CURVE
PCF	POUNDS PER CUBIC FOOT
PERF	PERFORATED
PERP	PERPENDICULAR
PF	PROPELLER FAN
PI	POINT OF INTERSECTION
PL	PROPERTY LINE OR PLATE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PLMB	PLUMBING
PNL	PANEL
PP	POWER PANEL OR POWER POLE
PREFAB	PREFABRICATED
PROP	PROPOSED
PRVN	POWER ROOF VENTILATOR
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSU	POWER SUPPLY UNIT
PVMT	PAVEMENT
QTY	QUANTITY
RAD	RADIUS
RECIR	RECIRCULATION
RECT	RECTANGULAR
REF	REFERENCE
REG	REGISTER
REINF	REINFORCING
REQD	REQUIRED
REST	RESTRAINED
RJ	RESTRAINED JOINT
R/W OR ROW	RIGHT OF WAY
S	SOUTH OR SLOPE
SB	SOIL BORING
SBL	SURVEY BASELINE
SBMP	SODIUM BISULFITE METERING PUMP
SCH	SCHEDULE
SCG	SLUICE GATE
SCR	SELECTIVE CATALYTIC REDUCTION
SDG	SLIDE GATE
SECT	SECTION
SERV	SERVICE
SF	SQUARE FEET
SG	SWITCH GEAR
SHT(S)	SHEET(S)
SI	SQUARE INCH
SIL	SILENCER
SIM	SIMILAR
SMH	STORM MANHOLE
SP	SUMP PUMP
SPEC	SPECIFICATION
SQ	SQUARE
SSP	SUBMERSIBLE SUMP PUMP
SST	STAINLESS STEEL
STA	STATION OR STACK
STD	STANDARD
STG	STORAGE OR STOP GATE (LOG)
STIR	STIRRUP
STL	STEEL
STRU	STRUCTURAL
SUB	SUBSTITUTE
SUCT	SUCTION
SUPT	SUPERINTENDENT
SUR	SURFACE
SUSP	SUSPENDED
SWD	SIDE WATER DEPTH
SYM	SYMMETRICAL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TOC	TOP OF CONCRETE
TOD	TOP OF DECK
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY/MANHOLE
TOS	TOP OF SLAB/ TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL
U/S	UPSTREAM
UTIL	UTILITY
W	WEST OR WIDTH
W/	WITH
WL	WATER LEVEL

VALVES, FITTINGS, ETC.

ARV	AIR RELIEF VALVE
ARVT	AIR RELEASE VALVE VAULT
BFP	BACKFLOW PREVENTER
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BV	BALL VALVE
CAV	COMBINATION AIR VALVE
CV	CHECK VALVE
CPLG	COUPLING
DJ	DISMANTLING JOINT
EP	ECCENTRIC PLUG VALVE
EXP JT	EXPANSION JOINT
FLEX	FLEXIBLE
FLG	FLANGE
FM	FLOW METER
FTG	FITTING
FV	FLAP VALVE
GV	GATE VALVE
HB	HOSE BIBB
KGV	KNIFE GATE VALVE
MFM	MAGNETIC FLOWMETER
MJ	MECHANICAL JOINT
MOV	MOTOR OPERATED VALVE
NPT	NATIONAL PIPE THREAD
PE	PLAIN END
PV	PLUG VALVE
PRV	PRESSURE RELIEF VALVE
RED	REDUCER
RPZ	REDUCED PRESSURE ZONE ASSEMBLY
SAV	SURGE ANTICIPATOR VALVE
SOV	SOLENOID OPERATED VALVE
TCV	TEMPERATURE CONTROL VALVE
THD	THREADED

PIPING MATERIALS

CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
CU	COPPER PIPE
DIP	DUCTILE IRON PIPE
ERCP	ELLIPTICAL REINFORCED CONCRETE PIPE
FRP	FIBERGLASS REINFORCED PIPE
GSP	GALVANIZED STEEL PIPE
HDPE	HIGH DENSITY POLYETHYLENE
PE LINING	POLYETHYLENE LINING
RCP	REINFORCED CONCRETE PIPE
SSP	STAINLESS STEEL PIPE
IPS	IRON PIPE SIZE
PVC	POLYVINYL CHLORIDE
PCCP	PRE-STRESSED CONCRETE CYLINDER PIPE
VCP	VITRIFIED CLAY PIPE

PROCESS PIPING

ABBREVIATION	DESCRIPTION

COORDINATE WITH SPEC SECTION 15390
DELETE THIS NOTE PRIOR TO FIRST SAVE

LEGEND

SYMBOLS

- BALL VALVE
- BALL CHECK VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- CONTROL VALVE
- DIAPHRAGM VALVE
- FLUSHING CONNECTION
- GATE VALVE
- GLOBE VALVE (GL)
- MOTOR OPERATED VALVE (M)
- PINCH VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE
- PRESSURE RELIEF/VACUUM BREAKER VALVE (VB)
- QUICK CONNECT COUPLING
- SOLENOID VALVE (S)
- STRAINER
- UNION
- HOSE BIBB
- REDUCER
- PARTITION TYPE (##)
- DOOR SCHEDULE (###)
- LOUVER TYPE (L#)
- WALL PENETRATION
- FLEXIBLE HOSE
  - SINGLE LINE DRAWINGS
  - DOUBLE LINE DRAWINGS
- MECHANICAL COUPLING
- WELDED JOINT
- FLANGED JOINT
- MECHANICAL, PUSH-ON OR RESTRAINED JOINT
- HARNESSED FLANGED ADAPTER
- SLEEVE TYPE COUPLING
- HARNESSED SLEEVE TYPE COUPLING
- DISMANTLING JOINT
- EXPANSION JOINT
- FE FIRE EXTINGUISHER
- ES/EEW

MATERIALS

- GRADE OR EARTH
- ASPHALT PAVING
- CAST IRON
- STEEL
- INSULATION
- WATER SURFACE
- GRATING
- CHECKERED PLATE
- GLASS
- WOOD BLOCKING
- CONCRETE FILL OR GROUT
- CONCRETE MASONRY UNIT
- BRICK
- GRAVEL
- CONCRETE

SECTION AND DETAIL KEYING

DRAWINGS ARE CROSS REFERENCED IN THE FOLLOWING METHOD:

(A) A SECTION CUT ON DRAWING A3 IS IDENTIFIED AS FOLLOWS:

A (SECTION LETTER) / A6 (DRAWING WHERE SECTION IS SHOWN)

(B) THE SECTION SHOWN ON DRAWING A6 IS IDENTIFIED AS FOLLOWS:

A (SECTION LETTER) / A3 (DRAWING FROM WHERE SECTION WAS TAKEN)

DETAILS ARE CROSS REFERENCED IN A SIMILAR MANNER, EXCEPT DETAILS ARE IDENTIFIED BY A SQUARE WITH A NUMBER IN THE UPPER HALF.

STANDARD DETAILS ARE REFERENCED BY A UNIQUE SEVEN DIGIT NUMBER AND ARE SHOWN ON THE CONTRACT DRAWINGS BY ONE OF TWO METHODS:

1509203 → REFERENCED ITEM

OR:

SEE 1509203 → REFERENCED ITEM

LINETYPES

- PROPOSED ITEMS
- EXISTING ITEMS
- HIDDEN ITEMS
- DEMOLITION ITEMS
- CENTER LINE
- MATCH LINE

ROOM NAME LABEL

ROOM NAME / ### (ROOM NAME, ROOM NUMBER)

ELEVATION CALL OUT

DIRECTION OF VIEW — # / A### (ELEVATION #, DRAWING #)

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: A. RAHIMIAN
DESIGNED BY: M. DONG
DRAWN BY: V. PANEZ
CHECKED BY: M. DONG

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

Hazen
HAZEN AND SAWYER
7700 IRVINE CENTER DRIVE, SUITE 200
IRVINE, CALIFORNIA 92618

MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

GENERAL
SHEET INDEX, LEGEND AND ABBREVIATIONS

DATE: FEBRUARY 2019
HAZEN NO.: 20133-000
CONTRACT NO.: 01
DRAWING NUMBER: G-02

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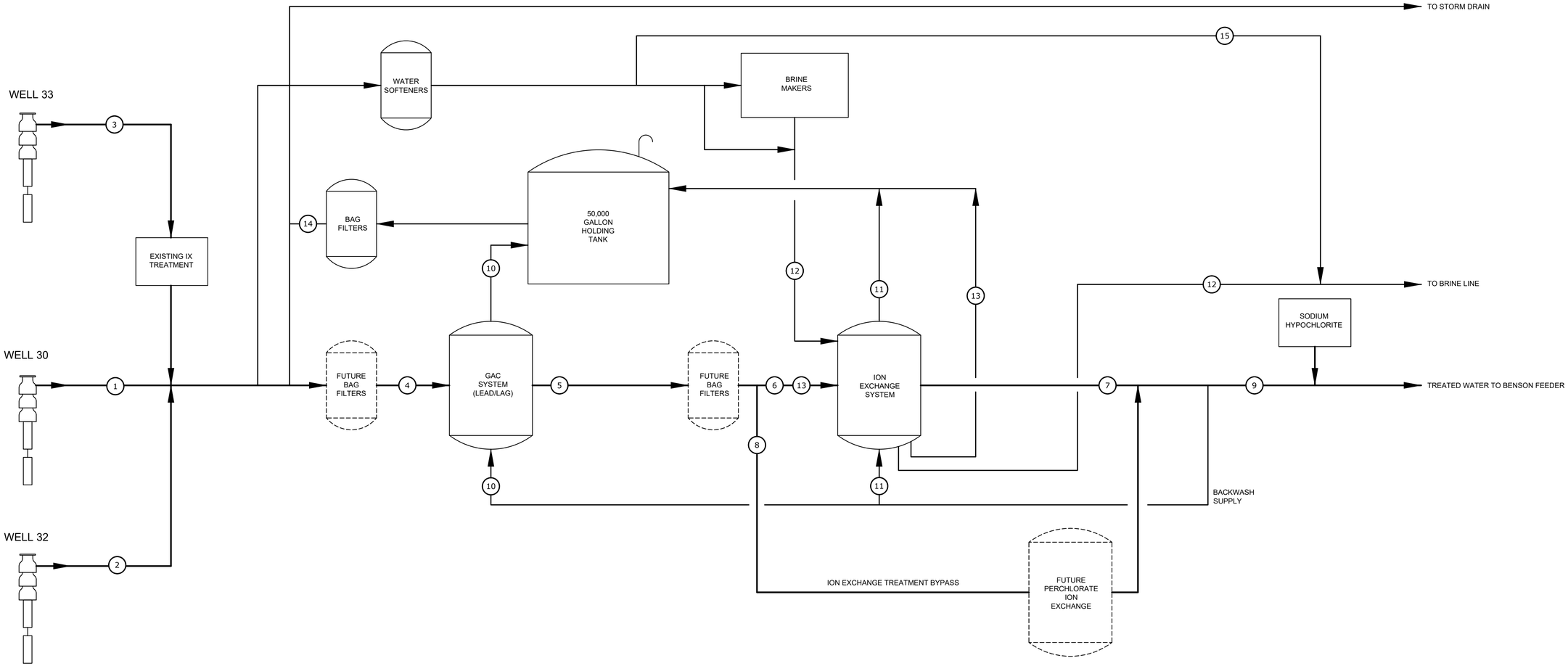
PLOT DATE: 2/21/2019 5:40 PM BY: HBENAVIDES



SCENARIO 1: WELLS 30 & 32 IN OPERATION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	WELL 30	WELL 32	WELL 33	GAC IN	GAC OUT	IX IN	IX OUT	IX BYPASS	PLANT EFFLUENT	GAC BACKWASH SUPPLY	IX BACKWASH	BRINE/SLOW RINSE	FAST RINSE (SERVICE WATER)	RECOVERED WATER	SOFTENER WASTE
FLOW (gpm)	2000	2000	-	4000	4000	3240	3240	760	4000	785-1200	226	84	810	170	12-108
NITRATE (mg/L as N)	19	17	-	18	18	18	2	18	5.0	-	-	-	-	-	-
TCP (µg/L)	0.029	0.014	-	0.022	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-	-	-	-	-	-
DBCP (µg/L)	0.36	0.18	-	0.27	0.16	0.16	0.16	0.16	0.16	-	-	-	-	-	-
PERCHLORATE (µg/L)	6.5	6.5	-	6.5	6.5	6.5	2	6.5	2.9	-	-	-	-	-	-

SCENARIO 2: WELLS 30 & 33 IN OPERATION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	WELL 30	WELL 32	WELL 33	GAC IN	GAC OUT	IX IN	IX OUT	IX BYPASS	PLANT EFFLUENT	GAC BACKWASH SUPPLY	IX BACKWASH	BRINE/SLOW RINSE	FAST RINSE (SERVICE WATER)	RECOVERED WATER	SOFTENER WASTE
FLOW (gpm)	2000	-	2000	4000	4000	2800	2800	1200	4000	785-1200	226	84	810	170	12-108
NITRATE (mg/L as N)	19	-	5	12	12	12	2	12	5.0	-	-	-	-	-	-
TCP (µg/L)	0.029	-	0.011	0.02	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-	-	-	-	-	-
DBCP (µg/L)	0.36	-	0.27	0.32	0.16	0.16	0.16	0.16	0.16	-	-	-	-	-	-
PERCHLORATE (µg/L)	6.5	-	2	4.3	4.3	4.3	2	4.3	2.7	-	-	-	-	-	-

SCENARIO 3: WELLS 32 & 33 TREATMENT IN OPERATION

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	WELL 30	WELL 32	WELL 33	GAC IN	GAC OUT	IX IN	IX OUT	IX BYPASS	PLANT EFFLUENT	GAC BACKWASH SUPPLY	IX BACKWASH	BRINE/SLOW RINSE	FAST RINSE (SERVICE WATER)	RECOVERED WATER	SOFTENER WASTE
FLOW (gpm)	-	2000	2000	4000	4000	2680	2680	1320	4000	785-1200	226	84	810	170	12-108
NITRATE (mg/L as N)	-	17	5	11	11	11	2	11	5.0	-	-	-	-	-	-
TCP (µg/L)	-	0.014	0.011	0.013	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-	-	-	-	-	-
DBCP (µg/L)	-	0.18	0.27	0.23	0.16	0.16	0.16	0.16	0.16	-	-	-	-	-	-
PERCHLORATE (µg/L)	-	6.5	2	4.3	4.3	4.3	2	4.3	2.7	-	-	-	-	-	-

SCENARIO 4: WELLS 30, 32 & 33 TREATMENT IN OPERATION (FUTURE)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	WELL 30	WELL 32	WELL 33	GAC IN	GAC OUT	IX IN	IX OUT	IX BYPASS	PLANT EFFLUENT	GAC BACKWASH SUPPLY	IX BACKWASH	BRINE/SLOW RINSE	FAST RINSE (SERVICE WATER)	RECOVERED WATER	SOFTENER WASTE
FLOW (gpm)	2000	2000	2000	6000	6000	4440	4440	1560	6000	785-1200	226	84	880	170	12-108
NITRATE (mg/L as N)	19	17	5	13.7	13.7	13.7	2	13.7	5.0	-	-	-	-	-	-
TCP (µg/L)	0.029	0.014	0.011	0.018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	-	-	-	-	-	-
DBCP (µg/L)	0.36	0.18	0.27	0.27	0.16	0.16	0.16	0.16	0.16	-	-	-	-	-	-
PERCHLORATE (µg/L)	6.5	6.5	2	5.0	5.0	5.0	2	5.0	2.8	-	-	-	-	-	-

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: A. RAHIMIAN
DESIGNED BY: M. DONG
DRAWN BY: A. GARCIA
CHECKED BY: A. RAHIMIAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
7700 IRVINE CENTER DRIVE, SUITE 200
IRVINE, CALIFORNIA 92618

MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

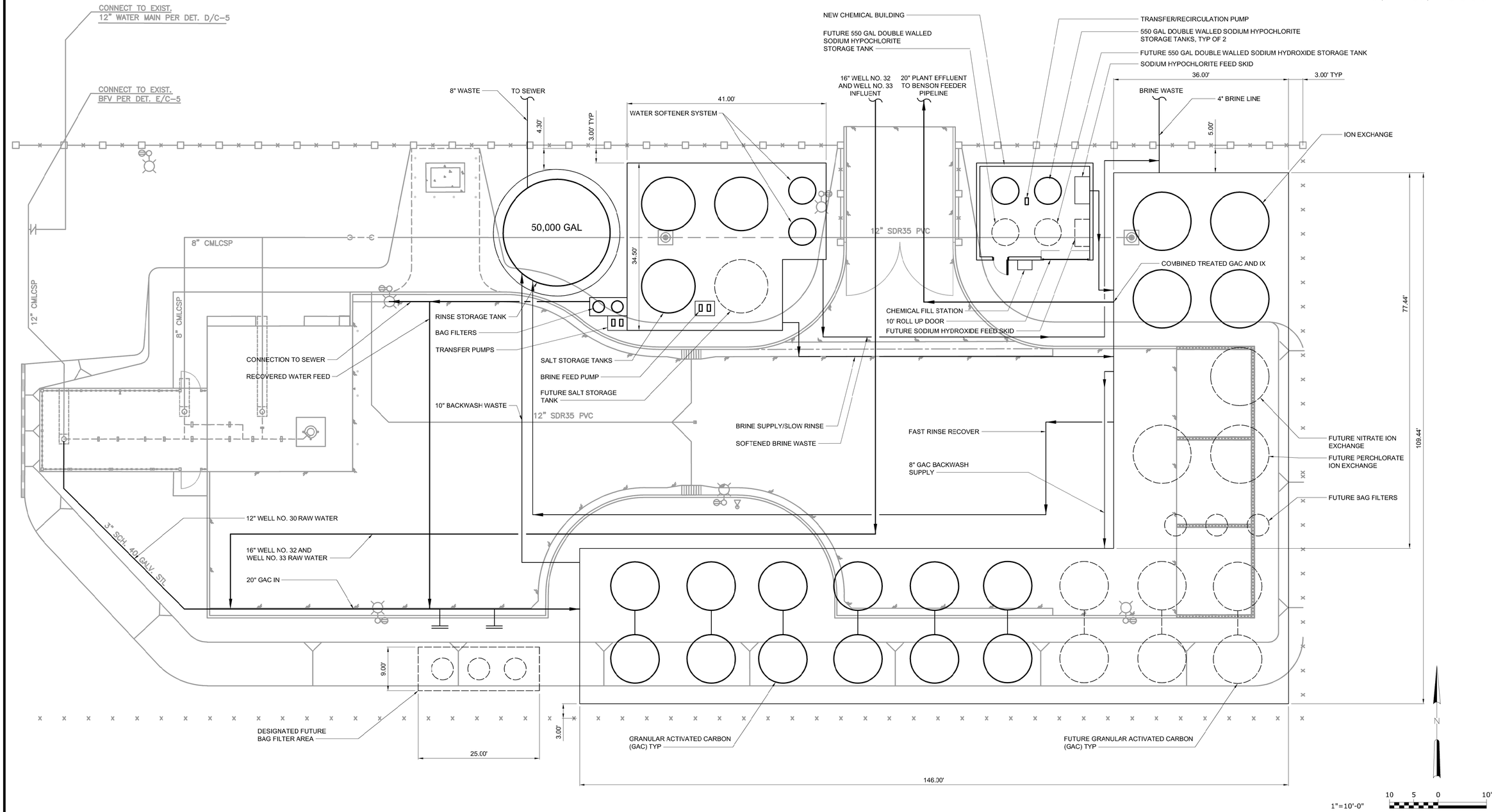
PLANT 30
WELLHEAD TREATMENT

GENERAL PROCESS FLOW DIAGRAM

DATE: FEBRUARY 2019
HAZEN NO.: 20133-000
CONTRACT NO.: 01
DRAWING NUMBER: G-03

NOTES:

1. GAC EFFLUENT, ION EXCHANGE INFLUENT ARE INSIDE OF THE PAD, THEREFORE, PIPING NOT SHOWN HERE.



REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	A. RAHIMIAN
DESIGNED BY:	V. DONG
DRAWN BY:	C. ANDERER
CHECKED BY:	V. DONG

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
7700 IRVINE CENTER DRIVE, SUITE 200
IRVINE, CALIFORNIA 92618

MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

CIVIL
SITE PLAN

DATE:	FEBRUARY 2019
HAZEN NO.:	20133-000
CONTRACT NO.:	01
DRAWING NUMBER:	C-02

INSTRUMENT AND FUNCTION SYMBOLS

LOCATION AND ACCESSIBILITY	SHARED DISPLAY/SHARED CONTROL: PRIMARY CHOICE OR BASIC PROCESS CONTROL SYSTEM	SHARED DISPLAY/SHARED CONTROL: ALTERNATE CHOICE OR SAFETY INSTRUMENTED SYSTEM	COMPUTER SYSTEMS AND SOFTWARE	DISCRETE
- LOCATED IN FIELD - NOT PANEL, CABINET, OR CONSOLE MOUNTED - VISIBLE AT FIELD LOCATION - NORMALLY OPERATOR ACCESSIBLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
- LOCATED IN OR ON FRONT OF CENTRAL OR MAIN PANEL OR CONSOLE - VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY - NORMALLY OPERATOR ACCESSIBLE AT PANEL FRONT OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
- LOCATED IN REAR OF CENTRAL OR MAIN PANEL - LOCATED IN CABINET BEHIND PANEL - NOT VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY - NOT NORMALLY OPERATOR ACCESSIBLE AT PANEL OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
- LOCATED IN OR ON FRONT OF SECONDARY OR LOCAL PANEL OR CONSOLE - VISIBLE ON FRONT OF PANEL OR ON VIDEO DISPLAY - NORMALLY OPERATOR ACCESSIBLE AT PANEL FRONT OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345
- LOCATED IN REAR OF SECONDARY OR LOCAL PANEL - LOCATED IN FIELD CABINET - NOT NORMALLY OPERATOR ACCESSIBLE AT PANEL OR CONSOLE	ABCD 12345	ABCD 12345	ABCD 12345	ABCD 12345

X — SUFFIX (X) TO DIFFERENTIATE BETWEEN INSTRUMENTS AND FUNCTIONS THAT WOULD OTHERWISE HAVE THE SAME IDENTIFICATION.

SINGLE INSTRUMENT OR OTHER COMPONENT HAVING MULTIPLE FUNCTIONS OR SHARING A COMMON HOUSING

(ZZZ) — DESIGNATIONS OF CONTROL FUNCTIONS (ZZZ) ASSOCIATED WITH INSTRUMENT OR OTHER COMPONENTS.

AHC	AUTO/HOLD/CLOSE	OC	OPEN/CLOSE
AM	AUTO/MANUAL	OSC	OPEN/STOP/CLOSED
CALC	CALCULATION	POT	POTENTIOMETER
DEV	DEVIATION	RL	RAISE/LOWER
MOA	MANUAL/OFF/AUTO	RS	RUN/STOP
HOR	HAND/OFF/REMOTE	RSL	RAISE/STOP/LOWER
LOS	LOCKOUT STOP	SD	SHUTDOWN
LR	LOCAL/REMOTE	SEL	SELECT
LSR	LOCAL/STOP/REMOTE	SP	SET POINT
00	ON / OFF	SR	START/RESET
		SS	STOP/START

* ABCD 12345 — INSTRUMENT WITH COMPUTING OR CONVERTING FUNCTION

* ABCD 12345 — CONTROL SYSTEM COMPUTING FUNCTION

CONVERT

E	VOLTAGE	H	HYDRAULIC
I	CURRENT	O	ELECTROMAGNETIC, SONIC
P	PNEUMATIC	R	RESISTANCE (ELECT.)
A	ANALOG	D	DIGITAL
B	BINARY		

COMPUTE

*	SUMMING	P	PROPORTIONAL	△	DIFFERENCE
—	SUBTRACTOR	R	DERIVATIVE	▷	HIGH SELECTING
X	MULTIPLYING	Σ/n	AVERAGING	◁	LOW SELECTING
÷	DIVIDING	I:I	RATIO		INTEGRAL
√	ROOT EXTRACTION	PID	PID	#	COMPLEX FUNCTION

= 1, 2, 3, etc.

REFER TO NOTE ON SAME SHEET FOR BRIEF DESCRIPTION

* — ELECTRICAL CONTROL INTERLOCK

\# — COMPLEX INTERLOCK
= 1, 2, 3, etc.
REFER TO NOTE ON SAME SHEET FOR BRIEF DESCRIPTION

ABCD 1234 — PILOT LIGHT

AND — AND LOGIC

OR — OR LOGIC

VALVE, GATE, AND ACTUATOR SYMBOLS

- GATE VALVE
- PLUG VALVE
- GLOBE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- BALL CHECK VALVE
- SWING CHECK VALVE
- CHECK VALVE
- 3-WAY VALVE
- 3-WAY BALL VALVE
- DIAPHRAGM VALVE
- PINCH VALVE
- NEEDLE VALVE
- SLUICE GATE
- STOP/SLIDE GATE
- S — SOLENOID ACTUATOR
- P — PNEUMATIC ACTUATOR
- BACKFLOW PREVENTER
- PRESSURE RELIEF VALVE
- VACUUM RELIEF VALVE
- COMBINATION VACUUM AND PRESSURE RELIEF VALVE
- PRESSURE-REDUCING REGULATOR
- BACKPRESSURE REGULATOR
- AIR RELEASE VALVE
- M — ROTARY MOTOR
- E/H — ELECTROHYDRAULIC ACTUATOR
- MANUAL ACTUATOR

PUMP AND EQUIPMENT SYMBOLS

- CENTRIFUGAL WET PIT PUMP (OR DRY-PIT SUBMERSIBLE)
- BLOWER (CENTRIFUGAL)
- GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT)
- CHOPPER PUMP
- PISTON PUMP
- DIAPHRAGM PUMP
- ROTARY LOBE PUMP OR BLOWER (POSITIVE DISPLACEMENT)
- METERING PUMP
- COMPRESSOR
- PROGRESSIVE CAVITY PUMP
- VERTICAL PUMP
- INLINE GRINDER
- CENTRIFUGAL PUMP
- SCREW CENTRIFUGAL PUMP
- MIXER

MISCELLANEOUS SYMBOLS

- EXPANSION JOINT
- QUICK CONNECT
- BLIND FLANGE
- FLEXIBLE HOSE
- CALIBRATION CYLINDER
- PULSATION DAMPENER
- EXPANSION TANK
- HORN
- HORN/STROBE
- RUPTURE DISK
- VENT
- DIAPHRAGM SEAL
- FULL LINE OR TAPPED RING SEAL
- DRAIN
- XXXX-YYYY — EQUIPMENT OR PANEL TAG
- M — MOTOR
- FILTER
- AIR FILTER
- STATIC MIXER
- INJECTOR

PRIMARY ELEMENT SYMBOLS

- M — MAGNETIC FLOW METER
- SONIC FLOW METER
- ΔT — THERMAL MASS FLOW METER
- TURBINE OR PROPELLER FLOW METER
- VENTURI FLOW METER
- AVERAGING PITOT TUBE
- VORTEX FLOW METER
- POSITIVE DISPLACEMENT FLOW METER
- PARSHALL FLUME
- WEIR
- ORIFICE PLATE
- FICV — ROTAMETER WITH INTEGRAL VALVE
- XX — XX: RF=ADMITTANCE/CAPACITANCE MAN=MANOMETER
- ULTRASONIC LEVEL SENSOR
- SUBMERSIBLE LEVEL SENSOR
- NON-CONTACT RADAR LEVEL SENSOR
- GUIDED WAVE RADAR LEVEL SENSOR
- FLOAT LEVEL SWITCH
- CAPACITANCE LEVEL SENSOR

ANALYTICAL ABBREVIATIONS

AXX 12345 — ANALYSIS INSTRUMENT

(ZZZ) = ALK - ALKALINITY

CH4	METHANE	PH	HYDROGEN ION CONCENTRATION
CL2	CHLORINE	PO4	PHOSPHATE
COMB	COMBUSTIBLE GAS	SO2	SULFUR DIOXIDE
CON	CONDUCTIVITY	TH	TOTAL HARDNESS
DO	DISSOLVED OXYGEN	TSS	TOTAL SUSPENDED SOLIDS
IR	INFRARED	TURB	TURBIDITY
H2S	HYDROGEN SULFIDE	UV	ULTRAVIOLET
LEL	LOWER EXPLOSIVE LIMIT		
METH	METHANOL VAPOR		
NH3	AMMONIA		
NO3	NITRATE		
O2	OXYGEN		
O3	OZONE		
ORP	OXIDATION/REDUCTION POTENTIAL		
PETRO	PETROLEUM VAPOR		

GENERAL NOTES

1. SYMBOLS AND NOMENCLATURE ARE BASED ON ANSI/ISA-5.1-2009.
2. REFER TO LEGEND SHEETS OF OTHER DISCIPLINES FOR ADDITIONAL SYMBOLS AND ABBREVIATIONS.
3. REFER TO SPECIFICATIONS FOR ADDITIONAL DETAIL ON CONTROL SYSTEM FUNCTIONAL REQUIREMENTS.
4. INSTRUMENTS AND PANELS DENOTED WITH AN ASTERISK (*) ARE PROVIDED BY OTHER DISCIPLINES. REFER TO THE DRAWINGS AND SPECIFICATIONS OF OTHER DISCIPLINES FOR ADDITIONAL DETAIL.
5. POWER SUPPLIES FOR LOOPS OR SYSTEMS SHALL BE FURNISHED BY THE INSTRUMENTATION SUPPLIER TO MEET THE PARTICULAR CHARACTERISTICS (E.G., VOLTAGE AND CURRENT REQUIREMENTS) OF COMPONENTS IN EACH LOOP OR SYSTEM.

LINE SYMBOLS AND LEGEND

- MAJOR PROCESS PIPES OR CHANNELS
- SECONDARY PROCESS OR MECHANICAL CONNECTION
- # # — AIR SUPPLY OR SIGNAL
- ELECTRICAL SIGNAL/ COPPER CABLE
- DATA LINK OR INTERNAL SOFTWARE LINK
- FO — FIBER OPTIC CABLE
- C6 — CAT6 CABLE
- PROCESS/SIGNALS NOT CONNECTED (CROSSING)
- PROCESS/SIGNALS CONNECTED
- TAG / DRAWING — OFF-SHEET CONNECTOR
- DISCRETE ELECTRICAL SIGNALS
- DISCRETE DIGITAL SIGNALS
- ANALOG ELECTRICAL SIGNALS
- ANALOG DIGITAL SIGNALS

IDENTIFICATION LETTERS

	FIRST LETTERS: MEASURED OR INITIATING VARIABLE	FIRST LETTERS: VARIABLE MODIFIER	SUCCEEDING LETTERS: READOUT/ PASSIVE FUNCTION	SUCCEEDING LETTERS: OUTPUT/ ACTIVE FUNCTION	SUCCEEDING LETTERS: FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY			CONTROL	CLOSE
D	DENSITY (MASS) OR SPECIFIC GRAVITY	DIFFERENCE, DIFFERENTIAL			DEVIATION
E	VOLTAGE (EMF)		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER		SCAN		
K	TIME, SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	MOISTURE OR HUMIDITY	MOMENTARY			MIDDLE, INTERMEDIATE
N	TORQUE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE, TOTALIZE	INTEGRATE, TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED, FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL PROBE		
X	UNCLASSIFIED	X-AXIS	ACCESSORY DEVICES, UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS, SAFETY INSTRUMENTED SYSTEM		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: A. RAHIMIAN
DESIGNED BY: V. DONG
DRAWN BY: J. IRVING
CHECKED BY: ####

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE — 0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR CONSTRUCTION

Hazen
HAZEN AND SAWYER
7700 IRVINE CENTER DRIVE, SUITE 200
IRVINE, CALIFORNIA 92618

MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

INSTRUMENTATION LEGEND

DATE: FEBRUARY 2019
HAZEN NO.: 20133-000
CONTRACT NO.: 01
DRAWING NUMBER: I-01

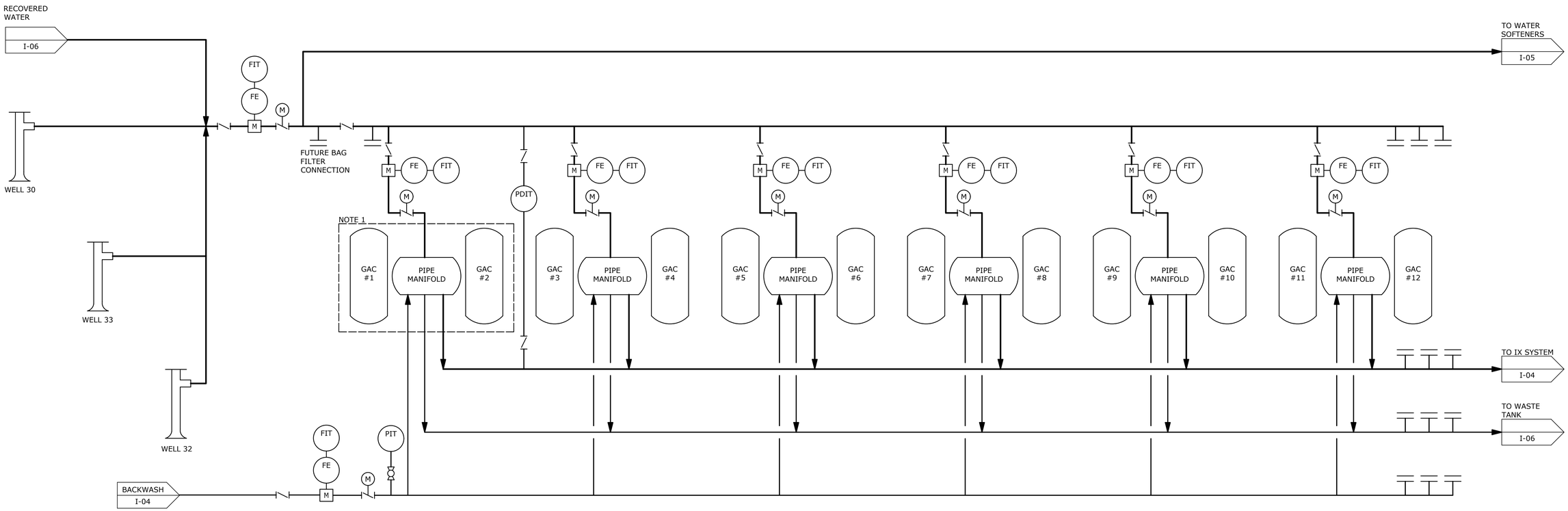
SCADA

PLC

FIELD

NOTES:

1. LEAD/LAG GAC SYSTEM P&ID TO BE PROVIDED BY SELECTED VENDOR, REFER TO I-03



REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	A. RAHIMIAN
DESIGNED BY:	M. DONG
DRAWN BY:	J. IRVING
CHECKED BY:	####

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

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MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

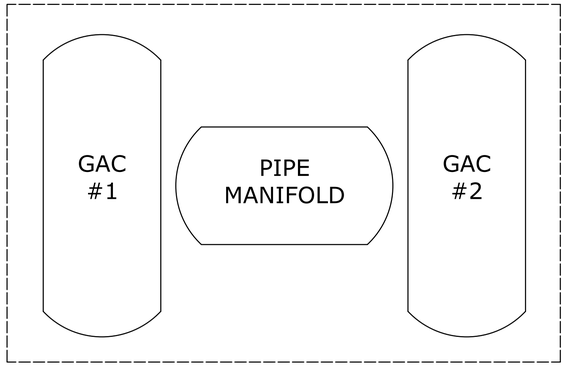
INSTRUMENTATION
GRANULAR
ACTIVATED CARBON P&ID

DATE:	FEBRUARY 2019
HAZEN NO.:	20133-000
CONTRACT NO.:	01
DRAWING NUMBER:	I-02

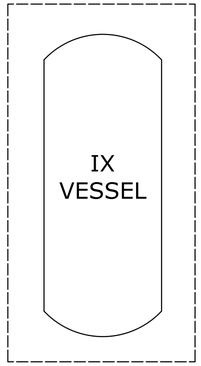
SCADA

PLC

FIELD



GAC SYSTEM P&ID TO BE PROVIDED
BY SELECTED VENDOR



IX SYSTEM P&ID TO BE PROVIDED
BY SELECTED VENDOR

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	A. RAHIMIAN
DESIGNED BY:	M. DONG
DRAWN BY:	J. IRVING
CHECKED BY:	####

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

PRELIMINARY DRAWING
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CONSTRUCTION

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MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

GAC AND IX SYSTEMS
DETAILS

DATE:	FEBRUARY 2019
HAZEN NO.:	20133-000
CONTRACT NO.:	01
DRAWING NUMBER:	I-03

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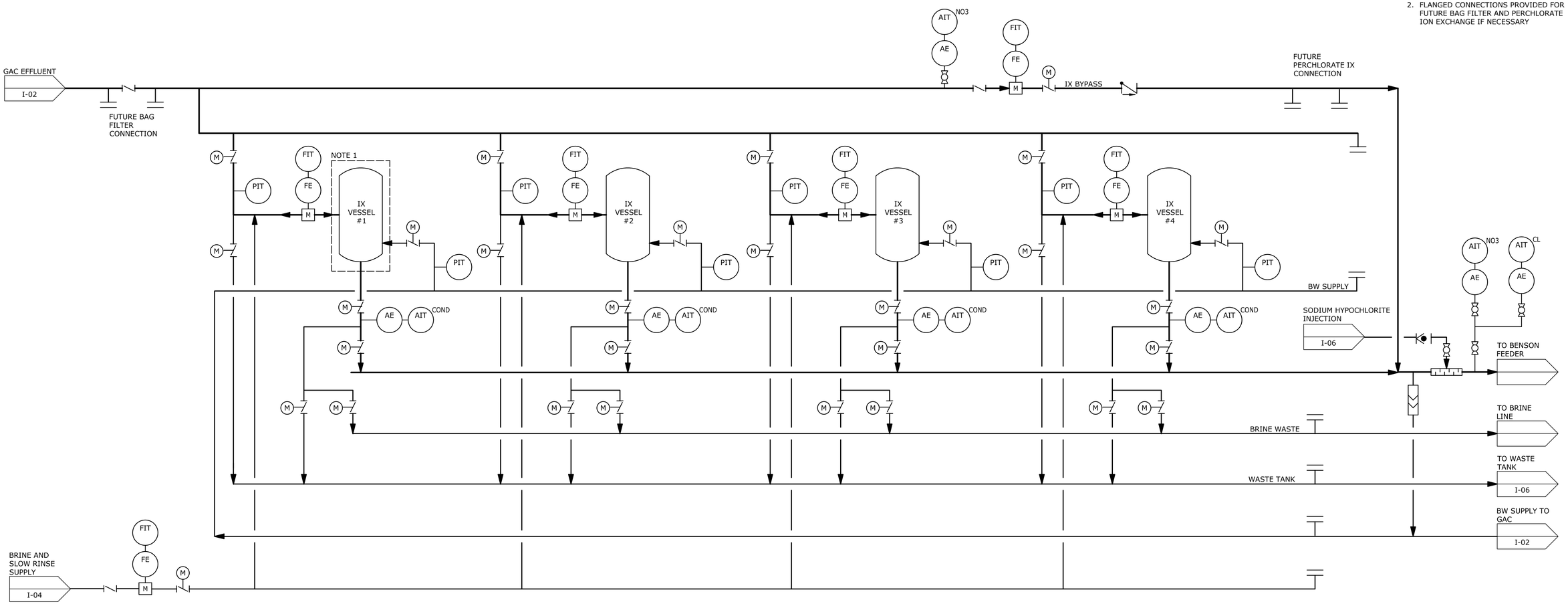
FIELD

NOTES:

1. IX SYSTEM P&ID TO BE PROVIDED BY SELECTED VENDOR REFER TO I-03
2. FLANGED CONNECTIONS PROVIDED FOR FUTURE BAG FILTER AND PERCHLORATE ION EXCHANGE IF NECESSARY



REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	A. RAHIMIAN
DESIGNED BY:	M. DONG
DRAWN BY:	J. IRVING
CHECKED BY:	####
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING
DO NOT USE FOR
CONSTRUCTION

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MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

INSTRUMENTATION ION EXCHANGE P&ID

DATE:	FEBRUARY 2019
HAZEN NO.:	20133-000
CONTRACT NO.:	01
DRAWING NUMBER:	I-04

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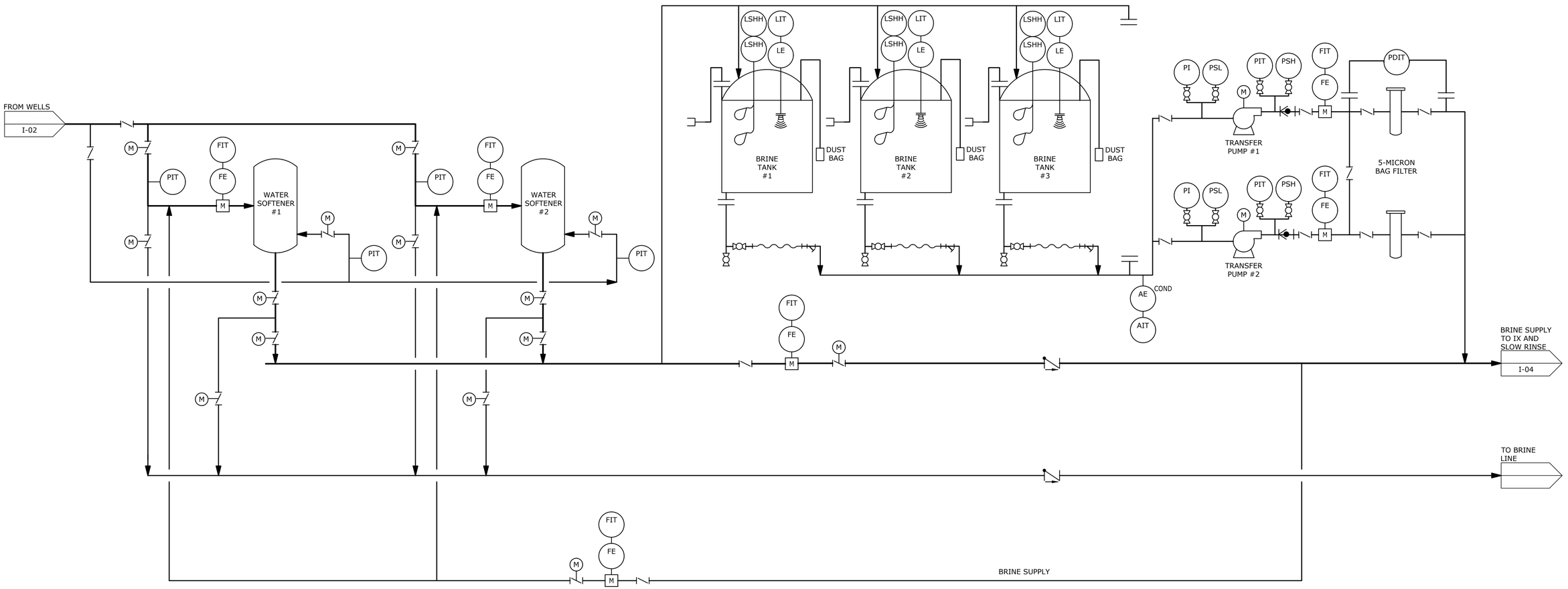
FIELD



REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	A. RAHIMIAN
DESIGNED BY:	M. DONG
DRAWN BY:	J. IRVING
CHECKED BY:	####

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

PRELIMINARY DRAWING
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CONSTRUCTION

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MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

INSTRUMENTATION WATER SOFTENER AND BRINE MAKER SYSTEMS P&ID

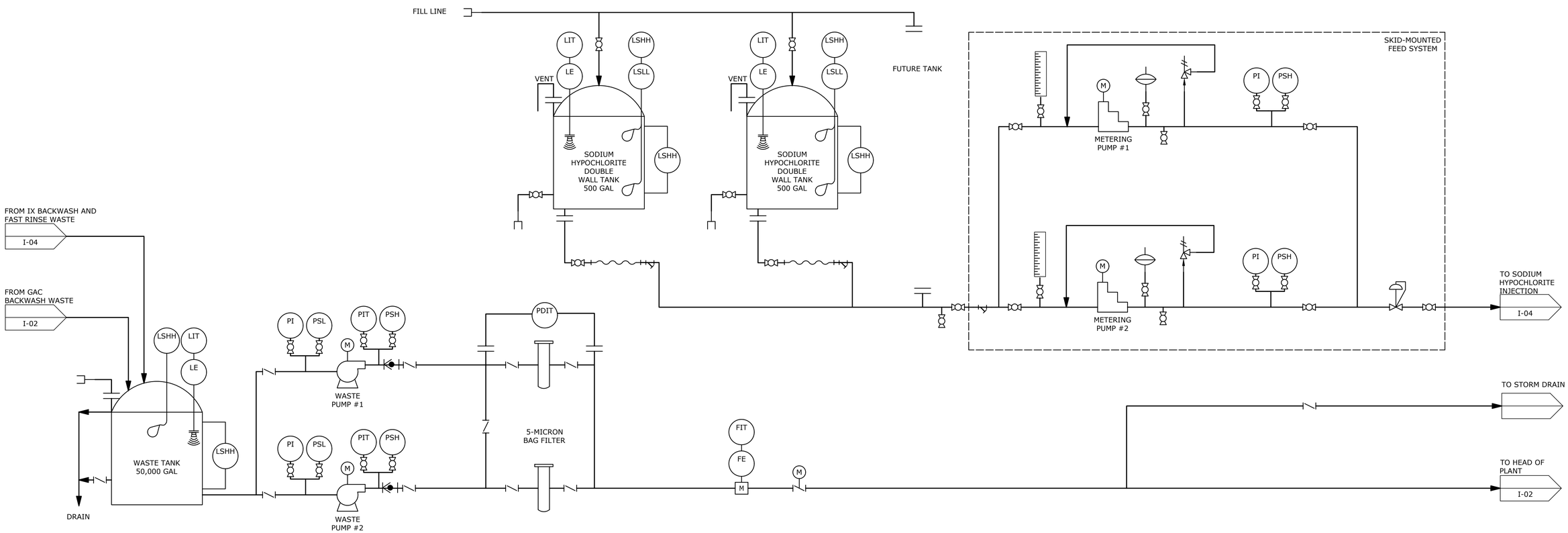
DATE:	FEBRUARY 2019
HAZEN NO.:	20133-000
CONTRACT NO.:	01
DRAWING NUMBER:	I-05

File: C:\USERS\JIRVING\DESKTOP\PW PID PROJECTS\20133-000\I-05 Saved by JIRVING Saved date: 2/21/2019 4:50 PM
PLOT DATE: 2/21/2019 5:05 PM BY: JIRVING

SCADA

PLC

FIELD



REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	A. RAHIMIAN
DESIGNED BY:	M. DONG
DRAWN BY:	J. IRVING
CHECKED BY:	####
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

PRELIMINARY DRAWING
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CONSTRUCTION

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MONTE VISTA WATER DISTRICT
MONTCLAIR, CALIFORNIA

PLANT 30
WELLHEAD TREATMENT

INSTRUMENTATION WASTE TANK AND SODIUM HYPOCHLORITE SYSTEMS P&ID

DATE:	FEBRUARY 2019
HAZEN NO.:	20133-000
CONTRACT NO.:	01
DRAWING NUMBER:	I-06

Appendix B
Field Test Report

Monte Vista Water District

Plant 30 Wellhead Treatment Project

Subject: Field Testing for Chlorine Demand Determination and Wells Sanding

Date Performed: December 26, 2018

By: Vivy Dong, PhD, P.E. and Michelle Chebeir, PhD

MVWD Wells 30 and 32 testing and sampling were performed on 12/26/2018. Rossum test, temperature, pH, turbidity were performed within 1hr post 5 min standard MVWD well purge. Time series SDI samples were collected and analyzed on site, and chlorine demand tests were performed in a laboratory setting.

Rossum test was only performed on well 30, and the result is summarized in **Figure 1**. Sanding occurs in the first 5 min, therefore, it is unlikely well sanding at start up would be an issue. Rossum test was not performed for well 33 due to equipment malfunction.

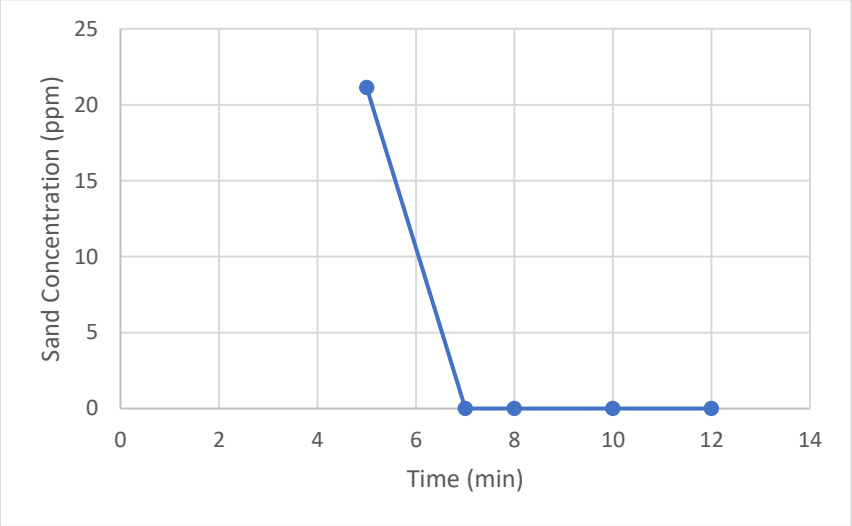


Figure 1. Well 30 Rossum test result

SDI test results are summarized in **Table 1**. Data suggests that particle concentration stayed relatively constant within one hr of well start up. SDI filters were captured and shown in **Figure 2**.

Table 1. SDI result from Wells 30 and 33

	Well 30	Well 33
Time (min)	SDI_{15}	SDI_{15}
0	17.7*	5.7
10	5.6	5.8
15	5.5	5.7
30	5.4	5.6
50	5.5	6.0

* Well 30 SDI at 0 min is a SDI_5.

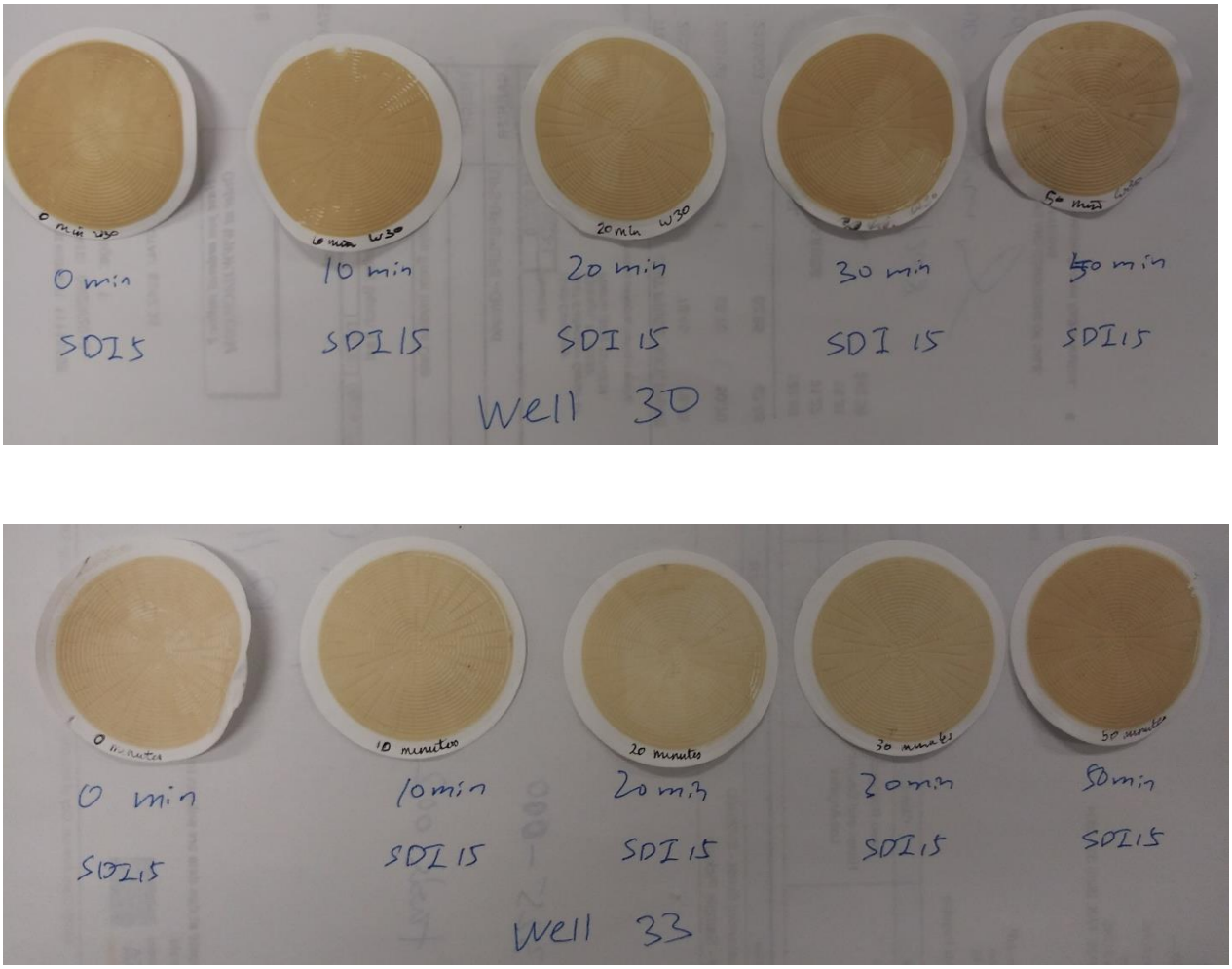


Figure 2. SDI Test Filter for Wells 30 and 33

Chlorine demand test were performed for both Wells 30 and 33, which are summarize in **Figure 3** and **Figure 4**. For Well 33, chlorine demand was close to 0.5 mg/L in a 24 hr time window. Higher chlorine demand in Well 33 was likely due to presence of ammonia as a result of ASR influence.

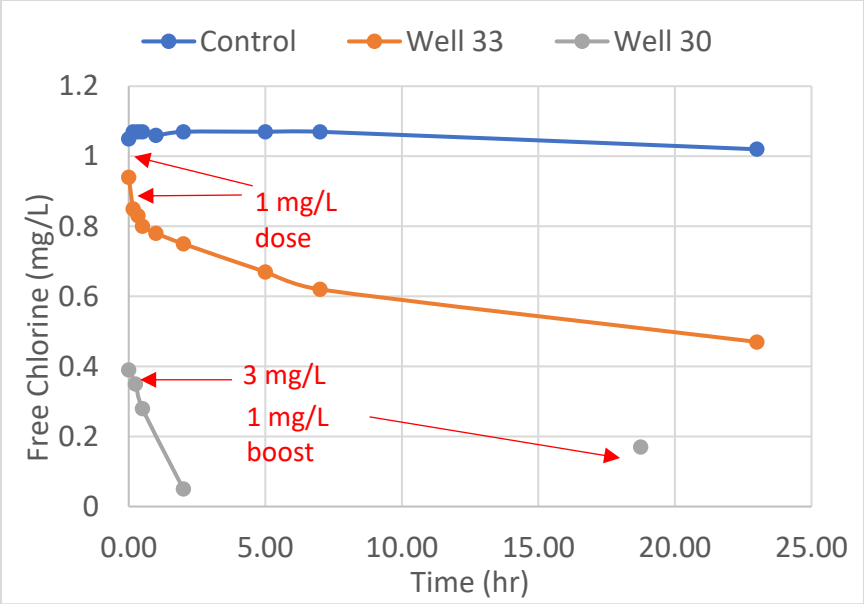


Figure 3. SDI Test Filter for Wells 30 and 33

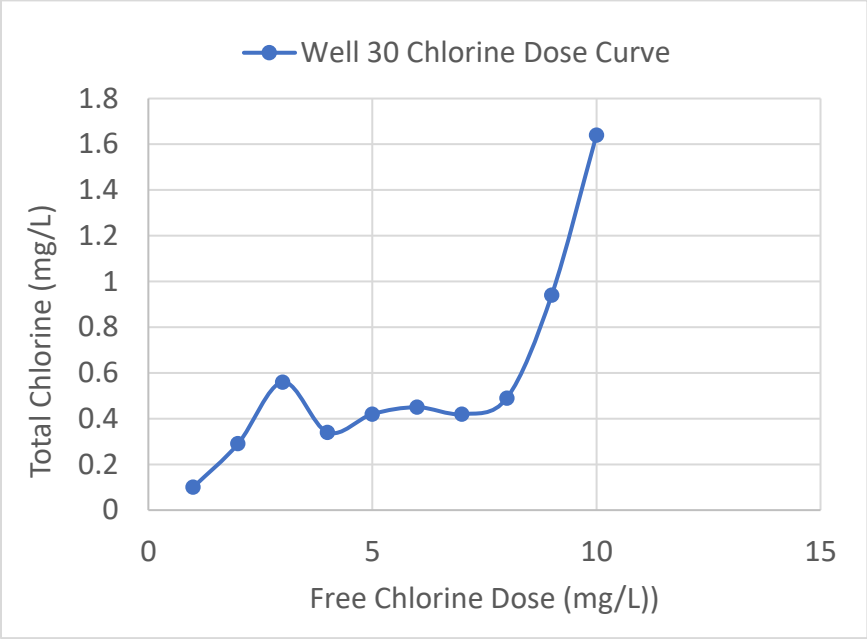


Figure 4. SDI Test Filter for Wells 30 and 33

Temperature, pH and turbidity for within the one hr well start up is summarized in **Table 2**.

Table 2. Wells 30 and 33 field pH, temperature and turbidity

	Well 30			Well 33		
Time (minutes)	pH	Temperature (°C)	Turbidity (NTU)	pH	Temperature (°C)	Turbidity (NTU)
0	8.72	18.2	6.48	7.92	17.0	2.71
5	8.63	17.6	2.64	8.06	16.6	0.93
10	8.76	17.7	2.66	8.07	16.6	0.42
15	8.73	17.7	1.71	8.08	16.3	1.98
20	8.69	17.4	1.14	8.11	16.6	0.55
25	8.73	17.3	1.23	8.22	16.4	1.22
30	8.65	17.2	1.21	8.06	16.6	1.13
35	8.79	17.3	1.05	-	-	-
40	8.8	17.4	1.16	-	-	-
45	8.71	17.40	1.34	-	-	-
50	8.81	17.5	0.98	8.02	16.3	0.97
55	8.69	17.2	0.91	8.05	16.6	3.40
60	8.76	17.3	0.72	8.04	17.0	3.03

Hazen

Hazen and Sawyer
7700 Irvine Center Drive • Suite 200 • Irvine, CA 92618

APPENDIX 2

AIR QUALITY and GHG IMPACT ANALYSES

HS-122
MONTE VISTA WATER DISTRICT PLANT 30 WELLHEAD TREATMENT PROJECT

CITY OF MONTCLAIR, CALIFORNIA

Prepared by:

Giroux & Associates
1800 E Garry St., #205
Santa Ana, CA 92705

Prepared for:

Tom Dodson & Associates
Attn: Kaitlyn Dodson
2150 N. Arrowhead Avenue
San Bernardino, California 92405

Date:

April 8, 2019

Project No.: P19-014 A

ATMOSPHERIC SETTING

The climate of western San Bernardino County, as with all of Southern California, is governed largely by the strength and location of the semi-permanent high-pressure center over the Pacific Ocean and the moderating effects of the nearby vast oceanic heat reservoir. Local climatic conditions are characterized by very warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and comfortable humidity levels. Unfortunately, the same climatic conditions that create such a desirable living climate combine to severely restrict the ability of the local atmosphere to disperse the large volumes of air pollution generated by the population and industry attracted in part by the climate.

The project will be situated in an area where the pollutants generated in coastal portions of the Los Angeles basin undergo photochemical reactions and then move inland across the project site during the daily sea breeze cycle. The resulting smog at times gives San Bernardino County some of the worst air quality in all of California. Fortunately, significant air quality improvement in the last decade suggests that healthful air quality may someday be attained despite the limited regional meteorological dispersion potential.

Winds across the project area are an important meteorological parameter because they control both the initial rate of dilution of locally generated air pollutant emissions as well as controlling their regional trajectory. Winds across the project site display a very unidirectional onshore flow from the southwest-west that is strongest in summer with a weaker offshore return flow from the northeast that is strongest on winter nights when the land is colder than the ocean. The onshore winds during the day average 8-12 mph while the offshore flow is often calm or drifts slowly westward at 1-3 mph.

During the daytime, any locally generated air emissions are thus rapidly transported eastward toward Banning Pass and northeast towards Cajon Pass without generating any localized air quality impacts. The nocturnal drainage winds which move slowly across the area have some potential for localized stagnation, but fortunately, these winds have their origin in the adjacent mountains where background pollution levels are low such that any localized contributions do not create any unhealthful impacts.

In conjunction with the two characteristic wind regimes that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. The summer on-shore flow is capped by a massive dome of warm, sinking air which caps a shallow layer of cooler ocean air. Such marine/subsidence inversions act like a giant lid over the basin. They allow for local mixing of emissions, but they confine the entire polluted air mass within the basin until it escapes into the desert or along the thermal chimneys formed along heated mountain slopes.

One other important local wind pattern within the project vicinity drainages occurs when high pressure over the Great Basin creates funneled, gusty down-canyon flows. The air moving downslope is warmed by a process called "adiabatic compression." Because the air was already dry at the top of the mountains, it is super-dry when it reaches the bottoms of local canyons. Such "Santa Ana" downslope winds can create dust storms and make dust control difficult.

In winter, when the air near the ground cools while the air aloft remains warm, radiation inversions are formed that trap low-level emissions such as automobile exhaust near their source. As background levels of primary vehicular exhaust rise during the seaward return flow, the combination of rising non-local baseline levels plus emissions trapped locally by these radiation inversions creates micro-scale air pollution "hot spots" near freeways, shopping centers and other traffic concentrations in coastal areas of the Los Angeles Basin. Because the nocturnal downslope has its origin in very lightly developed areas of the San Gabriel Mountains, background pollution levels at night in winter are very low in the project vicinity. Localized air pollution contributions are insufficient to create any "hot spot" potential when superimposed upon the clean nocturnal baseline. The combination of winds and inversions are thus critical determinants in leading to the degraded air quality in summer, and the generally good air quality in winter in the project area.

AIR QUALITY SETTING

AMBIENT AIR QUALITY STANDARDS (AAQS)

In order to gauge the significance of the air quality impacts of the proposed project, those impacts, together with existing background air quality levels, must be compared to the applicable ambient air quality standards. These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those people most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise, called "sensitive receptors." Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed. Recent research has shown, however, that chronic exposure to ozone (the primary ingredient in photochemical smog) may lead to adverse respiratory health even at concentrations close to the ambient standard.

National AAQS were established in 1971 for six pollution species with states retaining the option to add other pollutants, require more stringent compliance, or to include different exposure periods. The initial attainment deadline of 1977 was extended several times in air quality problem areas like Southern California. In 2003, the Environmental Protection Agency (EPA) adopted a rule, which extended and established a new attainment deadline for ozone for the year 2021. Because the State of California had established AAQS several years before the federal action and because of unique air quality problems introduced by the restrictive dispersion meteorology, there is considerable difference between state and national clean air standards. Those standards currently in effect in California are shown in Table 1. Sources and health effects of various pollutants are shown in Table 2.

The Federal Clean Air Act Amendments (CAAA) of 1990 required that the U.S. Environmental Protection Agency (EPA) review all national AAQS in light of currently known health effects. EPA was charged with modifying existing standards or promulgating new ones where appropriate. EPA subsequently developed standards for chronic ozone exposure (8+ hours per day) and for very small diameter particulate matter (called "PM-2.5"). New national AAQS were adopted in 1997 for these pollutants.

Planning and enforcement of the federal standards for PM-2.5 and for ozone (8-hour) were challenged by trucking and manufacturing organizations. In a unanimous decision, the U.S. Supreme Court ruled that EPA did not require specific congressional authorization to adopt national clean air standards. The Court also ruled that health-based standards did not require preparation of a cost-benefit analysis. The Court did find, however, that there was some inconsistency between existing and "new" standards in their required attainment schedules. Such attainment-planning schedule inconsistencies centered mainly on the 8-hour ozone standard. EPA subsequently agreed to downgrade the attainment designation for a large number of communities to “non-attainment” for the 8-hour ozone standard.

Table 1

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

Table 1 (continued)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Table 2
Health Effects of Major Criteria Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO_2)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O_3)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood function and nerve construction. • Behavioral and hearing problems in children.
Respirable Particulate Matter (PM-10)	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardio respiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Fine Particulate Matter (PM-2.5)	• Fuel combustion in motor vehicles, equipment, and industrial sources. • Residential and agricultural burning. • Industrial processes. • Also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.	• Increases respiratory disease. • Lung damage. • Cancer and premature death. • Reduces visibility and results in surface soiling.
Sulfur Dioxide (SO_2)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.

Source: California Air Resources Board, 2002.

Evaluation of the most current data on the health effects of inhalation of fine particulate matter prompted the California Air Resources Board (ARB) to recommend adoption of the statewide PM-2.5 standard that is more stringent than the federal standard. This standard was adopted in 2002. The State PM-2.5 standard is more of a goal in that it does not have specific attainment planning requirements like a federal clean air standard, but only requires continued progress towards attainment.

Similarly, the ARB extensively evaluated health effects of ozone exposure. A new state standard for an 8-hour ozone exposure was adopted in 2005, which aligned with the exposure period for the federal 8-hour standard. The California 8-hour ozone standard of 0.07 ppm is more stringent than the federal 8-hour standard of 0.075 ppm. The state standard, however, does not have a specific attainment deadline. California air quality jurisdictions are required to make steady progress towards attaining state standards, but there are no hard deadlines or any consequences of non-attainment. During the same re-evaluation process, the ARB adopted an annual state standard for nitrogen dioxide ($NO_{2)}$ that is more stringent than the corresponding federal standard, and strengthened the state one-hour NO_2 standard.

As part of EPA's 2002 consent decree on clean air standards, a further review of airborne particulate matter (PM) and human health was initiated. A substantial modification of federal clean air standards for PM was promulgated in 2006. Standards for PM-2.5 were strengthened, a new class of PM in the 2.5 to 10 micron size was created, some PM-10 standards were revoked, and a distinction between rural and urban air quality was adopted. In December, 2012, the federal annual standard for PM-2.5 was reduced from 15 $\mu g/m^3$ to 12 $\mu g/m^3$ which matches the California AAQS. The severity of the basin's non-attainment status for PM-2.5 may be increased by this action and thus require accelerated planning for future PM-2.5 attainment.

In response to continuing evidence that ozone exposure at levels just meeting federal clean air standards is demonstrably unhealthful, EPA had proposed a further strengthening of the 8-hour standard. A new 8-hour ozone standard was adopted in 2015 after extensive analysis and public input. The adopted national 8-hour ozone standard is 0.07 ppm which matches the current California standard. It will require three years of ambient data collection, then 2 years of non-attainment findings and planning protocol adoption, then several years of plan development and approval. Final air quality plans for the new standard are likely to be adopted around 2022. Ultimate attainment of the new standard in ozone problem areas such as Southern California might be after 2025.

In 2010 a new federal one-hour primary standard for nitrogen dioxide (NO_2) was adopted. This standard is more stringent than the existing state standard. Based upon air quality monitoring data in the South Coast Air Basin, the California Air Resources Board has requested the EPA to designate the basin as being in attainment for this standard. The federal standard for sulfur dioxide (SO_2) was also recently revised. However, with minimal combustion of coal and mandatory use of low sulfur fuels in California, SO_2 is typically not a problem pollutant.

BASELINE AIR QUALITY

Existing and probable future levels of air quality around the proposed project area can best be best inferred from ambient air quality measurements conducted by the SCAQMD at the Upland monitoring station. This station measures both regional pollution levels such as smog, as well as primary vehicular pollution levels near busy roadways such as carbon monoxide and nitrogen oxides as well as large particulates (PM-10). However smaller particulates (PM-2.5) data is only available at the nearby Ontario station. Table 3 provides a 3-year summary of the monitoring data for the major air pollutants compiled from these air monitoring stations. From these data the following conclusions can be drawn:

1. Photochemical smog (ozone) levels frequently exceed standards. The 1-hour state standard was violated an average of 15 percent of all days in the last three years near Upland. The federal 8-hour standard has been exceeded an average of 17 percent of all days within the same period and the state 8-hour standard has been exceeded approximately 22 percent of all days. While ozone levels are still high, they are much lower than 10 to 20 years ago. Attainment of all clean air standards in the project vicinity is not likely to occur soon, but the severity and frequency of violations is expected to continue to slowly decline during the current decade.

2. PM-10 levels have exceeded the state 24-hour standard on approximately four percent of all measurement days. The three times less stringent federal 24 hour-standard has not been exceeded once in the last three years.

3. A substantial fraction of PM-10 is comprised of ultra-small diameter particulates capable of being inhaled into deep lung tissue (PM-2.5). Both the frequency of violations of particulate standards, as well as high percentage of PM-2.5, are air quality concerns in the project area. However, PM-2.5 readings very infrequently exceed the federal 24-hour PM-2.5 ambient standard with less than one percent of the measured days.

4. More localized pollutants such as carbon monoxide, nitrogen oxides, etc. are very low near the project site because background levels throughout western San Bernardino County, never exceed allowable levels. There is substantial excess dispersive capacity to accommodate localized vehicular air pollutants such as NOx or CO without any threat of violating applicable AAQS.

Although complete attainment of every clean air standard is not yet imminent, extrapolation of the steady improvement trend suggests that such attainment could occur within the reasonably near future.

Table 3
Project Area Air Quality Monitoring Summary – 2015-2017
(Days Standards Were Exceeded and Maximum Observed Levels)

Pollutant/Standard	**2015**	**2016**	**2017**
Ozone			
1-Hour > 0.09 ppm (S)	49	53	66
8-Hour > 0.07 ppm (S)	69	88	87
8- Hour > 0.075 ppm (F)	53	65	72
Max. 1-Hour Conc. (ppm)	0.136	0.156	0.150
Max. 8-Hour Conc. (ppm)	0.110	0.116	0.127
Carbon Monoxide			
1-Hour > 20. ppm (S)	0	0	0
8-Hour > 9. ppm (S, F)	0	0	0
Max 8-Hour Conc. (ppm)	1.3	1.3	1.7
Nitrogen Dioxide			
1-Hour > 0.18 ppm (S)	0	0	0
Max. 1-Hour Conc. (ppm)	0.07	0.07	0.06
Respirable Particulates (PM-10)			
24-Hour > 50 $\mu g/m^3$ (S)	12/336	5/363	26/320
24-Hour > 150 $\mu g/m^3$ (F)	0/336	0/363	0/320
Max. 24-Hr. Conc. ($\mu g/m^3$)	77.	72.	106.
Fine Particulates (PM-2.5) [1]			
24-Hour > 35 $\mu g/m^3$ (F)	1/58	0/55	0/49
Max. 24-Hr. Conc. ($\mu g/m^3$)	39.4	28.4	23.5

S=State Standard
F=Federal Standard

Source: South Coast AQMD
Upland Monitoring Station (5175) ,[1] Ontario 1408 Francis Street (5817)

AIR QUALITY PLANNING

The Federal Clean Air Act (1977 Amendments) required that designated agencies in any area of the nation not meeting national clean air standards must prepare a plan demonstrating the steps that would bring the area into compliance with all national standards. The SCAB could not meet the deadlines for ozone, nitrogen dioxide, carbon monoxide, or PM-10. In the SCAB, the agencies designated by the governor to develop regional air quality plans are the SCAQMD and the Southern California Association of Governments (SCAG). The two agencies first adopted an Air Quality Management Plan (AQMP) in 1979 and revised it several times as earlier attainment forecasts were shown to be overly optimistic.

The 1990 Federal Clean Air Act Amendment (CAAA) required that all states with air-sheds with "serious" or worse ozone problems submit a revision to the State Implementation Plan (SIP). Amendments to the SIP have been proposed, revised and approved over the past decade. The most current regional attainment emissions forecast for ozone precursors (ROG and NOx) and for carbon monoxide (CO) and for particulate matter are shown in Table 4. Substantial reductions in emissions of ROG, NOx and CO are forecast to continue throughout the next several decades. Unless new particulate control programs are implemented, PM-10 and PM-2.5 are forecast to slightly increase.

The Air Quality Management District (AQMD) adopted an updated clean air "blueprint" in August 2003. The 2003 Air Quality Management Plan (AQMP) was approved by the EPA in 2004. The AQMP outlined the air pollution measures needed to meet federal health-based standards for ozone by 2010 and for particulates (PM-10) by 2006. The 2003 AQMP was based upon the federal one-hour ozone standard which was revoked late in 2005 and replaced by an 8-hour federal standard. Because of the revocation of the hourly standard, a new air quality planning cycle was initiated.

With re-designation of the air basin as non-attainment for the 8-hour ozone standard, a new attainment plan was developed. This plan shifted most of the one-hour ozone standard attainment strategies to the 8-hour standard. As previously noted, the attainment date was to "slip" from 2010 to 2021. The updated attainment plan also includes strategies for ultimately meeting the federal PM-2.5 standard.

Because projected attainment by 2021 required control technologies that did not exist yet, the SCAQMD requested a voluntary "bump-up" from a "severe non-attainment" area to an "extreme non-attainment" designation for ozone. The extreme designation was to allow a longer time period for these technologies to develop. If attainment cannot be demonstrated within the specified deadline without relying on "black-box" measures, EPA would have been required to impose sanctions on the region had the bump-up request not been approved. In April 2010, the EPA approved the change in the non-attainment designation from "severe-17" to "extreme." This reclassification set a later attainment deadline (2024), but also required the air basin to adopt even more stringent emissions controls.

Table 4

South Coast Air Basin Emissions Forecasts (Emissions in tons/day)

Pollutant	2015[a]	2020[b]	2025[b]	2030[b]
NOx	357	289	266	257
VOC	400	393	393	391
PM-10	161	165	170	172
PM-2.5	67	68	70	71

[a]2015 Base Year.
[b]With current emissions reduction programs and adopted growth forecasts.
Source: California Air Resources Board, 2013 Almanac of Air Quality

In other air quality attainment plan reviews, EPA had disapproved part of the SCAB PM-2.5 attainment plan included in the AQMP. EPA stated that the current attainment plan relied on PM-2.5 control regulations that had not yet been approved or implemented. It was expected that a number of rules that were pending approval would remove the identified deficiencies. If these issues were not resolved within the next several years, federal funding sanctions for transportation projects could result. The 2012 AQMP included in the current California State Implementation Plan (SIP) was expected to remedy identified PM-2.5 planning deficiencies.

The federal Clean Air Act requires that non-attainment air basins have EPA approved attainment plans in place. This requirement includes the federal one-hour ozone standard even though that standard was revoked almost ten years ago. There was no approved attainment plan for the one-hour federal standard at the time of revocation. Through a legal quirk, the SCAQMD is now required to develop an AQMP for the long since revoked one-hour federal ozone standard. Because the current SIP for the basin contains a number of control measures for the 8-hour ozone standard that are equally effective for one-hour levels, the 2012 AQMP was believed to satisfy hourly attainment planning requirements.

AQMPs are required to be updated every three years. The 2012 AQMP was adopted in early 2013. An updated AQMP was required for completion in 2016. The 2016 AQMP was adopted by the SCAQMD Board in March, 2017, and has been submitted the California Air Resources Board for forwarding to the EPA. The 2016 AQMP acknowledges that motor vehicle emissions have been effectively controlled and that reductions in NOx, the continuing ozone problem pollutant, may need to come from major stationary sources (power plants, refineries, landfill flares, etc.). The current attainment deadlines for all federal non-attainment pollutants are now as follows:

8-hour ozone (70 ppb)	2032
Annual PM-2.5 (12 $\mu g/m^3$)	2025
8-hour ozone (75 ppb)	2024 (former standard)

1-hour ozone (120 ppb)	2023 (rescinded standard)
24-hour PM-2.5 (35 $\mu g/m^3$)	2019

The key challenge is that NOx emission levels, as a critical ozone precursor pollutant, are forecast to continue to exceed the levels that would allow the above deadlines to be met. Unless additional stringent NOx control measures are adopted and implemented, ozone attainment goals may not be met.

The proposed project does not directly relate to the AQMP in that there are no specific air quality programs or regulations governing water improvement projects. Conformity with adopted plans, forecasts and programs relative to population, housing, employment and land use is the primary yardstick by which impact significance of planned growth is determined. The SCAQMD, however, while acknowledging that the AQMP is a growth-accommodating document, does not favor designating regional impacts as less-than-significant just because the proposed development is consistent with regional growth projections. Air quality impact significance for the proposed project has therefore been analyzed on a project-specific basis.

AIR QUALITY IMPACT

STANDARDS OF SIGNIFICANCE

Air quality impacts are considered "significant" if they cause clean air standards to be violated where they are currently met, or if they "substantially" contribute to an existing violation of standards. Any substantial emissions of air contaminants for which there is no safe exposure, or nuisance emissions such as dust or odors, would also be considered a significant impact.

Appendix G of the California CEQA Guidelines offers the following four tests of air quality impact significance. A project would have a potentially significant impact if it:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

c) Expose sensitive receptors to substantial pollutant concentrations?

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Primary Pollutants

Air quality impacts generally occur on two scales of motion. Near an individual source of emissions or a collection of sources such as a crowded intersection or parking lot, levels of those pollutants that are emitted in their already unhealthful form will be highest. Carbon monoxide (CO) is an example of such a pollutant. Primary pollutant impacts can generally be evaluated directly in comparison to appropriate clean air standards. Violations of these standards where they are currently met, or a measurable worsening of an existing or future violation, would be considered a significant impact. Many particulates, especially fugitive dust emissions, are also primary pollutants. Because of the non-attainment status of the South Coast Air Basin (SCAB) for PM-10, an aggressive dust control program is required to control fugitive dust during project construction.

Secondary Pollutants

Many pollutants, however, require time to transform from a more benign form to a more unhealthful contaminant. Their impact occurs regionally far from the source. Their incremental regional impact is minute on an individual basis and cannot be quantified except through complex photochemical computer models. Analysis of significance of such emissions is based upon a specified amount of emissions (pounds, tons, etc.) even though there is no way to translate those emissions directly into a corresponding ambient air quality impact.

Because of the chemical complexity of primary versus secondary pollutants, the SCAQMD has designated significant emissions levels as surrogates for evaluating regional air quality impact

significance independent of chemical transformation processes. Projects with daily emissions that exceed any of the following emission thresholds are recommended by the SCAQMD to be considered significant under CEQA guidelines.

Table 5
Daily Emissions Thresholds

Pollutant	Construction	Operations
ROG	75	55
NOx	100	55
CO	550	550
PM-10	150	150
PM-2.5	55	55
SOx	150	150
Lead	3	3

Source: SCAQMD CEQA Air Quality Handbook, November, 1993 Rev.

Additional Indicators

In its CEQA Handbook, the SCAQMD also states that additional indicators should be used as screening criteria to determine the need for further analysis with respect to air quality. The additional indicators are as follows:

- Project could interfere with the attainment of the federal or state ambient air quality standards by either violating or contributing to an existing or projected air quality violation

- Project could result in population increases within the regional statistical area which would be in excess of that projected in the AQMP and in other than planned locations for the project's build-out year.

- Project could generate vehicle trips that cause a CO hot spot.

CONSTRUCTION ACTIVITY IMPACTS

CalEEMod was developed by the SCAQMD to provide a model by which to calculate construction emissions from a variety of land use projects. It calculates both the daily maximum and annual average emissions for criteria pollutants as well as total or annual greenhouse gas (GHG) emissions.

The proposed project consists of development of a Wellhead Treatment Plant within the existing Well 30 site, to treat water from Wells 30, 32, and Well 33. On-site improvements include demolition of portions of the existing site, site civil improvements including paving and grading, and yard piping. Off-site construction include installation of pipelines such as a raw water pipelines from Well 32 and 33, the treated water pipeline (plant effluent), brine pipeline, and waste pipeline to the sewer. In total installation of approximately 8,100 linear feet of pipeline between 4-20 inch diameter will be required. The pipeline will on-average be installed in 3-foot wide trenches.

The project is estimated to require 10 months of construction beginning in November 2019. The Wellhead treatment project will require 15 daily workers and the off-site pipeline will require 10 daily workers. With the off-site pipeline progress rate of 100-150 linear feet per day the total duration is expected to be approximately 80 days.

Although exhaust emissions will result from on and off-site equipment, the exact types and numbers of equipment will vary among contractors such that such emissions cannot be quantified with certainty. The CalEEMod.2016.3.2 computer model was used to calculate emissions from the prototype construction equipment fleet and schedule as indicated in Table 6.

Table 6
CalEEMod Construction Activity Equipment Fleet and Workdays

Wellhead Site

Demolition (1 month) 100 CY demo export	1 Concrete Saw
	1 Dozer
	1 Loader/Backhoe
	2 Skid Steer Loaders
Grade (1 month)	1 Loader/Backhoe
	1 Dozer
	1 Excavator
	1 Grader
Pave/Pour Concrete Slabs (3 months)	1 Paver
	1 Roller
	1 Loader/Backhoe
	4 Mixers
	1 Compactor
Construction and Yard Piping/Drainage (5 months)	1 Trencher
	2 Forklifts
	1 Crane
	2 Skid Steer Loaders

Off-Site Pipeline Installation

Phase Name and Duration	**Equipment**
Prep and Concrete Removal (20 days)	1 Concrete Saw
	2 Skid Steer Loaders
	2 Loader/Backhoes
Trenching and Pipeline Install (40 days)	2 Trenchers
	1 Excavator
	2 Forklifts
	1 Loader/Backhoes
Backfill and Paving (20 days)	4 Mixers
	1 Paver
	1 Rollers
	1 Loader/Backhoes
	2 Compactors

Utilizing the indicated equipment fleet shown in Tables 6 the following worst-case daily construction emissions are calculated by CalEEMod and are listed in Table 7.

Table 7
Construction Activity Emissions
Maximum Daily Emissions (pounds/day)

Maximal Construction Emissions per Calendar Year	ROG	NOx	CO	SO_2	PM-10	PM-2.5
Plant 30						
2019	1.5	14.8	11.1	0.0	1.8	1.1
2020	1.4	13.9	8.8	0.0	1.7	1.1
Off-Site Piping						
2020	1.4	12.1	11.2	0.0	1.5	0.9
Yearly Totals						
2019	**1.5**	**14.8**	**11.1**	**0.0**	**1.8**	**1.1**
2020	**2.8**	**26.0**	**20.0**	**0.0**	**3.2**	**2.0**
SCAQMD Thresholds	75	100	550	150	150	55

Source: CalEEMod.2016.3.2 output in appendix

Peak daily construction activity emissions are below their respective SCAQMD CEQA significance thresholds, even if activities overlapped, without the need for any additional mitigation.

LOCALIZED SIGNIFICANCE THRESHOLDS

The SCAQMD has developed analysis parameters to evaluate ambient air quality on a local level in addition to the more regional emissions-based thresholds of significance. These analysis elements are called Localized Significance Thresholds (LSTs). LSTs were developed in response to Governing Board's Environmental Justice Enhancement Initiative 1-4 and the LST methodology was provisionally adopted in October 2003 and formally approved by SCAQMD's Mobile Source Committee in February 2005.

For the proposed project, the primary source of possible LST impact would be during construction. LST screening tables are available various source-receptor distances. For this project the most stringent thresholds for a 1-acre site and a 25-meter source-receptor distance was used to compare to emissions as shown in Table 8.

Table 8
LST and Project Emissions (pounds/day)

LST 1 acre/25 meters Northwest San Bernardino Valley	CO	NOx	PM-10	PM-2.5
LST Thresholds	863	118	5	4
Max On-Site Emissions				
Plant 30 Wellhead	11	15	2	1
Off-Site Pipeline	11	12	2	1

LSTs were compared to the maximum daily construction activities. As seen in Table 8, even without use of mitigation, emissions easily meet the LST for construction thresholds. LST impacts are less-than-significant.

OPERATIONAL IMPACTS

Operational air pollution emissions will be minimal. Electrical generation of power will be used for pumping and treatment. Electrical consumption has no single uniquely related air pollution emissions source because power is supplied to and drawn from a regional grid. Electrical power is generated regionally by a combination of non-combustion (nuclear, hydroelectric, solar, wind, geothermal, etc.) and fossil fuel combustion sources. There is no direct nexus between consumption and the type of power source or the air basin where the source is located. Operational air pollution emissions from electrical generation are therefore not attributable on a project-specific basis.

ODOR IMPACTS

Project operations (pumping and treatment, and distribution) are an essentially closed system with negligible odor potential. Groundwater contains minimal organic matter capable of odor generation. Chlorine storage and dispensing is prevented from being released to the atmosphere by a required containment system.

The site uses low concentrations of chlorine for water disinfection, but it will be injected into the water stream and have no airborne pathways. The solution will be stored in tanks and the solution will be pumped to the inline mixer. The dosing is controlled by a metering pump installed close to the storage tank. The quality of the disinfected water coming out of the online mixer will be analyzed by a Chlorine Analyzer. Chemical levels will be diluted to below their odor threshold.

CONSTRUCTION EMISSIONS MINIMIZATION

Construction activities are not anticipated to cause dust emissions to exceed SCAQMD CEQA thresholds. Nevertheless, emissions minimization through enhanced dust control measures is recommended for use because of the non-attainment status of the air basin. Recommended measures include:

Fugitive Dust Control

- Apply soil stabilizers or moisten inactive areas.
- Water exposed surfaces as needed to avoid visible dust leaving the construction site (typically 2-3 times/day).
- Cover all stock piles with tarps at the end of each day or as needed.
- Provide water spray during loading and unloading of earthen materials.
- Minimize in-out traffic from construction zone
- Cover all trucks hauling dirt, sand, or loose material and require all trucks to maintain at least two feet of freeboard
- Sweep streets daily if visible soil material is carried out from the construction site

Similarly, ozone precursor emissions (ROG and NOx) are calculated to be below SCAQMD CEQA thresholds. However, because of the regional non-attainment for photochemical smog, the use of reasonably available control measures for diesel exhaust is recommended. Combustion emissions control options include:

Exhaust Emissions Control

- Utilize well-tuned off-road construction equipment.
- Establish a preference for contractors using Tier 3 or better rated heavy equipment.
- Enforce 5-minute idling limits for both on-road trucks and off-road equipment.

GREENHOUSE GAS EMISSIONS

GREENHOUSE GAS EMISSIONS

"Greenhouse gases" (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as "global warming." These greenhouse gases contribute to an increase in the temperature of the earth's atmosphere by transparency to short wavelength visible sunlight, but near opacity to outgoing terrestrial long wavelength heat radiation in some parts of the infrared spectrum. The principal greenhouse gases (GHGs) are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. For purposes of planning and regulation, Section 15364.5 of the California Code of Regulations defines GHGs to include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. Fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of GHG emissions globally. Industrial and commercial sources are the second largest contributors of GHG emissions with about one-fourth of total emissions.

California has passed several bills and the Governor has signed at least three executive orders regarding greenhouse gases. GHG statues and executive orders (EO) include AB 32, SB 1368, EO S-03-05, EO S-20-06 and EO S-01-07.

AB 32 is one of the most significant pieces of environmental legislation that California has adopted. Among other things, it is designed to maintain California's reputation as a "national and international leader on energy conservation and environmental stewardship." It will have wide-ranging effects on California businesses and lifestyles as well as far reaching effects on other states and countries. A unique aspect of AB 32, beyond its broad and wide-ranging mandatory provisions and dramatic GHG reductions are the short time frames within which it must be implemented. Major components of the AB 32 include:

- Require the monitoring and reporting of GHG emissions beginning with sources or categories of sources that contribute the most to statewide emissions.
- Requires immediate "early action" control programs on the most readily controlled GHG sources.
- Mandates that by 2020, California's GHG emissions be reduced to 1990 levels.
- Forces an overall reduction of GHG gases in California by 25-40%, from business as usual, to be achieved by 2020.
- Must complement efforts to achieve and maintain federal and state ambient air quality standards and to reduce toxic air contaminants.

Statewide, the framework for developing the implementing regulations for AB 32 is under way. Maximum GHG reductions are expected to derive from increased vehicle fuel efficiency, from greater use of renewable energy and from increased structural energy efficiency. Additionally, through the California Climate Action Registry (CCAR now called the Climate Action Reserve), general and industry-specific protocols for assessing and reporting GHG emissions have been

developed. GHG sources are categorized into direct sources (i.e. company owned) and indirect sources (i.e. not company owned). Direct sources include combustion emissions from on-and off-road mobile sources, and fugitive emissions. Indirect sources include off-site electricity generation and non-company owned mobile sources.

GREENHOUSE GAS EMISSIONS SIGNIFICANCE THRESHOLDS

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

- Generates GHG emissions, directly or indirectly, that may have a significant impact on the environment, or,

- Conflicts with an applicable plan, policy or regulation adopted to reduce GHG emissions.

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

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

The significance of those emissions then must be evaluated; the selection of a threshold of significance must take into consideration what level of GHG emissions would be cumulatively considerable. The guidelines are clear that they do not support a zero net emissions threshold. If the lead agency does not have sufficient expertise in evaluating GHG impacts, it may rely on thresholds adopted by an agency with greater expertise.

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

PROJECT RELATED GHG EMISSIONS GENERATION

Construction Activity GHG Emissions

The project is assumed to require 10 months for construction starting in November of 2019 and continuing September 2020. During project construction, the CalEEMod2016.3.2 computer model predicts that the construction activities will generate the annual CO_2e emissions identified in Table 9.

Table 9
Construction Emissions (Metric Tons $CO_2(e)$)

Year 2019 Wellhead	38.1
Year 2020Wellhead	116.0
Year 2020 Off-Site Piping	57.3
Total	**211.4**
Amortized	7.0
Significance Threshold	3,000

*CalEEMod Output provided in appendix

SCAQMD GHG emissions policy from construction activities is to amortize emissions over a 30-year lifetime. The amortized level is also provided. GHG impacts from construction are considered individually less-than-significant.

CONSISTENCY WITH GHG PLANS, PROGRAMS AND POLICIES

The City of Montclair participated in preparation of the San Bernardino County Regional Greenhouse Gas Reduction Plan in March 2014. In this document, the City of Montclair selected a goal to reduce its GHG emissions to a level that is 20% below its 2008 GHG emissions by 2020. The City plans for these reductions to stem from building energy alternatives, wastewater reuse, smartbus technologies and other performance standard for new development.

Water conveyance and treatment is a very small component of the total City of Montclair GHG emissions inventory. However, it is likely that this project would be considered GHG positive as it provides a localized water source and distribution system.

CALEEMOD2016.3.2 COMPUTER MODEL OUTPUT

WELLHEAD 30 ON-SITE IMPROVEMENTS

- **DAILY EMISISONS**
- **ANNUAL EMISSIONS**

OFF-SITE PIPELINE INSTALLATION

- **DAILY EMISISONS**
- **ANNUAL EMISSIONS**

HS-122 Montclair Wellhead 30 Treatment Proj

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site 30 approx 0.6 acres

Construction Phase - Demo: 1 month, Grading: 1 month, Pave and Pour Slab: 3 months, Construction and Piping: 5 months

Trips and VMT - 15 workers per proj information, 100 miles rt demo

Demolition - 100 CY= 140 tons debris: assume loose aggregate

Off-road Equipment - Demo: 1 saw, 1 dozer, 1 loader/backhoe, 2 skid steer loaders

Off-road Equipment - Grading: 1 dozer, 1 loader/backhoe, 1 excavator, 1 grader

Off-road Equipment - Construction: 1 crane, 2 forklifts, 1 trencher, 2 skid/steer loaders

Off-road Equipment - Paving: 1 paver, 1 roller, 1 loader/backhoe, 4 mixers, 1 compactor

HS-122 Montclair Wellhead 30 Treatment Proj - South Coast Air Basin, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	110.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	22.00
tblConstructionPhase	NumDays	5.00	66.00
tblConstructionPhase	PhaseEndDate	4/7/2020	9/4/2020
tblConstructionPhase	PhaseEndDate	11/14/2019	12/2/2019
tblConstructionPhase	PhaseEndDate	11/19/2019	1/1/2020
tblConstructionPhase	PhaseEndDate	4/14/2020	4/3/2020
tblConstructionPhase	PhaseStartDate	11/20/2019	4/4/2020
tblConstructionPhase	PhaseStartDate	11/16/2019	12/3/2019
tblConstructionPhase	PhaseStartDate	4/8/2020	1/3/2020
tblLandUse	LotAcreage	0.00	0.60
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00

tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.4884	14.8383	11.0835	0.0207	1.0881	0.7226	1.7575	0.5027	0.6832	1.1186	0.0000	2,031.7102	2,031.7102	0.4952	0.0000	2,040.8231
2020	1.3721	13.8896	8.8100	0.0189	1.0881	0.6192	1.7073	0.5027	0.5697	1.0724	0.0000	1,839.5264	1,839.5264	0.4939	0.0000	1,851.8725
Maximum	**1.4884**	**14.8383**	**11.0835**	**0.0207**	**1.0881**	**0.7226**	**1.7575**	**0.5027**	**0.6832**	**1.1186**	**0.0000**	**2,031.7102**	**2,031.7102**	**0.4952**	**0.0000**	**2,040.8231**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	1.4884	11.8600	11.0835	0.0207	1.0881	0.7226	1.7575	0.5027	0.6832	1.1186	0.0000	2,031.7102	2,031.7102	0.4952	0.0000	2,040.8231
2020	1.3721	7.3360	8.8100	0.0189	1.0881	0.6192	1.7073	0.5027	0.5697	1.0724	0.0000	1,839.5264	1,839.5264	0.4939	0.0000	1,851.8725
Maximum	**1.4884**	**11.8600**	**11.0835**	**0.0207**	**1.0881**	**0.7226**	**1.7575**	**0.5027**	**0.6832**	**1.1186**	**0.0000**	**2,031.7102**	**2,031.7102**	**0.4952**	**0.0000**	**2,040.8231**

	ROG	NOx	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**	**33.18**	**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**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/1/2019	12/2/2019	5	22	
2	Grading	Grading	12/3/2019	1/1/2020	5	22	
3	Paving	Paving	1/3/2020	4/3/2020	5	66	
4	Building Construction	Building Construction	4/4/2020	9/4/2020	5	110	

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
Demolition	Skid Steer Loaders	2	6.00	65	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Trenchers	1	8.00	78	0.50
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Grading	Excavators	1	6.00	158	0.38
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Grading	Rubber Tired Dozers	1	4.00	247	0.40
Paving	Plate Compactors	1	7.00	8	0.43
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Building Construction	Skid Steer Loaders	2	6.00	65	0.37
Paving	Tractors/Loaders/Backhoes	1		97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	5	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	30.00	0.00	14.00	14.70	6.90	50.00	LD_Mix	HDT_Mix	HHDT
Grading	4	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	30.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1362	0.0000	0.1362	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.3308	13.0686	9.6565	0.0160		0.7183	0.7183		0.6791	0.6791		1,552.9553	1,552.9553	0.3455		1,561.5939
Total	**1.3308**	**13.0686**	**9.6565**	**0.0160**	**0.1362**	**0.7183**	**0.8544**	**0.0206**	**0.6791**	**0.6998**		**1,552.9553**	**1,552.9553**	**0.3455**		**1,561.5939**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0119	0.3793	0.0832	1.1500e-003	0.0278	1.7100e-003	0.0295	7.6100e-003	1.6400e-003	9.2400e-003		124.6465	124.6465	7.8800e-003		124.8434
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
Worker	0.1457	0.1019	1.3438	3.5600e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		354.1084	354.1084	0.0111		354.3859
Total	**0.1576**	**0.4812**	**1.4270**	**4.7100e-003**	**0.3631**	**4.3300e-003**	**0.3674**	**0.0965**	**4.0600e-003**	**0.1006**		**478.7549**	**478.7549**	**0.0190**		**479.2293**

3.2 Demolition - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1362	0.0000	0.1362	0.0206	0.0000	0.0206			0.0000			0.0000
Off-Road	1.3308	11.3788	9.6565	0.0160		0.7183	0.7183		0.6791	0.6791	0.0000	1,552.9553	1,552.9553	0.3455		1,561.5939
Total	**1.3308**	**11.3788**	**9.6565**	**0.0160**	**0.1362**	**0.7183**	**0.8544**	**0.0206**	**0.6791**	**0.6998**	**0.0000**	**1,552.9553**	**1,552.9553**	**0.3455**		**1,561.5939**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0119	0.3793	0.0832	1.1500e-003	0.0278	1.7100e-003	0.0295	7.6100e-003	1.6400e-003	9.2400e-003		124.6465	124.6465	7.8800e-003		124.8434
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
Worker	0.1457	0.1019	1.3438	3.5600e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		354.1084	354.1084	0.0111		354.3859
Total	**0.1576**	**0.4812**	**1.4270**	**4.7100e-003**	**0.3631**	**4.3300e-003**	**0.3674**	**0.0965**	**4.0600e-003**	**0.1006**		**478.7549**	**478.7549**	**0.0190**		**479.2293**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.3025	14.7363	7.6950	0.0155		0.6668	0.6668		0.6134	0.6134		1,529.9352	1,529.9352	0.4841		1,542.0366
Total	**1.3025**	**14.7363**	**7.6950**	**0.0155**	**0.7528**	**0.6668**	**1.4195**	**0.4138**	**0.6134**	**1.0272**		**1,529.9352**	**1,529.9352**	**0.4841**		**1,542.0366**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1457	0.1019	1.3438	3.5600e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		354.1084	354.1084	0.0111		354.3859
Total	**0.1457**	**0.1019**	**1.3438**	**3.5600e-003**	**0.3353**	**2.6200e-003**	**0.3380**	**0.0889**	**2.4200e-003**	**0.0914**		**354.1084**	**354.1084**	**0.0111**		**354.3859**

3.3 Grading - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.3025	7.7902	7.6950	0.0155		0.6668	0.6668		0.6134	0.6134	0.0000	1,529.9352	1,529.9352	0.4841		1,542.0366
Total	**1.3025**	**7.7902**	**7.6950**	**0.0155**	**0.7528**	**0.6668**	**1.4195**	**0.4138**	**0.6134**	**1.0272**	**0.0000**	**1,529.9352**	**1,529.9352**	**0.4841**		**1,542.0366**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1457	0.1019	1.3438	3.5600e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		354.1084	354.1084	0.0111		354.3859
Total	**0.1457**	**0.1019**	**1.3438**	**3.5600e-003**	**0.3353**	**2.6200e-003**	**0.3380**	**0.0889**	**2.4200e-003**	**0.0914**		**354.1084**	**354.1084**	**0.0111**		**354.3859**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.2375	13.7986	7.5873	0.0154		0.6167	0.6167		0.5673	0.5673		1,496.3755	1,496.3755	0.4840		1,508.4744
Total	**1.2375**	**13.7986**	**7.5873**	**0.0154**	**0.7528**	**0.6167**	**1.3694**	**0.4138**	**0.5673**	**0.9811**		**1,496.3755**	**1,496.3755**	**0.4840**		**1,508.4744**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1346	0.0910	1.2227	3.4400e-003	0.3353	2.5600e-003	0.3379	0.0889	2.3600e-003	0.0913		343.1509	343.1509	9.8900e-003		343.3981
Total	**0.1346**	**0.0910**	**1.2227**	**3.4400e-003**	**0.3353**	**2.5600e-003**	**0.3379**	**0.0889**	**2.3600e-003**	**0.0913**		**343.1509**	**343.1509**	**9.8900e-003**		**343.3981**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	1.2375	7.2450	7.5873	0.0154		0.6167	0.6167		0.5673	0.5673	0.0000	1,496.3755	1,496.3755	0.4840		1,508.4744
Total	**1.2375**	**7.2450**	**7.5873**	**0.0154**	**0.7528**	**0.6167**	**1.3694**	**0.4138**	**0.5673**	**0.9811**	**0.0000**	**1,496.3755**	**1,496.3755**	**0.4840**		**1,508.4744**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1346	0.0910	1.2227	3.4400e-003	0.3353	2.5600e-003	0.3379	0.0889	2.3600e-003	0.0913		343.1509	343.1509	9.8900e-003		343.3981
Total	**0.1346**	**0.0910**	**1.2227**	**3.4400e-003**	**0.3353**	**2.5600e-003**	**0.3379**	**0.0889**	**2.3600e-003**	**0.0913**		**343.1509**	**343.1509**	**9.8900e-003**		**343.3981**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6233	5.6044	5.3022	8.9700e-003		0.2871	0.2871		0.2683	0.2683		802.3896	802.3896	0.2196		807.8797
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6233**	**5.6044**	**5.3022**	**8.9700e-003**		**0.2871**	**0.2871**		**0.2683**	**0.2683**		**802.3896**	**802.3896**	**0.2196**		**807.8797**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0332	1.0532	0.2562	2.5500e-003	0.0640	5.2100e-003	0.0692	0.0184	4.9900e-003	0.0234		272.7913	272.7913	0.0175		273.2278
Worker	0.1346	0.0910	1.2227	3.4400e-003	0.3353	2.5600e-003	0.3379	0.0889	2.3600e-003	0.0913		343.1509	343.1509	9.8900e-003		343.3981
Total	**0.1678**	**1.1442**	**1.4789**	**5.9900e-003**	**0.3993**	**7.7700e-003**	**0.4071**	**0.1074**	**7.3500e-003**	**0.1147**		**615.9422**	**615.9422**	**0.0274**		**616.6260**

3.4 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6233	5.3846	5.3022	8.9700e-003		0.2871	0.2871		0.2683	0.2683	0.0000	802.3896	802.3896	0.2196		807.8797
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.6233**	**5.3846**	**5.3022**	**8.9700e-003**		**0.2871**	**0.2871**		**0.2683**	**0.2683**	**0.0000**	**802.3896**	**802.3896**	**0.2196**		**807.8797**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0332	1.0532	0.2562	2.5500e-003	0.0640	5.2100e-003	0.0692	0.0184	4.9900e-003	0.0234		272.7913	272.7913	0.0175		273.2278
Worker	0.1346	0.0910	1.2227	3.4400e-003	0.3353	2.5600e-003	0.3379	0.0889	2.3600e-003	0.0913		343.1509	343.1509	9.8900e-003		343.3981
Total	**0.1678**	**1.1442**	**1.4789**	**5.9900e-003**	**0.3993**	**7.7700e-003**	**0.4071**	**0.1074**	**7.3500e-003**	**0.1147**		**615.9422**	**615.9422**	**0.0274**		**616.6260**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9823	10.0321	7.5495	0.0117		0.6094	0.6094		0.5606	0.5606		1,128.5062	1,128.5062	0.3650		1,137.6308
Total	**0.9823**	**10.0321**	**7.5495**	**0.0117**		**0.6094**	**0.6094**		**0.5606**	**0.5606**		**1,128.5062**	**1,128.5062**	**0.3650**		**1,137.6308**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1346	0.0910	1.2227	3.4400e-003	0.3353	2.5600e-003	0.3379	0.0889	2.3600e-003	0.0913		343.1509	343.1509	9.8900e-003		343.3981
Total	**0.1346**	**0.0910**	**1.2227**	**3.4400e-003**	**0.3353**	**2.5600e-003**	**0.3379**	**0.0889**	**2.3600e-003**	**0.0913**		**343.1509**	**343.1509**	**9.8900e-003**		**343.3981**

3.5 Building Construction - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9823	4.6420	7.5495	0.0117		0.6094	0.6094		0.5606	0.5606	0.0000	1,128.5062	1,128.5062	0.3650		1,137.6308
Total	**0.9823**	**4.6420**	**7.5495**	**0.0117**		**0.6094**	**0.6094**		**0.5606**	**0.5606**	**0.0000**	**1,128.5062**	**1,128.5062**	**0.3650**		**1,137.6308**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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
Worker	0.1346	0.0910	1.2227	3.4400e-003	0.3353	2.5600e-003	0.3379	0.0889	2.3600e-003	0.0913		343.1509	343.1509	9.8900e-003		343.3981
Total	**0.1346**	**0.0910**	**1.2227**	**3.4400e-003**	**0.3353**	**2.5600e-003**	**0.3379**	**0.0889**	**2.3600e-003**	**0.0913**		**343.1509**	**343.1509**	**9.8900e-003**		**343.3981**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	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
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

HS-122 Montclair Wellhead 30 Treatment Proj

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	0.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site 30 approx 0.6 acres

Construction Phase - Demo: 1 month, Grading: 1 month, Pave and Pour Slab: 3 months, Construction and Piping: 5 months

Trips and VMT - 15 workers per proj information, 100 miles rt demo

Demolition - 100 CY= 140 tons debris: assume loose aggregate

Off-road Equipment - Demo: 1 saw, 1 dozer, 1 loader/backhoe, 2 skid steer loaders

Off-road Equipment - Grading: 1 dozer, 1 loader/backhoe, 1 excavator, 1 grader

Off-road Equipment - Construction: 1 crane, 2 forklifts, 1 trencher, 2 skid/steer loaders

Off-road Equipment - Paving: 1 paver, 1 roller, 1 loader/backhoe, 4 mixers, 1 compactor

HS-122 Montclair Wellhead 30 Treatment Proj - South Coast Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	110.00
tblConstructionPhase	NumDays	10.00	22.00
tblConstructionPhase	NumDays	2.00	22.00
tblConstructionPhase	NumDays	5.00	66.00
tblConstructionPhase	PhaseEndDate	4/7/2020	9/4/2020
tblConstructionPhase	PhaseEndDate	11/14/2019	12/2/2019
tblConstructionPhase	PhaseEndDate	11/19/2019	1/1/2020
tblConstructionPhase	PhaseEndDate	4/14/2020	4/3/2020
tblConstructionPhase	PhaseStartDate	11/20/2019	4/4/2020
tblConstructionPhase	PhaseStartDate	11/16/2019	12/3/2019
tblConstructionPhase	PhaseStartDate	4/8/2020	1/3/2020
tblLandUse	LotAcreage	0.00	0.60
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00

tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Grading
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	UsageHours	1.00	4.00
tblOffRoadEquipment	UsageHours	1.00	4.00
tblTripsAndVMT	HaulingTripLength	20.00	50.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	0.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	18.00	30.00

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					
2019	0.0316	0.3053	0.2149	4.2000e-004	0.0168	0.0150	0.0318	6.5300e-003	0.0140	0.0205	0.0000	37.8909	37.8909	8.3400e-003	0.0000	38.0996
2020	0.0882	0.7881	0.7036	1.3200e-003	0.0316	0.0437	0.0753	8.5400e-003	0.0403	0.0489	0.0000	115.3284	115.3284	0.0263	0.0000	115.9859
Maximum	**0.0882**	**0.7881**	**0.7036**	**1.3200e-003**	**0.0316**	**0.0437**	**0.0753**	**8.5400e-003**	**0.0403**	**0.0489**	**0.0000**	**115.3284**	**115.3284**	**0.0263**	**0.0000**	**115.9859**

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					
2019	0.0316	0.2138	0.2149	4.2000e-004	0.0168	0.0150	0.0318	6.5300e-003	0.0140	0.0205	0.0000	37.8909	37.8909	8.3400e-003	0.0000	38.0995
2020	0.0882	0.4811	0.7036	1.3200e-003	0.0316	0.0437	0.0753	8.5400e-003	0.0403	0.0489	0.0000	115.3283	115.3283	0.0263	0.0000	115.9858
Maximum	**0.0882**	**0.4811**	**0.7036**	**1.3200e-003**	**0.0316**	**0.0437**	**0.0753**	**8.5400e-003**	**0.0403**	**0.0489**	**0.0000**	**115.3283**	**115.3283**	**0.0263**	**0.0000**	**115.9858**

	ROG	NOx	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**	**36.45**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	11-1-2019	1-31-2020	0.4250	0.3291
2	2-1-2020	4-30-2020	0.2785	0.2216
3	5-1-2020	7-31-2020	0.3693	0.1922
4	8-1-2020	9-30-2020	0.1405	0.0731
		Highest	0.4250	0.3291

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	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	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	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	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	11/1/2019	12/2/2019	5	22	
2	Grading	Grading	12/3/2019	1/1/2020	5	22	
3	Paving	Paving	1/3/2020	4/3/2020	5	66	
4	Building Construction	Building Construction	4/4/2020	9/4/2020	5	110	

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
Demolition	Skid Steer Loaders	2	6.00	65	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Trenchers	1	8.00	78	0.50
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Grading	Excavators	1	6.00	158	0.38
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Demolition	Rubber Tired Dozers	1	4.00	247	0.40
Grading	Rubber Tired Dozers	1	4.00	247	0.40
Paving	Plate Compactors	1	7.00	8	0.43
Demolition	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Building Construction	Skid Steer Loaders	2	6.00	65	0.37
Paving	Tractors/Loaders/Backhoes	1		97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	5	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	4	30.00	0.00	14.00	14.70	6.90	50.00	LD_Mix	HDT_Mix	HHDT
Grading	4	30.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	30.00	10.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5000e-003	0.0000	1.5000e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0146	0.1438	0.1062	1.8000e-004		7.9000e-003	7.9000e-003		7.4700e-003	7.4700e-003	0.0000	15.4970	15.4970	3.4500e-003	0.0000	15.5832
Total	**0.0146**	**0.1438**	**0.1062**	**1.8000e-004**	**1.5000e-003**	**7.9000e-003**	**9.4000e-003**	**2.3000e-004**	**7.4700e-003**	**7.7000e-003**	**0.0000**	**15.4970**	**15.4970**	**3.4500e-003**	**0.0000**	**15.5832**

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	1.3000e-004	4.3600e-003	9.3000e-004	1.0000e-005	3.0000e-004	2.0000e-005	3.2000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.2400	1.2400	8.0000e-005	0.0000	1.2420
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	1.5900e-003	1.2700e-003	0.0138	4.0000e-005	3.6200e-003	3.0000e-005	3.6500e-003	9.6000e-004	3.0000e-005	9.9000e-004	0.0000	3.3668	3.3668	1.1000e-004	0.0000	3.3695
Total	**1.7200e-003**	**5.6300e-003**	**0.0147**	**5.0000e-005**	**3.9200e-003**	**5.0000e-005**	**3.9700e-003**	**1.0400e-003**	**5.0000e-005**	**1.0900e-003**	**0.0000**	**4.6069**	**4.6069**	**1.9000e-004**	**0.0000**	**4.6115**

3.2 Demolition - 2019

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					1.5000e-003	0.0000	1.5000e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0146	0.1252	0.1062	1.8000e-004		7.9000e-003	7.9000e-003		7.4700e-003	7.4700e-003	0.0000	15.4970	15.4970	3.4500e-003	0.0000	15.5832
Total	**0.0146**	**0.1252**	**0.1062**	**1.8000e-004**	**1.5000e-003**	**7.9000e-003**	**9.4000e-003**	**2.3000e-004**	**7.4700e-003**	**7.7000e-003**	**0.0000**	**15.4970**	**15.4970**	**3.4500e-003**	**0.0000**	**15.5832**

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	1.3000e-004	4.3600e-003	9.3000e-004	1.0000e-005	3.0000e-004	2.0000e-005	3.2000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	1.2400	1.2400	8.0000e-005	0.0000	1.2420
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	1.5900e-003	1.2700e-003	0.0138	4.0000e-005	3.6200e-003	3.0000e-005	3.6500e-003	9.6000e-004	3.0000e-005	9.9000e-004	0.0000	3.3668	3.3668	1.1000e-004	0.0000	3.3695
Total	**1.7200e-003**	**5.6300e-003**	**0.0147**	**5.0000e-005**	**3.9200e-003**	**5.0000e-005**	**3.9700e-003**	**1.0400e-003**	**5.0000e-005**	**1.0900e-003**	**0.0000**	**4.6069**	**4.6069**	**1.9000e-004**	**0.0000**	**4.6115**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.9000e-003	0.0000	7.9000e-003	4.3400e-003	0.0000	4.3400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0137	0.1547	0.0808	1.6000e-004		7.0000e-003	7.0000e-003		6.4400e-003	6.4400e-003	0.0000	14.5733	14.5733	4.6100e-003	0.0000	14.6886
Total	**0.0137**	**0.1547**	**0.0808**	**1.6000e-004**	**7.9000e-003**	**7.0000e-003**	**0.0149**	**4.3400e-003**	**6.4400e-003**	**0.0108**	**0.0000**	**14.5733**	**14.5733**	**4.6100e-003**	**0.0000**	**14.6886**

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	1.5200e-003	1.2100e-003	0.0132	4.0000e-005	3.4600e-003	3.0000e-005	3.4800e-003	9.2000e-004	3.0000e-005	9.4000e-004	0.0000	3.2138	3.2138	1.0000e-004	0.0000	3.2163
Total	**1.5200e-003**	**1.2100e-003**	**0.0132**	**4.0000e-005**	**3.4600e-003**	**3.0000e-005**	**3.4800e-003**	**9.2000e-004**	**3.0000e-005**	**9.4000e-004**	**0.0000**	**3.2138**	**3.2138**	**1.0000e-004**	**0.0000**	**3.2163**

3.3 Grading - 2019

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					7.9000e-003	0.0000	7.9000e-003	4.3400e-003	0.0000	4.3400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0137	0.0818	0.0808	1.6000e-004		7.0000e-003	7.0000e-003		6.4400e-003	6.4400e-003	0.0000	14.5733	14.5733	4.6100e-003	0.0000	14.6886
Total	**0.0137**	**0.0818**	**0.0808**	**1.6000e-004**	**7.9000e-003**	**7.0000e-003**	**0.0149**	**4.3400e-003**	**6.4400e-003**	**0.0108**	**0.0000**	**14.5733**	**14.5733**	**4.6100e-003**	**0.0000**	**14.6886**

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	1.5200e-003	1.2100e-003	0.0132	4.0000e-005	3.4600e-003	3.0000e-005	3.4800e-003	9.2000e-004	3.0000e-005	9.4000e-004	0.0000	3.2138	3.2138	1.0000e-004	0.0000	3.2163
Total	**1.5200e-003**	**1.2100e-003**	**0.0132**	**4.0000e-005**	**3.4600e-003**	**3.0000e-005**	**3.4800e-003**	**9.2000e-004**	**3.0000e-005**	**9.4000e-004**	**0.0000**	**3.2138**	**3.2138**	**1.0000e-004**	**0.0000**	**3.2163**

3.3 Grading - 2020

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					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2000e-004	6.9000e-003	3.7900e-003	1.0000e-005		3.1000e-004	3.1000e-004		2.8000e-004	2.8000e-004	0.0000	0.6787	0.6787	2.2000e-004	0.0000	0.6842
Total	**6.2000e-004**	**6.9000e-003**	**3.7900e-003**	**1.0000e-005**	**3.8000e-004**	**3.1000e-004**	**6.9000e-004**	**2.1000e-004**	**2.8000e-004**	**4.9000e-004**	**0.0000**	**0.6787**	**0.6787**	**2.2000e-004**	**0.0000**	**0.6842**

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	7.0000e-005	5.0000e-005	5.7000e-004	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1483	0.1483	0.0000	0.0000	0.1484
Total	**7.0000e-005**	**5.0000e-005**	**5.7000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1483**	**0.1483**	**0.0000**	**0.0000**	**0.1484**

3.3 Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.8000e-004	0.0000	3.8000e-004	2.1000e-004	0.0000	2.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2000e-004	3.6200e-003	3.7900e-003	1.0000e-005		3.1000e-004	3.1000e-004		2.8000e-004	2.8000e-004	0.0000	0.6787	0.6787	2.2000e-004	0.0000	0.6842
Total	**6.2000e-004**	**3.6200e-003**	**3.7900e-003**	**1.0000e-005**	**3.8000e-004**	**3.1000e-004**	**6.9000e-004**	**2.1000e-004**	**2.8000e-004**	**4.9000e-004**	**0.0000**	**0.6787**	**0.6787**	**2.2000e-004**	**0.0000**	**0.6842**

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	7.0000e-005	5.0000e-005	5.7000e-004	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1483	0.1483	0.0000	0.0000	0.1484
Total	**7.0000e-005**	**5.0000e-005**	**5.7000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1483**	**0.1483**	**0.0000**	**0.0000**	**0.1484**

3.4 Paving - 2020

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	0.0206	0.1850	0.1750	3.0000e-004		9.4700e-003	9.4700e-003		8.8500e-003	8.8500e-003	0.0000	24.0212	24.0212	6.5700e-003	0.0000	24.1856
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0206**	**0.1850**	**0.1750**	**3.0000e-004**		**9.4700e-003**	**9.4700e-003**		**8.8500e-003**	**8.8500e-003**	**0.0000**	**24.0212**	**24.0212**	**6.5700e-003**	**0.0000**	**24.1856**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1200e-003	0.0354	8.9200e-003	8.0000e-005	2.0800e-003	1.7000e-004	2.2500e-003	6.0000e-004	1.7000e-004	7.7000e-004	0.0000	8.0734	8.0734	5.4000e-004	0.0000	8.0868
Worker	4.4100e-003	3.3900e-003	0.0376	1.1000e-004	0.0109	8.0000e-005	0.0110	2.8800e-003	8.0000e-005	2.9600e-003	0.0000	9.7874	9.7874	2.8000e-004	0.0000	9.7945
Total	**5.5300e-003**	**0.0388**	**0.0465**	**1.9000e-004**	**0.0129**	**2.5000e-004**	**0.0132**	**3.4800e-003**	**2.5000e-004**	**3.7300e-003**	**0.0000**	**17.8608**	**17.8608**	**8.2000e-004**	**0.0000**	**17.8813**

3.4 Paving - 2020

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	0.0206	0.1777	0.1750	3.0000e-004		9.4700e-003	9.4700e-003		8.8500e-003	8.8500e-003	0.0000	24.0212	24.0212	6.5700e-003	0.0000	24.1855
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0206**	**0.1777**	**0.1750**	**3.0000e-004**		**9.4700e-003**	**9.4700e-003**		**8.8500e-003**	**8.8500e-003**	**0.0000**	**24.0212**	**24.0212**	**6.5700e-003**	**0.0000**	**24.1855**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1200e-003	0.0354	8.9200e-003	8.0000e-005	2.0800e-003	1.7000e-004	2.2500e-003	6.0000e-004	1.7000e-004	7.7000e-004	0.0000	8.0734	8.0734	5.4000e-004	0.0000	8.0868
Worker	4.4100e-003	3.3900e-003	0.0376	1.1000e-004	0.0109	8.0000e-005	0.0110	2.8800e-003	8.0000e-005	2.9600e-003	0.0000	9.7874	9.7874	2.8000e-004	0.0000	9.7945
Total	**5.5300e-003**	**0.0388**	**0.0465**	**1.9000e-004**	**0.0129**	**2.5000e-004**	**0.0132**	**3.4800e-003**	**2.5000e-004**	**3.7300e-003**	**0.0000**	**17.8608**	**17.8608**	**8.2000e-004**	**0.0000**	**17.8813**

3.5 Building Construction - 2020

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	0.0540	0.5518	0.4152	6.4000e-004		0.0335	0.0335		0.0308	0.0308	0.0000	56.3070	56.3070	0.0182	0.0000	56.7623
Total	**0.0540**	**0.5518**	**0.4152**	**6.4000e-004**		**0.0335**	**0.0335**		**0.0308**	**0.0308**	**0.0000**	**56.3070**	**56.3070**	**0.0182**	**0.0000**	**56.7623**

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	7.3400e-003	5.6500e-003	0.0626	1.8000e-004	0.0181	1.4000e-004	0.0182	4.8100e-003	1.3000e-004	4.9400e-003	0.0000	16.3124	16.3124	4.7000e-004	0.0000	16.3241
Total	**7.3400e-003**	**5.6500e-003**	**0.0626**	**1.8000e-004**	**0.0181**	**1.4000e-004**	**0.0182**	**4.8100e-003**	**1.3000e-004**	**4.9400e-003**	**0.0000**	**16.3124**	**16.3124**	**4.7000e-004**	**0.0000**	**16.3241**

3.5 Building Construction - 2020

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	0.0540	0.2553	0.4152	6.4000e-004		0.0335	0.0335		0.0308	0.0308	0.0000	56.3069	56.3069	0.0182	0.0000	56.7622
Total	**0.0540**	**0.2553**	**0.4152**	**6.4000e-004**		**0.0335**	**0.0335**		**0.0308**	**0.0308**	**0.0000**	**56.3069**	**56.3069**	**0.0182**	**0.0000**	**56.7622**

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	7.3400e-003	5.6500e-003	0.0626	1.8000e-004	0.0181	1.4000e-004	0.0182	4.8100e-003	1.3000e-004	4.9400e-003	0.0000	16.3124	16.3124	4.7000e-004	0.0000	16.3241
Total	**7.3400e-003**	**5.6500e-003**	**0.0626**	**1.8000e-004**	**0.0181**	**1.4000e-004**	**0.0182**	**4.8100e-003**	**1.3000e-004**	**4.9400e-003**	**0.0000**	**16.3124**	**16.3124**	**4.7000e-004**	**0.0000**	**16.3241**

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
User Defined Industrial	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
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

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	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	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	3.0000e-005
Unmitigated	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	3.0000e-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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					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	3.0000e-005
Total	**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**	**3.0000e-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	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					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	3.0000e-005
Total	**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**	**3.0000e-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			
User Defined Industrial	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			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

HS-122 Off-Site Piping

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	0.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 8100 lf x 3 f trench

Construction Phase - Demo: 20 days, Trenching and Installation: 40 days, Backfill and Paving: 20 days

Trips and VMT - 10 workers per day, 10 haul trucks 100 miles rt

Off-road Equipment - Demo and Prep: 1 concrete saw, 2 loader/backhoes, 2 skid steer loaders

Off-road Equipment - Backfill and Paving: 4 mixers, 1 paver, 1 roller, 1 loader/backhoe, 2 compactors

Off-road Equipment - Trenching and Pipe Install: 2 trenchers, 1 excavator, 2 forklifts, 1 loader/backhoe

HS-122 Off-Site Piping - South Coast Air Basin, Summer

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	5.00	20.00
tblConstructionPhase	PhaseEndDate	1/17/2020	2/12/2020
tblConstructionPhase	PhaseEndDate	6/12/2020	5/12/2020
tblConstructionPhase	PhaseStartDate	6/6/2020	4/15/2020
tblLandUse	LotAcreage	0.00	0.60
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Demo and Grading
tblOffRoadEquipment	PhaseName		Pipeline Install
tblOffRoadEquipment	PhaseName		Pipeline Install
tblOffRoadEquipment	PhaseName		Pipeline Install
tblOffRoadEquipment	PhaseName		Pipeline Install
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	PhaseName		Pipeline Install
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3801	12.1081	11.1692	0.0181	1.0199	0.8392	1.4906	0.4850	0.7721	0.9340	0.0000	1,760.9242	1,760.9242	0.4446	0.0000	1,768.3870
Maximum	**1.3801**	**12.1081**	**11.1692**	**0.0181**	**1.0199**	**0.8392**	**1.4906**	**0.4850**	**0.7721**	**0.9340**	**0.0000**	**1,760.9242**	**1,760.9242**	**0.4446**	**0.0000**	**1,768.3870**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2020	1.3801	7.3925	11.1692	0.0181	1.0199	0.8392	1.4906	0.4850	0.7721	0.9340	0.0000	1,760.9242	1,760.9242	0.4446	0.0000	1,768.3870
Maximum	**1.3801**	**7.3925**	**11.1692**	**0.0181**	**1.0199**	**0.8392**	**1.4906**	**0.4850**	**0.7721**	**0.9340**	**0.0000**	**1,760.9242**	**1,760.9242**	**0.4446**	**0.0000**	**1,768.3870**

HS-122 Off-Site Piping - South Coast Air Basin, Summer

	ROG	NOx	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**	**38.95**	**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**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	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	Demo and Grading	Grading	1/16/2020	2/12/2020	5	20	
2	Paving	Paving	4/15/2020	5/12/2020	5	20	
3	Pipeline Install	Trenching	2/14/2020	4/9/2020	5	40	

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

HS-122 Off-Site Piping - South Coast Air Basin, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demo and Grading	Skid Steer Loaders	2	6.00	65	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Plate Compactors	2	7.00	8	0.43
Demo and Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Pipeline Install	Trenchers	2	7.00	78	0.50
Pipeline Install	Excavators	1	4.00	158	0.38
Pipeline Install	Forklifts	2	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Pipeline Install	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demo and Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pipeline Install	0	20.00	1.00		14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demo and Grading	4	20.00	0.00	10.00	14.70	6.90	100.00	LD_Mix	HDT_Mix	HHDT
Paving	7	20.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demo and Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.8523	8.0499	9.1912	0.0140		0.4668	0.4668		0.4453	0.4453		1,344.0705	1,344.0705	0.2806		1,351.0846
Total	**0.8523**	**8.0499**	**9.1912**	**0.0140**	**0.7528**	**0.4668**	**1.2196**	**0.4138**	**0.4453**	**0.8591**		**1,344.0705**	**1,344.0705**	**0.2806**		**1,351.0846**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0166	0.5056	0.1223	1.7300e-003	0.0436	2.1700e-003	0.0458	0.0120	2.0800e-003	0.0140		188.0864	188.0864	0.0114		188.3704
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
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.1063**	**0.5663**	**0.9375**	**4.0300e-003**	**0.2672**	**3.8800e-003**	**0.2711**	**0.0712**	**3.6500e-003**	**0.0749**		**416.8537**	**416.8537**	**0.0180**		**417.3025**

3.2 Demo and Grading - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.7528	0.0000	0.7528	0.4138	0.0000	0.4138			0.0000			0.0000
Off-Road	0.8523	6.4563	9.1912	0.0140		0.4668	0.4668		0.4453	0.4453	0.0000	1,344.0705	1,344.0705	0.2806		1,351.0846
Total	**0.8523**	**6.4563**	**9.1912**	**0.0140**	**0.7528**	**0.4668**	**1.2196**	**0.4138**	**0.4453**	**0.8591**	**0.0000**	**1,344.0705**	**1,344.0705**	**0.2806**		**1,351.0846**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0166	0.5056	0.1223	1.7300e-003	0.0436	2.1700e-003	0.0458	0.0120	2.0800e-003	0.0140		188.0864	188.0864	0.0114		188.3704
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
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.1063**	**0.5663**	**0.9375**	**4.0300e-003**	**0.2672**	**3.8800e-003**	**0.2711**	**0.0712**	**3.6500e-003**	**0.0749**		**416.8537**	**416.8537**	**0.0180**		**417.3025**

3.3 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8417	7.6663	7.4811	0.0121		0.4121	0.4121		0.3840	0.3840		1,095.7315	1,095.7315	0.3079		1,103.4278
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8417**	**7.6663**	**7.4811**	**0.0121**		**0.4121**	**0.4121**		**0.3840**	**0.3840**		**1,095.7315**	**1,095.7315**	**0.3079**		**1,103.4278**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.3200e-003	0.1053	0.0256	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.2791	27.2791	1.7500e-003		27.3228
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.0930**	**0.1660**	**0.8408**	**2.5600e-003**	**0.2300**	**2.2300e-003**	**0.2322**	**0.0611**	**2.0700e-003**	**0.0632**		**256.0464**	**256.0464**	**8.3400e-003**		**256.2549**

3.3 Paving - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8417	7.2266	7.4811	0.0121		0.4121	0.4121		0.3840	0.3840	0.0000	1,095.7315	1,095.7315	0.3079		1,103.4278
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8417**	**7.2266**	**7.4811**	**0.0121**		**0.4121**	**0.4121**		**0.3840**	**0.3840**	**0.0000**	**1,095.7315**	**1,095.7315**	**0.3079**		**1,103.4278**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.3200e-003	0.1053	0.0256	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.2791	27.2791	1.7500e-003		27.3228
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.0930**	**0.1660**	**0.8408**	**2.5600e-003**	**0.2300**	**2.2300e-003**	**0.2322**	**0.0611**	**2.0700e-003**	**0.0632**		**256.0464**	**256.0464**	**8.3400e-003**		**256.2549**

3.4 Pipeline Install - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2871	11.9422	10.3284	0.0139		0.8369	0.8369		0.7700	0.7700		1,348.7959	1,348.7959	0.4362		1,359.7016
Total	**1.2871**	**11.9422**	**10.3284**	**0.0139**		**0.8369**	**0.8369**		**0.7700**	**0.7700**		**1,348.7959**	**1,348.7959**	**0.4362**		**1,359.7016**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.3200e-003	0.1053	0.0256	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.2791	27.2791	1.7500e-003		27.3228
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.0930**	**0.1660**	**0.8408**	**2.5600e-003**	**0.2300**	**2.2300e-003**	**0.2322**	**0.0611**	**2.0700e-003**	**0.0632**		**256.0464**	**256.0464**	**8.3400e-003**		**256.2549**

3.4 Pipeline Install - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2871	2.0966	10.3284	0.0139		0.8369	0.8369		0.7700	0.7700	0.0000	1,348.7959	1,348.7959	0.4362		1,359.7016
Total	**1.2871**	**2.0966**	**10.3284**	**0.0139**		**0.8369**	**0.8369**		**0.7700**	**0.7700**	**0.0000**	**1,348.7959**	**1,348.7959**	**0.4362**		**1,359.7016**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.3200e-003	0.1053	0.0256	2.6000e-004	6.4000e-003	5.2000e-004	6.9200e-003	1.8400e-003	5.0000e-004	2.3400e-003		27.2791	27.2791	1.7500e-003		27.3228
Worker	0.0897	0.0607	0.8152	2.3000e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5700e-003	0.0609		228.7673	228.7673	6.5900e-003		228.9321
Total	**0.0930**	**0.1660**	**0.8408**	**2.5600e-003**	**0.2300**	**2.2300e-003**	**0.2322**	**0.0611**	**2.0700e-003**	**0.0632**		**256.0464**	**256.0464**	**8.3400e-003**		**256.2549**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	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
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
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

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

HS-122 Off-Site Piping

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	0.00	User Defined Unit	0.60	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - 8100 lf x 3 f trench

Construction Phase - Demo: 20 days, Trenching and Installation: 40 days, Backfill and Paving: 20 days

Trips and VMT - 10 workers per day, 10 haul trucks 100 miles rt

Off-road Equipment - Demo and Prep: 1 concrete saw, 2 loader/backhoes, 2 skid steer loaders

Off-road Equipment - Backfill and Paving: 4 mixers, 1 paver, 1 roller, 1 loader/backhoe, 2 compactors

Off-road Equipment - Trenching and Pipe Install: 2 trenchers, 1 excavator, 2 forklifts, 1 loader/backhoe

HS-122 Off-Site Piping - South Coast Air Basin, Annual

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	5.00	20.00
tblConstructionPhase	PhaseEndDate	1/17/2020	2/12/2020
tblConstructionPhase	PhaseEndDate	6/12/2020	5/12/2020
tblConstructionPhase	PhaseStartDate	6/6/2020	4/15/2020
tblLandUse	LotAcreage	0.00	0.60
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	2.00
tblOffRoadEquipment	PhaseName		Paving
tblOffRoadEquipment	PhaseName		Demo and Grading
tblOffRoadEquipment	PhaseName		Pipeline Install
tblOffRoadEquipment	PhaseName		Pipeline Install
tblOffRoadEquipment	PhaseName		Pipeline Install
tblOffRoadEquipment	PhaseName		Pipeline Install
tblTripsAndVMT	HaulingTripLength	20.00	100.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	PhaseName		Pipeline Install
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	10.00	20.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00

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					
2020	0.0465	0.4073	0.4057	6.5000e-004	0.0169	0.0256	0.0426	6.6400e-003	0.0238	0.0304	0.0000	56.9522	56.9522	0.0136	0.0000	57.2930
Maximum	**0.0465**	**0.4073**	**0.4057**	**6.5000e-004**	**0.0169**	**0.0256**	**0.0426**	**6.6400e-003**	**0.0238**	**0.0304**	**0.0000**	**56.9522**	**56.9522**	**0.0136**	**0.0000**	**57.2930**

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					
2020	0.0465	0.1900	0.4057	6.5000e-004	0.0169	0.0256	0.0426	6.6400e-003	0.0238	0.0304	0.0000	56.9521	56.9521	0.0136	0.0000	57.2930
Maximum	**0.0465**	**0.1900**	**0.4057**	**6.5000e-004**	**0.0169**	**0.0256**	**0.0426**	**6.6400e-003**	**0.0238**	**0.0304**	**0.0000**	**56.9521**	**56.9521**	**0.0136**	**0.0000**	**57.2930**

	ROG	NOx	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**	**53.34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2020**	**3-31-2020**	0.3227	0.1415
2	**4-1-2020**	**6-30-2020**	0.1310	0.0950
		Highest	0.3227	0.1415

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	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	Demo and Grading	Grading	1/16/2020	2/12/2020	5	20	
2	Paving	Paving	4/15/2020	5/12/2020	5	20	
3	Pipeline Install	Trenching	2/14/2020	4/9/2020	5	40	

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
Demo and Grading	Skid Steer Loaders	2	6.00	65	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Plate Compactors	2	7.00	8	0.43
Demo and Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Pipeline Install	Trenchers	2	7.00	78	0.50
Pipeline Install	Excavators	1	4.00	158	0.38
Pipeline Install	Forklifts	2	6.00	89	0.20
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Pipeline Install	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Demo and Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Pipeline Install	0	20.00	1.00		14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Demo and Grading	4	20.00	0.00	10.00	14.70	6.90	100.00	LD_Mix	HDT_Mix	HHDT
Paving	7	20.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demo and Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.5300e-003	0.0000	7.5300e-003	4.1400e-003	0.0000	4.1400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5200e-003	0.0805	0.0919	1.4000e-004		4.6700e-003	4.6700e-003		4.4500e-003	4.4500e-003	0.0000	12.1932	12.1932	2.5500e-003	0.0000	12.2568
Total	**8.5200e-003**	**0.0805**	**0.0919**	**1.4000e-004**	**7.5300e-003**	**4.6700e-003**	**0.0122**	**4.1400e-003**	**4.4500e-003**	**8.5900e-003**	**0.0000**	**12.1932**	**12.1932**	**2.5500e-003**	**0.0000**	**12.2568**

3.2 Demo and Grading - 2020

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	1.7000e-004	5.3100e-003	1.2300e-003	2.0000e-005	4.3000e-004	2.0000e-005	4.5000e-004	1.2000e-004	2.0000e-005	1.4000e-004	0.0000	1.7036	1.7036	1.0000e-004	0.0000	1.7061
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	8.9000e-004	6.9000e-004	7.5900e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9773	1.9773	6.0000e-005	0.0000	1.9787
Total	**1.0600e-003**	**6.0000e-003**	**8.8200e-003**	**4.0000e-005**	**2.6200e-003**	**4.0000e-005**	**2.6600e-003**	**7.0000e-004**	**4.0000e-005**	**7.4000e-004**	**0.0000**	**3.6808**	**3.6808**	**1.6000e-004**	**0.0000**	**3.6848**

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					7.5300e-003	0.0000	7.5300e-003	4.1400e-003	0.0000	4.1400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5200e-003	0.0646	0.0919	1.4000e-004		4.6700e-003	4.6700e-003		4.4500e-003	4.4500e-003	0.0000	12.1932	12.1932	2.5500e-003	0.0000	12.2568
Total	**8.5200e-003**	**0.0646**	**0.0919**	**1.4000e-004**	**7.5300e-003**	**4.6700e-003**	**0.0122**	**4.1400e-003**	**4.4500e-003**	**8.5900e-003**	**0.0000**	**12.1932**	**12.1932**	**2.5500e-003**	**0.0000**	**12.2568**

3.2 Demo and Grading - 2020

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	1.7000e-004	5.3100e-003	1.2300e-003	2.0000e-005	4.3000e-004	2.0000e-005	4.5000e-004	1.2000e-004	2.0000e-005	1.4000e-004	0.0000	1.7036	1.7036	1.0000e-004	0.0000	1.7061
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	8.9000e-004	6.9000e-004	7.5900e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9773	1.9773	6.0000e-005	0.0000	1.9787
Total	**1.0600e-003**	**6.0000e-003**	**8.8200e-003**	**4.0000e-005**	**2.6200e-003**	**4.0000e-005**	**2.6600e-003**	**7.0000e-004**	**4.0000e-005**	**7.4000e-004**	**0.0000**	**3.6808**	**3.6808**	**1.6000e-004**	**0.0000**	**3.6848**

3.3 Paving - 2020

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	8.4200e-003	0.0767	0.0748	1.2000e-004		4.1200e-003	4.1200e-003		3.8400e-003	3.8400e-003	0.0000	9.9403	9.9403	2.7900e-003	0.0000	10.0101
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.4200e-003**	**0.0767**	**0.0748**	**1.2000e-004**		**4.1200e-003**	**4.1200e-003**		**3.8400e-003**	**3.8400e-003**	**0.0000**	**9.9403**	**9.9403**	**2.7900e-003**	**0.0000**	**10.0101**

3.3 Paving - 2020

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	3.0000e-005	1.0700e-003	2.7000e-004	0.0000	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2447	0.2447	2.0000e-005	0.0000	0.2451
Worker	8.9000e-004	6.9000e-004	7.5900e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9773	1.9773	6.0000e-005	0.0000	1.9787
Total	**9.2000e-004**	**1.7600e-003**	**7.8600e-003**	**2.0000e-005**	**2.2500e-003**	**3.0000e-005**	**2.2800e-003**	**6.0000e-004**	**3.0000e-005**	**6.2000e-004**	**0.0000**	**2.2219**	**2.2219**	**8.0000e-005**	**0.0000**	**2.2237**

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	8.4200e-003	0.0723	0.0748	1.2000e-004		4.1200e-003	4.1200e-003		3.8400e-003	3.8400e-003	0.0000	9.9403	9.9403	2.7900e-003	0.0000	10.0101
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**8.4200e-003**	**0.0723**	**0.0748**	**1.2000e-004**		**4.1200e-003**	**4.1200e-003**		**3.8400e-003**	**3.8400e-003**	**0.0000**	**9.9403**	**9.9403**	**2.7900e-003**	**0.0000**	**10.0101**

3.3 Paving - 2020

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	3.0000e-005	1.0700e-003	2.7000e-004	0.0000	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2447	0.2447	2.0000e-005	0.0000	0.2451
Worker	8.9000e-004	6.9000e-004	7.5900e-003	2.0000e-005	2.1900e-003	2.0000e-005	2.2100e-003	5.8000e-004	2.0000e-005	6.0000e-004	0.0000	1.9773	1.9773	6.0000e-005	0.0000	1.9787
Total	**9.2000e-004**	**1.7600e-003**	**7.8600e-003**	**2.0000e-005**	**2.2500e-003**	**3.0000e-005**	**2.2800e-003**	**6.0000e-004**	**3.0000e-005**	**6.2000e-004**	**0.0000**	**2.2219**	**2.2219**	**8.0000e-005**	**0.0000**	**2.2237**

3.4 Pipeline Install - 2020

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	0.0257	0.2388	0.2066	2.8000e-004		0.0167	0.0167		0.0154	0.0154	0.0000	24.4721	24.4721	7.9100e-003	0.0000	24.6700
Total	**0.0257**	**0.2388**	**0.2066**	**2.8000e-004**		**0.0167**	**0.0167**		**0.0154**	**0.0154**	**0.0000**	**24.4721**	**24.4721**	**7.9100e-003**	**0.0000**	**24.6700**

3.4 Pipeline Install - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	2.1400e-003	5.4000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4893	0.4893	3.0000e-005	0.0000	0.4901
Worker	1.7800e-003	1.3700e-003	0.0152	4.0000e-005	4.3900e-003	3.0000e-005	4.4200e-003	1.1700e-003	3.0000e-005	1.2000e-003	0.0000	3.9545	3.9545	1.1000e-004	0.0000	3.9574
Total	**1.8500e-003**	**3.5100e-003**	**0.0157**	**5.0000e-005**	**4.5200e-003**	**4.0000e-005**	**4.5600e-003**	**1.2100e-003**	**4.0000e-005**	**1.2500e-003**	**0.0000**	**4.4438**	**4.4438**	**1.4000e-004**	**0.0000**	**4.4475**

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	0.0257	0.0419	0.2066	2.8000e-004		0.0167	0.0167		0.0154	0.0154	0.0000	24.4721	24.4721	7.9100e-003	0.0000	24.6700
Total	**0.0257**	**0.0419**	**0.2066**	**2.8000e-004**		**0.0167**	**0.0167**		**0.0154**	**0.0154**	**0.0000**	**24.4721**	**24.4721**	**7.9100e-003**	**0.0000**	**24.6700**

3.4 Pipeline Install - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.0000e-005	2.1400e-003	5.4000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4893	0.4893	3.0000e-005	0.0000	0.4901
Worker	1.7800e-003	1.3700e-003	0.0152	4.0000e-005	4.3900e-003	3.0000e-005	4.4200e-003	1.1700e-003	3.0000e-005	1.2000e-003	0.0000	3.9545	3.9545	1.1000e-004	0.0000	3.9574
Total	**1.8500e-003**	**3.5100e-003**	**0.0157**	**5.0000e-005**	**4.5200e-003**	**4.0000e-005**	**4.5600e-003**	**1.2100e-003**	**4.0000e-005**	**1.2500e-003**	**0.0000**	**4.4438**	**4.4438**	**1.4000e-004**	**0.0000**	**4.4475**

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
User Defined Industrial	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
User Defined Industrial	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.550339	0.043800	0.200255	0.122233	0.016799	0.005871	0.020633	0.029727	0.002027	0.001932	0.004726	0.000704	0.000955

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	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

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

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					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	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					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	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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			
User Defined Industrial	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			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX 3

47 1st Street, Suite 1
Redlands, CA 92373-4601
(909) 915-5900

May 3, 2019

Tom Dodson
Tom Dodson and Associates
2150 N Arrowhead Ave
San Bernardino, CA 92405

RE: CEQA Plus Biological Evaluation
Monte Vista Water District Plant 30 Wellhead Treatment Project
Montclair, CA

Dear Tom:

Jericho Systems, Inc. (Jericho) is pleased to provide the results of the general biological resources assessment (BRA) report for the Monte Vista Water District's (MVWD's) Plant 30 Wellhead Treatment Project (Project) located in the City of Montclair, County of San Bernardino, CA.

This report is designed to address potential effects of the proposed Project to designated Critical Habitats and/or any species currently listed or formally proposed for listing as endangered or threatened under the federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA), or species designated as sensitive by the California Department of Fish and Wildlife (CDFW), or the California Native Plant Society (CNPS). Attention was focused sensitive species known to occur locally. This report also addresses resources protected under the Coastal Barriers Resources Act, Coastal Zone Management Act, Magnuson-Stevens Fishery Conservation and Management Act, the Protection of Wetlands – Executive Order 11990, Migratory Bird Treaty Act and Wild and Scenic Rivers Act.

PROJECT LOCATION

The Project site is located at 5616 San Bernardino Avenue, Montclair, CA 91763 and can be found on the U.S. Geological Survey (USGS) 7.5 Minute Ontario topographical quadrangle within Section 23, Township 1 South, Range 8 West. The Wellhead Treatment Plant will be installed at the existing Monte Vista Water District Well 30 site; latitude 34.077348°, longitude -117.682896°. (Figures 1-3)

PROJECT DESCRIPTION

The public agency Monte Vista Water District (MVWD) proposes to install a wellhead treatment facility that would provide groundwater treatment for Wells 30, 32, and 33. Wells 30 and 32 are owned by MVWD, and Well 33 is co-owned with the City of Chino. Due to space constraints at Wells 32 and 33, water from Wells 32 and 33 will be conveyed to the Well 30 site for treatment. Phase 1 of the project will provide the capacity to treat up to 4,000 gallons per minute (GPM) and Phase 2 will facilitate the treatment of up to 6,000 GPM. The anticipated extraction rate from each well is 2,000 GPM.

A new pipeline will be installed within Benson Avenue, from Well 33, located near Palo Verde Avenue and Benson to Well 32, located on the northeast corner of Orchard Street and Benson. Additional piping will be installed along San Bernardino Street, from the intersection of Benson Avenue, 900 feet west, to

the Well 30 site. The Project is anticipated to be funded by the State Revolving Fund, which also requires a National Environmental Policy Act (NEPA) level of review.

LISTED SPECIES AND CRITICAL HABITAT

Listed Species

Prior to conducting the field study, species and habitat information was gathered from the relevant databases for the *Ontario* USGS quadrangle to determine which species and/or habitats would be expected to occur on site. These databases include:

- U.S. Fish and Wildlife (USFWS) threatened and endangered species occurrence GIS overlay;
- USFWS Information for Planning and Consultation System (IPaC);
- California Natural Diversity Database (CNDDB) *Rarefind 5*);
- CNDDB Biogeographic Information and Observation System (BIOS);
- California Native Plant Society Electronic Inventory (CNPSEI) database;
- Calflora Database;
- U.S. Department of Agriculture Natural Resources Conservation Service; Web Soil Survey;
- USFWS National Wetland Inventory;
- Environmental Protection Agency - Water Program "My Waters" data layers.

According to the database queries, 31 sensitive species (13 plant, 2 insect, 5 bird, 7 mammal and 4 reptile species) and 1 sensitive habitat have been documented to occur in the Ontario USGS 7.5-minute series quadrangle. Of the 31 sensitive species identified, 7 are State and/or federally listed as threatened or endangered. Table 1 below represents a compiled list of results from IPaC, CNDDB and CNPS databases of listed species which have been documented within three miles of the Project area and/or have the potential to be present within the Project area based on proximity of the occurrence and potential for suitable habitat. Table 1 also provides a potential to occur assessment based on the field investigation of the Action Area and surveyor's knowledge of the species and local ecology.

Table 1:
State and Federally Listed Species Occurrence Potential within the Project Area

Scientific Name	Common Name	Federal / StateStatus	Habitat	Potential to Occur
Mammals				
Dipodomys merriami parvus	San Bernardino kangaroo rat	Endangered/ None	Alluvial scrub vegetation on sandy loam substrates characteristic of alluvial fans and flood plains. Needs early to intermediate seral stages.	None of the Primary Constituent Elements for this species occur on site. No aspect of the Project area is suitable to support this species. The Project area is separated from known populations of this species by development, high volume road ways, and industrial and commercial uses. Suitable habitat for this species does not exist within the Project area. The potential for this species to occur is **none**.
Birds				
Polioptila californica	coastal California gnatcatcher	Threatened/ None	Obligate, permanent resident of coastal sage scrub below 762 m in Southern California. Low, coastal sage scrub in arid washes, on mesas and slopes. Not all areas classified as coastal sage scrub are occupied.	None of the Primary Constituent Elements for this species occur on site. No aspect of the Project area is suitable to support this species. The Project area is separated from known populations of this species by development, high volume road ways, and residential,

Scientific Name	Common Name	Federal / StateStatus	Habitat	Potential to Occur
				industrial and commercial uses. Suitable habitat for this species does not exist within the Project area. The potential for this species to occur is **none**.
Vireo bellii pusillus	least Bell's vireo	Endangered/ Endangered	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 610 m. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Suitable habitat for this species does not exist within the Action Area. The potential for this species to occur is **none.**
Buteo swainsoni	Swainson's hawk	None/ Threatened	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	The Project area is in a developed area with high volume road ways, and residential, industrial and commercial uses. Suitable habitat for this species does not exist within the Project area. The potential for this species to occur is **none**.
Laterallus jamaicensis coturniculus	California black rail	None/ Threatened	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Suitable habitat for this species does not exist within the Action Area. The potential for this species to occur is **none.**
Plants				
Berberis nevinii	Nevin's barberry	Endangered/ Endangered	Chaparral, cismontane woodland, coastal scrub, riparian scrub. On steep, N-facing slopes or in low grade sandy washes. 290-1575 m.	Suitable habitat for this species does not exist within the Action Area. The potential for this species to occur is **none**.
Dodecahema leptoceras	slender-horned spineflower	Endangered/ Endangered	Chaparral, cismontane woodland, coastal scrub (alluvial fan sage scrub). Flood deposited terraces and washes; associates include Encelia, Dalea, Lepidospartum, etc. Sandy soils. 200-765 m.	This species is found locally within the Santa Ana River in areas that are highly suitable for this species. The nearest location is approx.. 2.5 miles to the east of the Action Area. Suitable habitat for this species does not exist within the Action Area. The potential for this species to occur is **none**.

Critical Habitat

The Project area is not located within or directly adjacent to any designated Critical Habitat.

EXISTING CONDITION – AFFECTED ENVIRONMENT

On April 18, 2019, Ecologist Shay Lawrey conducted a field survey of the Project Area with focus on potential habitat for State and federally listed species and migratory birds. Ms. Lawrey is a qualified biologist with advanced degrees in Biology and 25 years of experience surveying for all of the sensitive species known to occur in the County of San Bernardino. She surveyed the Project area on a calm weather day, during peak animal activity, between 6:00 a.m. and 9:00 a.m. and of 2:30 p.m. to 5:30 p.m. General wildlife species were detected during field surveys by sight, calls, tracks, scat, or other signs. In addition to species observed, expected wildlife usage of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area.

Ms. Lawrey also looked for the presence of wetland habitat and jurisdictional waters, in accordance with regulations set forth in 33CFR part 328 and the USACE guidance documents and Fish and Game Code (FGC).

Based on the survey results the conditions within the Project area are urbanized and developed. Vegetation at each well site consists of mature landscaping with planted ornamental and native trees (sycamores, olive, rosemary shrubs, etc.). Residential urban development surrounds each well site. The pipeline alignments along Benson Avenue and San Bernardino Street are paved with either concrete or asphalt and are completely surrounded by urban residential development with other related development such as schools and churches.

The habitat conditions within and adjacent to the Project area are not suitable to support for any sensitive habitat and/or any species listed or proposed for listing under the federal ESA or CESA, or species designated as sensitive by the CDFW, or CNPS.

EFFECTS ANALYSIS

Federal Endangered Species Act (ESA)

The USFWS administers the federal ESA of 1973. The ESA provides a legal mechanism for listing species as either threatened or endangered, and a process of protection for those species listed. Section 9 of the ESA prohibits "take" of threatened or endangered species. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. "Take" can include adverse modification of habitats used by a threatened or endangered species during any portion of its life history. Under the regulations of the ESA, the USFWS may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act. Take authorization can be obtained under Section 7 or Section 10 of the act.

No federally listed species were observed during the field survey nor are any expected to occur. No impact to federally protected species or habitats will result from implementation of the proposed Project.

California Endangered Species Act (CESA)

The CDFW administers the State CESA. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is one present in such small numbers throughout its range that it is likely to become an endangered species soon, in the absence of special protection or management. And a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species applies to California native plants. Further, all raptors and their nests are protected under Section 3503.5 of the California Fish and Game Code (FGC). Species of Special Concern (SSC) is an informal designation used by CDFW for some declining wildlife species that are not proposed for listing as threatened or endangered. This designation does not provide legal protection but signifies that these species are recognized as sensitive by CDFW.

No State listed species, or other sensitive species were observed during the field survey nor are any expected to occur. No impact to species protected by the State will result from implementation of the proposed Project.

Coastal Barriers Resources Act Resources

The Coastal Barrier Resources Act (CBRA) was passed by Congress in 1982 to encourage conservation of hurricane-prone, biologically rich coastal barriers. CBRA prohibits most new federal expenditures that encourage development or modification of coastal barriers. CBRS boundaries are shown on maps that were originally adopted by Congress and are maintained by the USFWS. Currently, the coastal barrier resource systems are located along the Atlantic and Gulf Coasts of the United States and the shore areas of the Great Lakes. Therefore, the Project is not located in a Coastal Barriers Resources Act area.

Coastal Zone Management Act Resources

Coastal Zone Management Act was passed by Congress in 1972 and is administered by National Oceanic and Atmospheric Administration, (NOAA). It provides for the management of the nation's coastal resources, including the Great Lakes. The goal is to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."

The Project is not located in a Coastal Zone that where the provisions of this Act would be applicable.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) is the primary law governing marine fisheries management in U.S. federal waters. First passed in 1976, the Magnuson-Stevens Act fosters long-term biological and economic sustainability of our nation's marine fisheries out to 200 nautical miles from shore. The goals of the act include: prevent overfishing; rebuild overfished stocks; increase long-term economic and social benefits; use reliable data and sound science; conserve essential fish habitat; ensure a safe and sustainable supply of seafood.

The Project is not located 200 nautical miles from shore, nor does it impact any essential fish habitat that would impact regulated areas 200 nautical miles from shore.

Protection of Wetlands – Executive Order 11990

Protection of Wetlands – Executive Order 11990: The purpose of Executive Order (EO) 11990 is to "minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands". To meet these objectives, the Order requires federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. The procedures require the determination of whether or not the proposed project will be in or will affect wetlands. If so, a wetlands assessment must be prepared that describes the alternatives considered. The procedures include a requirement for public review of assessments. The evaluation process follows the same 8 steps as for EO 11988, Floodplain Management.

No drainages or indications of wetlands, hydric soils, naturally occurring indicator plant species were observed during the field survey nor are any expected to occur. No impact to protected wetland areas will result from implementation of the proposed Project.

Migratory Bird Treaty Act (MBTA)

The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C 703-711) provides protection for nesting birds that are both residents and migrants whether or not they are considered sensitive by resource agencies. The MBTA prohibits take of nearly all native birds. The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed under 50 CFR 10, including feathers or

other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The direct injury or death of a migratory bird, due to construction activities or other construction-related disturbance that causes nest abandonment, nestling abandonment, or forced fledging would be considered take under federal law. The USFWS, in coordination with the CDFW administers the MBTA. CDFW's authoritative nexus to MBTA is provided in FGC Sections 3503.5 which protects all birds of prey and their nests and FGC Section 3800 which protects all non-game birds that occur naturally in the State.

Ornamental vegetation suitable for nesting birds does exist within the Project area and adjacent areas. As discussed, most birds are protected by the MBTA. In general, impacts to all bird species (common and special status) can be avoided by conducting work outside of the nesting season, which is generally January/February to August/September, and by conducting a worker environmental awareness training. However, if all work cannot be conducted outside of nesting season, a Project-specific Nesting Bird Management Plan can be prepared to determine suitable buffers.

Preconstruction Nesting Bird Surveys are recommended prior to the commencement of any Project activities that may occur within the nesting season (February to September), to avoid any potential Project-related impacts to nesting birds within the Project area.

Wild and Scenic Rivers Act.

Wild and Scenic Rivers Act. The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act is notable for safeguarding the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection. Rivers may be designated either a federal or state agency. As of 2019, there were 22 water body sections have a wild and scenic river designation in California. The Project is not located within a water body that is designated by the Wild and Scenic Rivers Act.

CONCLUSION

The proposed Project will not affect any State or federally listed endangered, threatened, or species of special concern, because there is no habitat to support these species within, adjacent to, or in the broader vicinity of the Project area. In addition, the proposed Project will not adversely affect Critical Habitat as none exists within the Project area.

The Project area supports ornamental trees that have the potential to provide nestable habitat to migratory birds protected under the MBTA. Therefore, pre-construction surveys are warranted and recommended should project implementation occur during the bird nesting season.

LIST OF PREPARERS

Shay Lawrey
Education**:** M.A., Biology, Occidental College, Los Angeles, CA, 1997 and B.A., Environmental Studies, University of California Santa Cruz, 1993

Biological Permits / Licenses**:** US Fish and Wildlife Service Federal 10(a) Recovery Permit (TE-094308-4) - San Bernardino kangaroo rat (*Dipodomys merriami parvus*) and Southwestern willow flycatcher (*Empidonax traillii extimus*)

Ms. Lawrey has 25 years of experience in environmental planning, natural resource management, special status species survey, regulatory permitting, and construction monitoring. She has experience in all project types (public and private) found in the Inland Empire and has a proven track record in performing impact analyses. She has a working familiarity with processes of numerous State and federal regulatory agencies such as the FAA, USFWS, U.S. Forest Service (USFS), U.S. Army Corps of Engineers (Corps), Bureau of Land Management (BLM), Bureau of Reclamation (BOR), Federal Highways Administration (FHWA), Federal Emergency Management Agency (FEMA), Department of Homeland Security (DHS), State Water Board (SWB), State Revolving Fund (SRF), California Public Utilities Commission (CPUC), Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW) etc. She is well versed in both the California Environmental Quality Act (CEQA) and NEPA. Mrs. Lawrey is skilled in CEQA/NEPA compliance analysis, documentation and has authored numerous Initial Studies and Environmental Assessments (EAs).

Thank you for asking us to assist you with this project. If you have any questions or need any clarifications, contact me at (909) 915-5900 or at shay@jericho-systems.com.

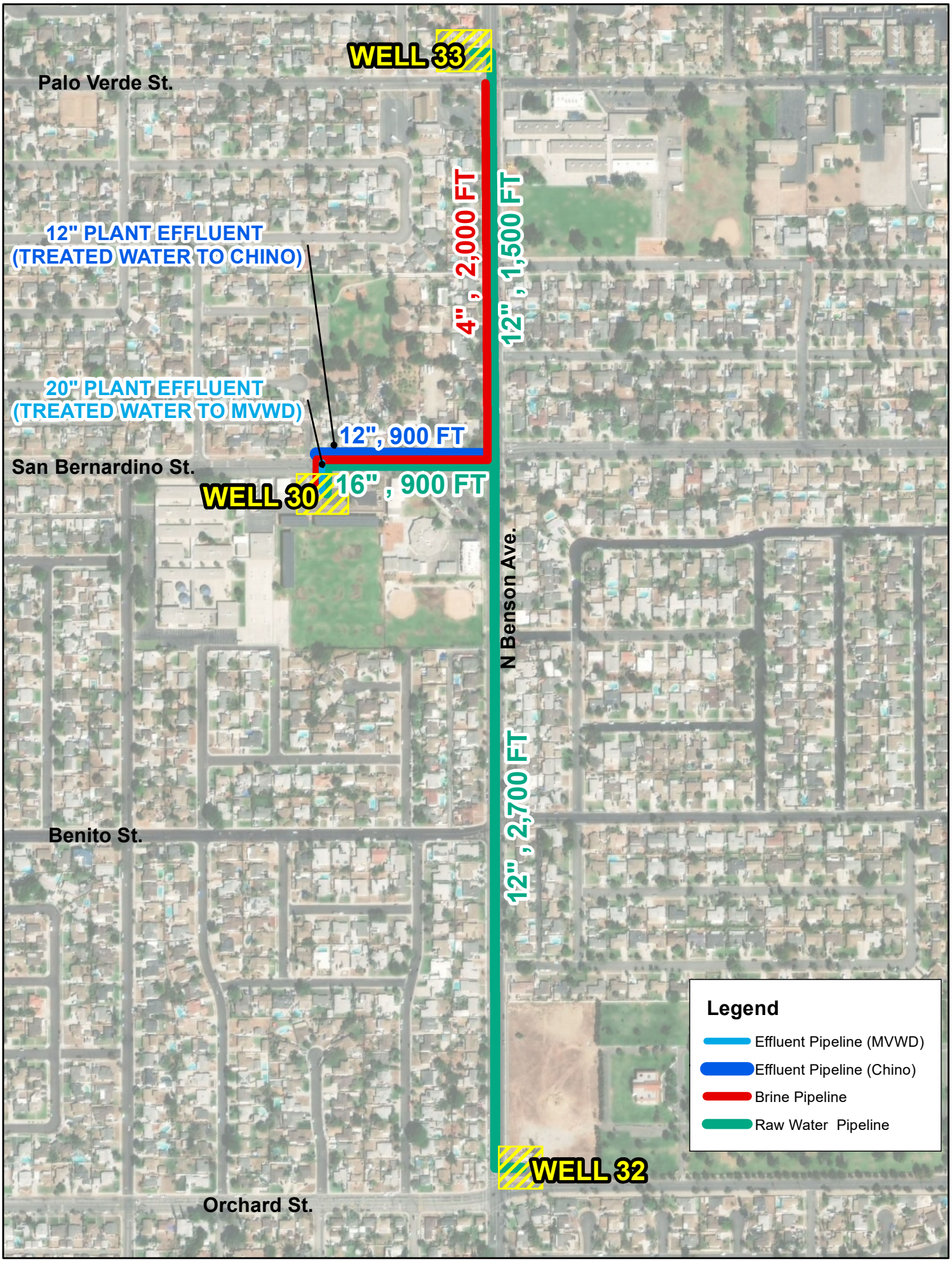
Sincerely,

Shay Lawrey, President
Ecologist/Regulatory Specialist

Attachments:

- Figures
- Site Photos
- Database Search Results


Bonnie Brae St
Palo Verde St
Yale St
Cambridge St
Princeton St
Harvard St
San Bernardino St
Berkeley St
Benito St
Granada St
Denver St
Del Mar Ave
N Benson Ave
N Jasmine Ave
N Gardenia Ave
N Fuchsia Ave
N Elderberry Ave
W Harvard Pl
Well 33
(Benson Ave and
Palo Verde St)
Well 30
(Benson Ave and
San Bernardino)
Well 32
(Benson Ave
and Orchard St)


WELL 33
Palo Verde St.
12" PLANT EFFLUENT
(TREATED WATER TO CHINO)
20" PLANT EFFLUENT
(TREATED WATER TO MVWD)
4", 2,000 FT
12", 1,500 FT
12", 900 FT
San Bernardino St.
WELL 30
16", 900 FT
N Benson Ave.
12", 2,700 FT
Benito St.
Legend
Effluent Pipeline (MVWD)
Effluent Pipeline (Chino)
Brine Pipeline
Raw Water Pipeline
WELL 32
Orchard St.


Site Photopoint Map
Project Area
Well 32
Well 33
Well 30
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
N-Helen-Ave
W-Princeton-St
W-Harvard-Pl
W-4th-St
W-Rosewood-Ct
W-I-St
W-Berkeley-Ct
W-Granada-Ct
N-Jasmine-Ave
W-5th-St
W-H-St
N-Benson
N-Iris
Del-Mar-Ave
Santa-Anita-Ave
Bel-Air-Ave
Hawthorne-St
Bonnie-Brae-St
Palo-Verde-St
Vale-St
Cambridge-St
Princeton-St
Harvard-St
San-Bernardino-St
Berkeley-St
Granada-St
Benito-St
Denver-St
Orchard-St
© 2018 Google
Google Ear
1994
Imagery Date: 6/8/2018 34°04'30.61" N 117°40'59.47" W elev 1063 ft eye alt 557

2019 Site Photos

Photo 1. Looking east along Palo Verde St. from SW corner of Well 33 site.

Photo 2. Looking south along Benson Ave. down pipeline alignment, eastern side of Well 33 facility.

	**Photo 3.** Looking north at Well 33 facility from SW corner of intersection of Palo Verde St.and Benson Ave.
	**Photo 4.** Looking south down west side of Benson Ave. south of Palo Verde St.

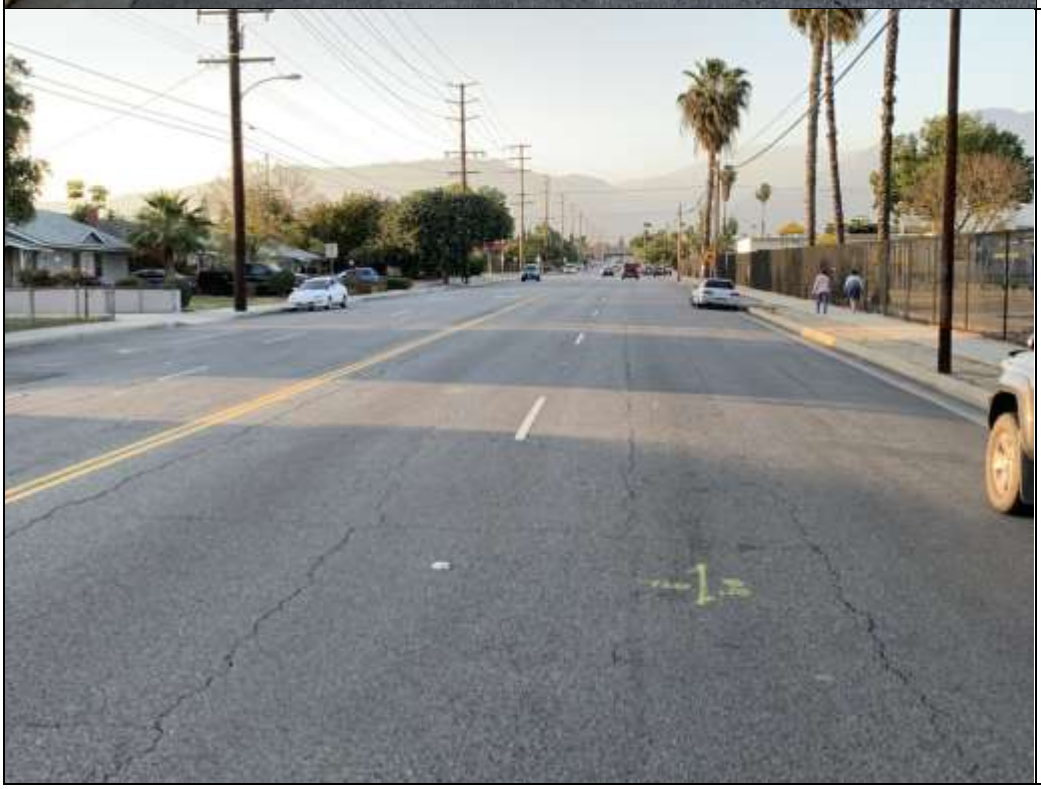
	**Photo 5.** Looking south down pipeline alignment along east side of Benson Ave at the intersection with Princeton St.
	**Photo 6.** Looking north towards Well 33 facility down pipeline alignment along east side of Benson Ave at the intersection with Princeton St.

	**Photo 7.** Looking south across San Bernardino St. at Well 30 facility.
	**Photo 8.** Looking west down south side of San Bernardino St. from gated entrance to Well 30 facility

	**Photo 9.** Looking SE from gated entrance to Well 30 facility
	**Photo 10.** Looking east down south side of San Bernardino St. from gated entrance to Well 30 facility

	**Photo 11.** Looking west down San Bernardino St. thru the intersection with Benson Ave. along pipeline towards Well 30 facility
	**Photo 12.** Looking north down Benson Ave. along pipeline alignment towards Well 33 facility from the intersection with San Bernardino St.

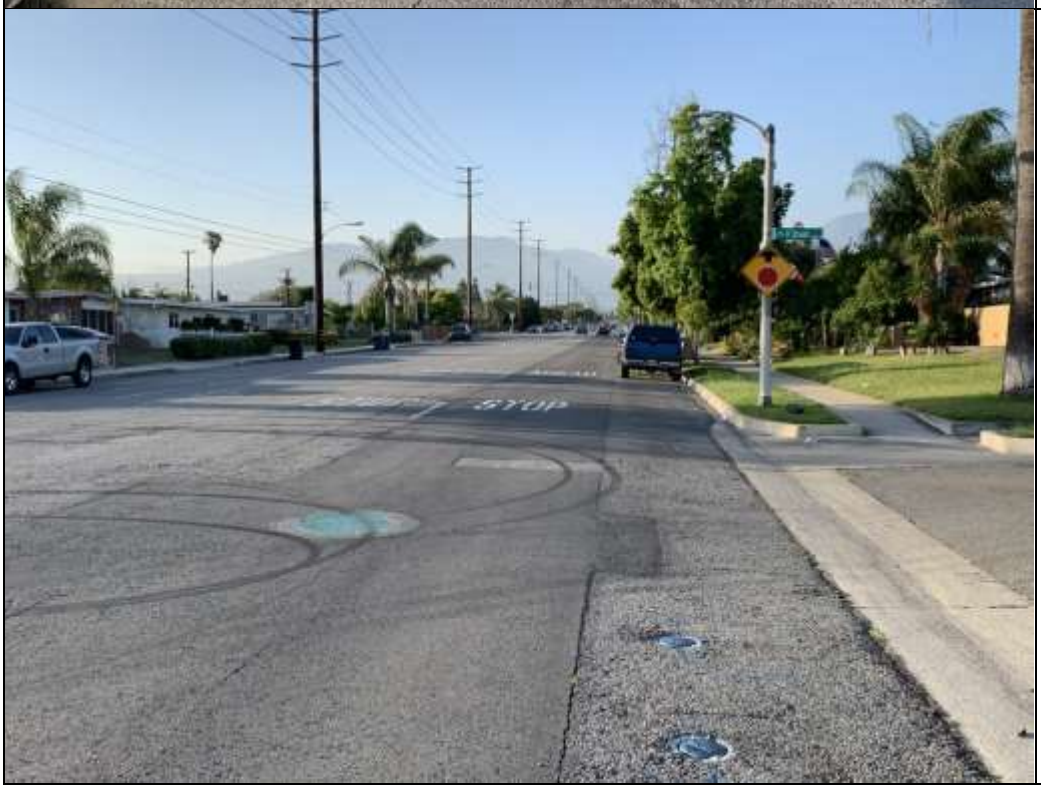
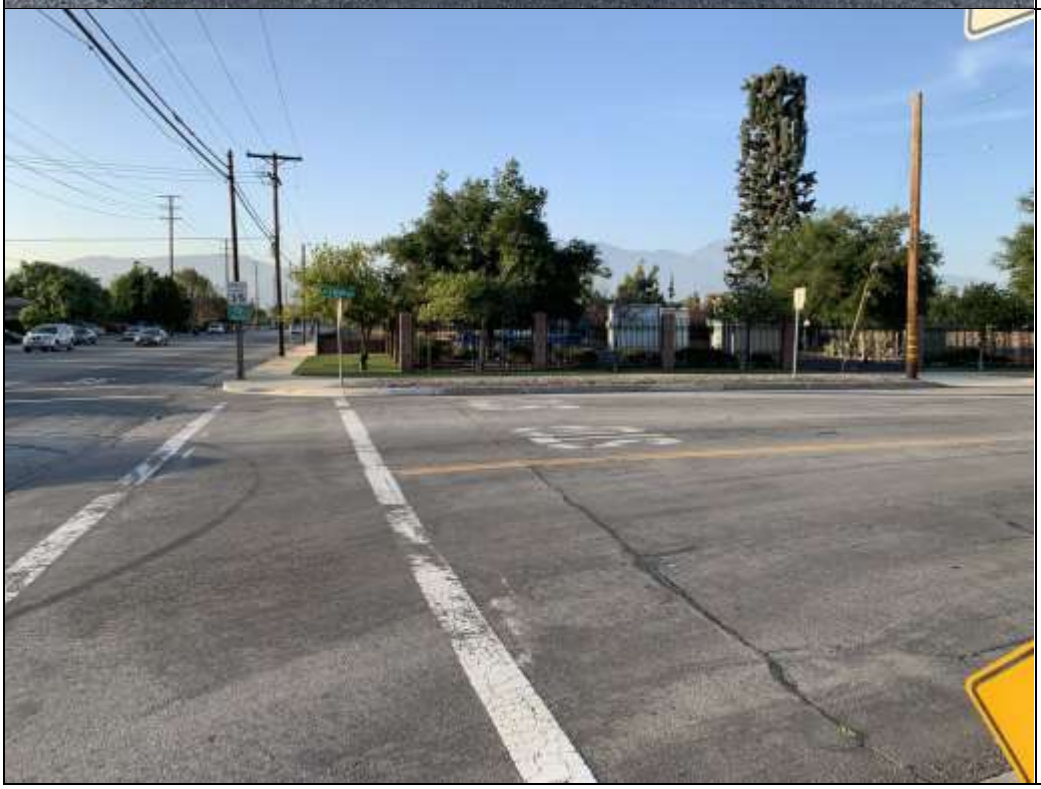
	**Photo 13.** E. Looking sourth down Benson Ave. along pipeline alignment towards Well 32 facility from the intersection with San Bernardino St.
	**Photo 14.** Looking north down the east side of Benson Ave. along pipeline alignment from the intersection of H St.

	**Photo 15.** Looking south down the east side of Benson Ave. along pipeline alignment from the intersection of H St. towards Well 32 facility.
	**Photo 16.** Looking north down the east side of Benson Ave. across the intersection of W. G/Orchard St. towards Well 32 facility.

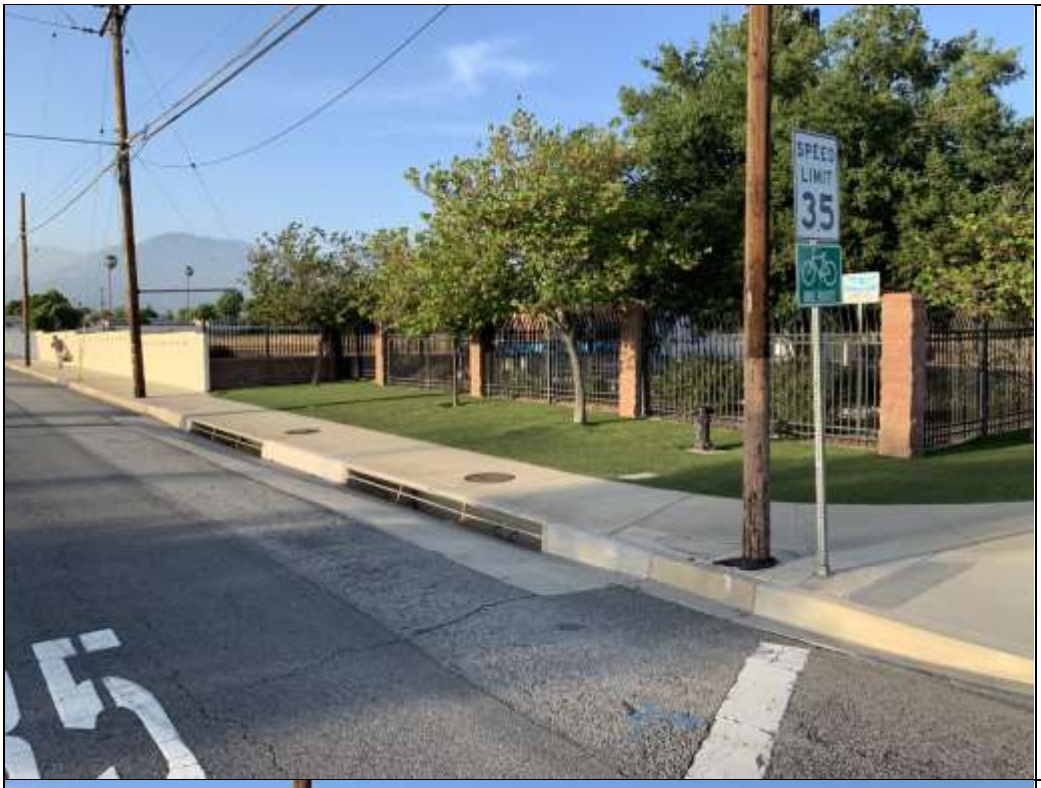
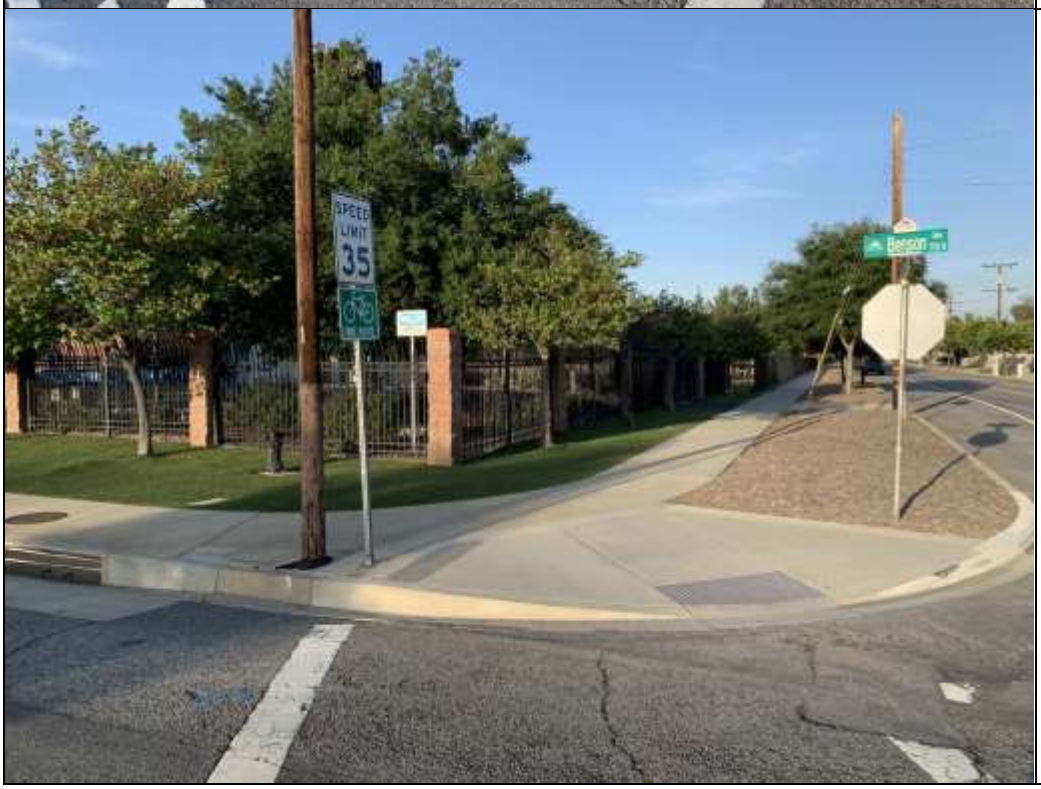
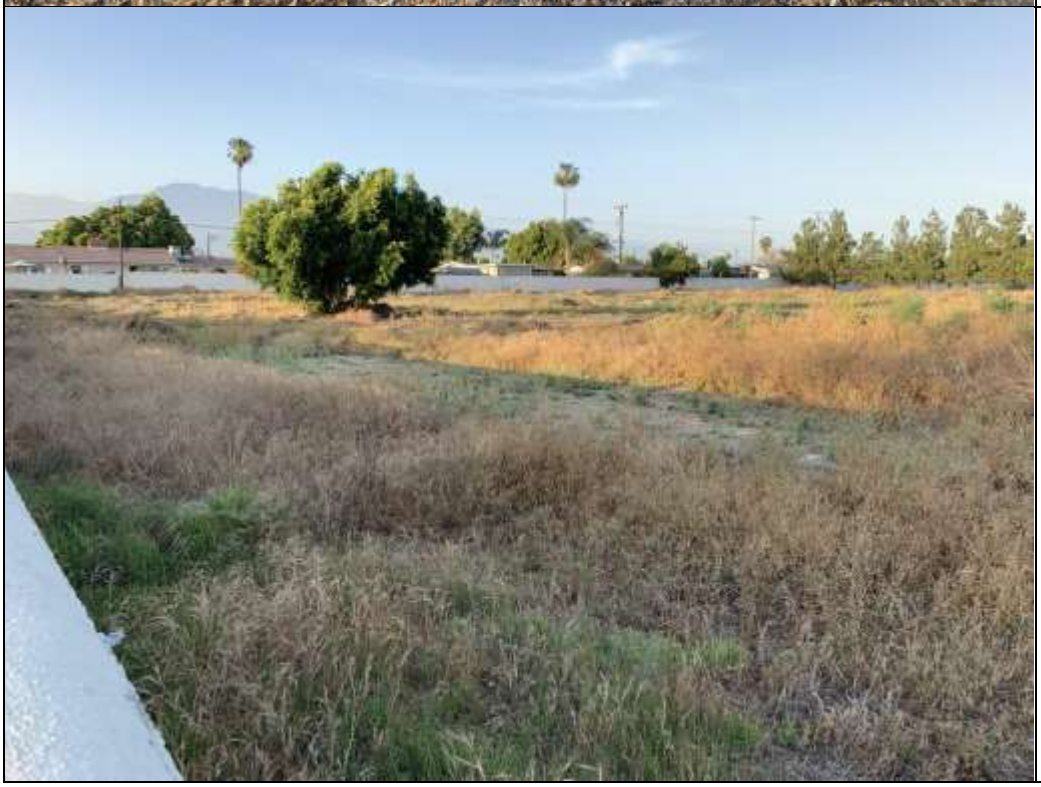
	**Photo 17.** Looking NE at the west side of Well 32 facility along Benson Ave..
	**Photo 18.** Looking east down W. G St. along south side of Well 32 facility.

	**Photo 19.** Looking north from W. G St. along eastern fence line of Well 32 facility
	**Photo 20.** Looking NE at vacant lot bordering east and north side of Well 32 facility.

	**Photo 21.** Looking north from W. G St. east of Well 32 facility thru vacant lot bordering east and north sides of facility.
	**Photo 22.** Looking NE from Benson Ave thru the north side of vacant lot north and east of the Well 32 facility.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901
http://www.fws.gov/carlsbad/

In Reply Refer To: May 04, 2019
Consultation Code: 08ECAR00-2019-SLI-0915
Event Code: 08ECAR00-2019-E-02122
Project Name: MVWD Plant 30 Wellhead Treatment Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Project Summary

Consultation Code: 08ECAR00-2019-SLI-0915

Event Code: 08ECAR00-2019-E-02122

Project Name: MVWD Plant 30 Wellhead Treatment Project

Project Type: WATER QUALITY MODIFICATION

Project Description: The project proposes to install a wellhead treatment facility at the Monte Vista Water District (MVWD) Well 30 site, and associated piping, to serve at water treatment for MVWD wells 30, 32, & 33. The project is anticipated to be funded by the State Revolving Fund.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/34.07743747169094N117.68257431685933W

Counties: San Bernardino, CA

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
San Bernardino Merriam's Kangaroo Rat *Dipodomys merriami parvus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2060	Endangered

Birds

NAME	STATUS
Coastal California Gnatcatcher *Polioptila californica californica* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered

Insects

NAME	STATUS
Delhi Sands Flower-loving Fly *Rhaphiomidas terminatus abdominalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1540	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Ontario (3411716))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
big free-tailed bat *Nyctinomops macrotis*	AMACD04020	None	None	G5	S3	SSC
burrowing owl *Athene cunicularia*	ABNSB10010	None	None	G4	S3	SSC
California black rail *Laterallus jamaicensis coturniculus*	ABNME03041	None	Threatened	G3G4T1	S1	FP
California diplectronan caddisfly *Diplectrona californica*	IITRI23010	None	None	G1G2	S1S2	
California glossy snake *Arizona elegans occidentalis*	ARADB01017	None	None	G5T2	S2	SSC
California muhly *Muhlenbergia californica*	PMPOA480A0	None	None	G4	S4	4.3
California saw-grass *Cladium californicum*	PMCYP04010	None	None	G4	S2	2B.2
coast horned lizard *Phrynosoma blainvillii*	ARACF12100	None	None	G3G4	S3S4	SSC
coastal California gnatcatcher *Polioptila californica californica*	ABPBJ08081	Threatened	None	G4G5T2Q	S2	SSC
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G3G4	S1S2	
lucky morning-glory *Calystegia felix*	PDCON040P0	None	None	G1Q	S1	1B.1
mesa horkelia *Horkelia cuneata var. puberula*	PDROS0W045	None	None	G4T1	S1	1B.1
Nevin's barberry *Berberis nevinii*	PDBER060A0	Endangered	Endangered	G1	S1	1B.1
northwestern San Diego pocket mouse *Chaetodipus fallax fallax*	AMAFD05031	None	None	G5T3T4	S3S4	SSC
pallid bat *Antrozous pallidus*	AMACC10010	None	None	G5	S3	SSC
Plummer's mariposa-lily *Calochortus plummerae*	PMLIL0D150	None	None	G4	S4	4.2
prostrate vernal pool navarretia *Navarretia prostrata*	PDPLM0C0Q0	None	None	G2	S2	1B.1
rigid fringepod *Thysanocarpus rigidus*	PDBRA2Q070	None	None	G1G2	S1	1B.2
Riversidian Alluvial Fan Sage Scrub *Riversidian Alluvial Fan Sage Scrub*	CTT32720CA	None	None	G1	S1.1	
Robinson's pepper-grass *Lepidium virginicum var. robinsonii*	PDBRA1M114	None	None	G5T3	S3	4.3

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
salt spring checkerbloom *Sidalcea neomexicana*	PDMAL110J0	None	None	G4	S2	2B.2
San Bernardino aster *Symphyotrichum defoliatum*	PDASTE80C0	None	None	G2	S2	1B.2
San Bernardino kangaroo rat *Dipodomys merriami parvus*	AMAFD03143	Endangered	None	G5T1	S1	SSC
San Diego desert woodrat *Neotoma lepida intermedia*	AMAFF08041	None	None	G5T3T4	S3S4	SSC
slender-horned spineflower *Dodecahema leptoceras*	PDPGN0V010	Endangered	Endangered	G1	S1	1B.1
southern California legless lizard *Anniella stebbinsi*	ARACC01060	None	None	G3	S3	SSC
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
two-striped gartersnake *Thamnophis hammondii*	ARADB36160	None	None	G4	S3S4	SSC
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G5T4	S3S4	SSC
western yellow bat *Lasiurus xanthinus*	AMACC05070	None	None	G5	S3	SSC
white rabbit-tobacco *Pseudognaphalium leucocephalum*	PDAST440C0	None	None	G4	S2	2B.2

Record Count: 31

APPENDIX 5

IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES

PLANT 30 WELLHEAD TREATMENT PLANT AND PIPELINE PROJECT

City of Montclair
San Bernardino County, California

For Submittal to:

Monte Vista Water District
10575 Central Avenue
Montclair, CA 91763
and
State Water Resources Control Board
1001 I Street/P.O. Box 944212
Sacramento, CA 94244

Prepared for:

Tom Dodson and Associates
2150 N. Arrowhead Avenue
San Bernardino, CA 92405

Prepared by:

CRM TECH
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Michael Hogan, Principal Investigator, Archaeology
Bai "Tom" Tang, Principal Investigator, History
Ben Kerridge, Archaeologist/Report Writer
Nina Gallardo, Archaeologist

May 10, 2019

CRM TECH Project No. 3457
Approximately 1.5 acres and 0.9 linear mile
USGS Ontario, Calif., 7.5' quadrangle; Sections 13, 14, 23, and 24, T1S R8W, SBBM
Keywords: Western San Bernardino Valley; Phase I survey; no "historic properties" or "historical resources" found

EXECUTIVE SUMMARY

Between March and May 2019, at the request of Tom Dodson and Associates, CRM TECH performed a Phase I cultural resources survey on the Area of Potential Effects (APE) for the proposed Monte Vista Water District Plant 30 Wellhead Treatment Plant and Pipeline Project on the eastern edge of the City of Montclair, San Bernardino County, California. The undertaking seeks to develop a wellhead treatment plant at the existing site of Well 30 and install pipelines to transport water to the new facility from Well 32 and Well 33. All construction activities for the undertaking will occur within the existing sites of Wells 30, 32, and 33 and the rights-of-way of Benson Avenue, San Bernardino Street, and G Street.

The APE is generally located along Benson Avenue between Palo Verde Street/5th Street and Orchard Street/G Street and along San Bernardino Street to the west of Benson Avenue, within Sections 13, 14, 23, and 24, Township 1 South, Range 8 West, San Bernardino Baseline and Meridian. It includes the three well sites involved, totaling approximately 1.5 acres, and approximately 0.9 linear mile of pipeline alignment. The vertical extent of the APE will not exceed 10 feet below the ground surface.

The study is a part of the environmental review process for the undertaking. The Monte Vista Water District (MVWD), as the project proponent and the lead agency, required the study in compliance with the California Environmental Quality Act (CEQA). As the undertaking involves State Revolving Funds administered by the State Water Resources Control Board (SWRCB), the study was conducted in accordance with the provisions of both CEQA and Section 106 of the National Historic Preservation Act (NHPA), in a process known as CEQA-Plus.

The purpose of the study is to provide MVWD and SWRCB with the necessary information and analysis to determine whether the proposed undertaking would have an effect on any "historic properties" or "historical resources," as defined by the pertinent federal and state statutes and regulations, that may exist in or near the APE. In order to accomplish this objective, CRM TECH conducted a cultural resources records search, pursued historical and geoarchaeological background research, contacted Native American representatives, and carried out a systematic field survey of the entire APE.

Throughout the course of the study, no "historic properties" or "historical resources" were encountered within the APE, and the heavily disturbed subsurface sediments in the vertical APE appear to be relatively low in archaeological sensitivity. Therefore, pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1, CRM TECH recommends to MVWD and SWRCB a finding that *no "historic properties" or "historical resources" will be affected by the proposed undertaking*.

No further cultural resources investigation is recommended for the undertaking unless project plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are inadvertently discovered during earth-moving operations associated with the undertaking, all work in the immediate area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

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INTRODUCTION

Between March and May 2019, at the request of Tom Dodson and Associates, CRM TECH performed a Phase I cultural resources survey on the Area of Potential Effects (APE) for the proposed Monte Vista Water District Plant 30 Wellhead Treatment Plant and Pipeline Project on the eastern edge of the City of Montclair, San Bernardino County, California (Figure 1). The undertaking seeks to develop a wellhead treatment plant at the existing site of Well 30 and install pipelines to transport water to the new facility from Well 32 and Well 33. All construction activities for the undertaking will occur within the existing sites of Wells 30, 32, and 33 and the rights-of-way of Benson Avenue, San Bernardino Street, and G Street.

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The study is a part of the environmental review process for the undertaking. The Monte Vista Water District (MVWD), as the project proponent and the lead agency, required the study in compliance with the California Environmental Quality Act (CEQA). As the undertaking involves State Revolving Funds administered by the State Water Resources Control Board (SWRCB), the study was conducted in accordance with the provisions of both CEQA and Section 106 of the National Historic Preservation Act (NHPA), in a process known as CEQA-Plus.

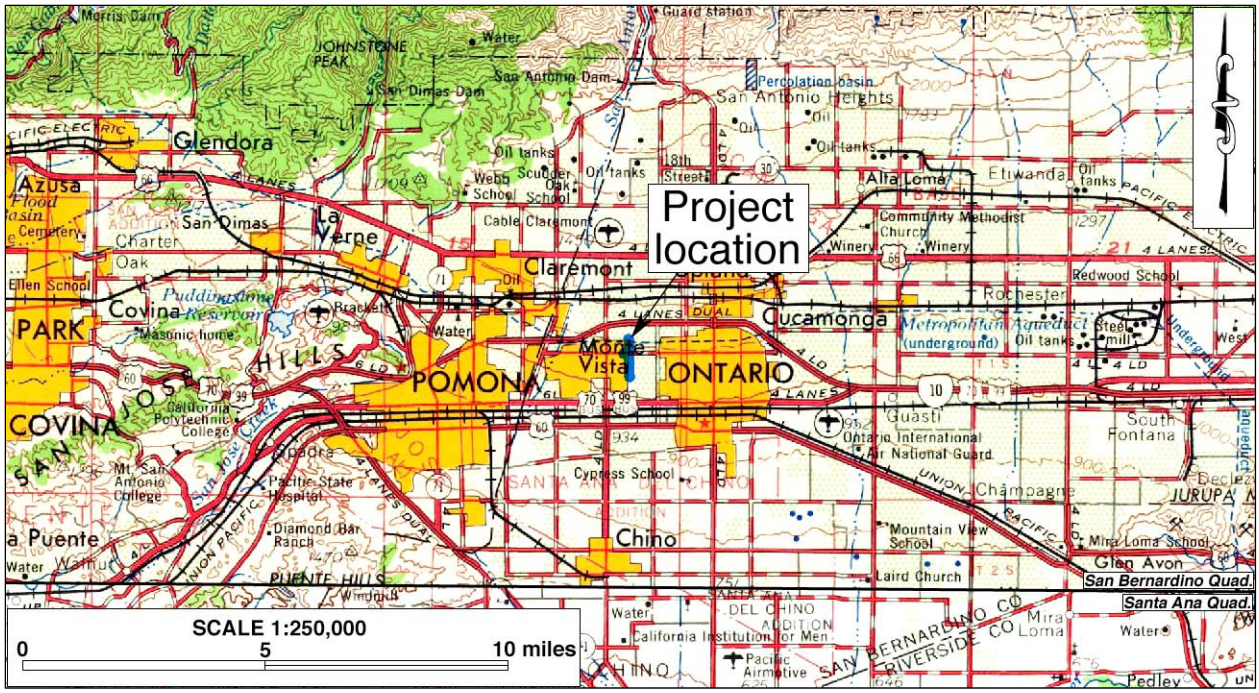

Figure 1. Project vicinity. (Based on USGS San Bernardino and Santa Ana, Calif., 60'x30' quadrangles [USGS 1969; 1979])

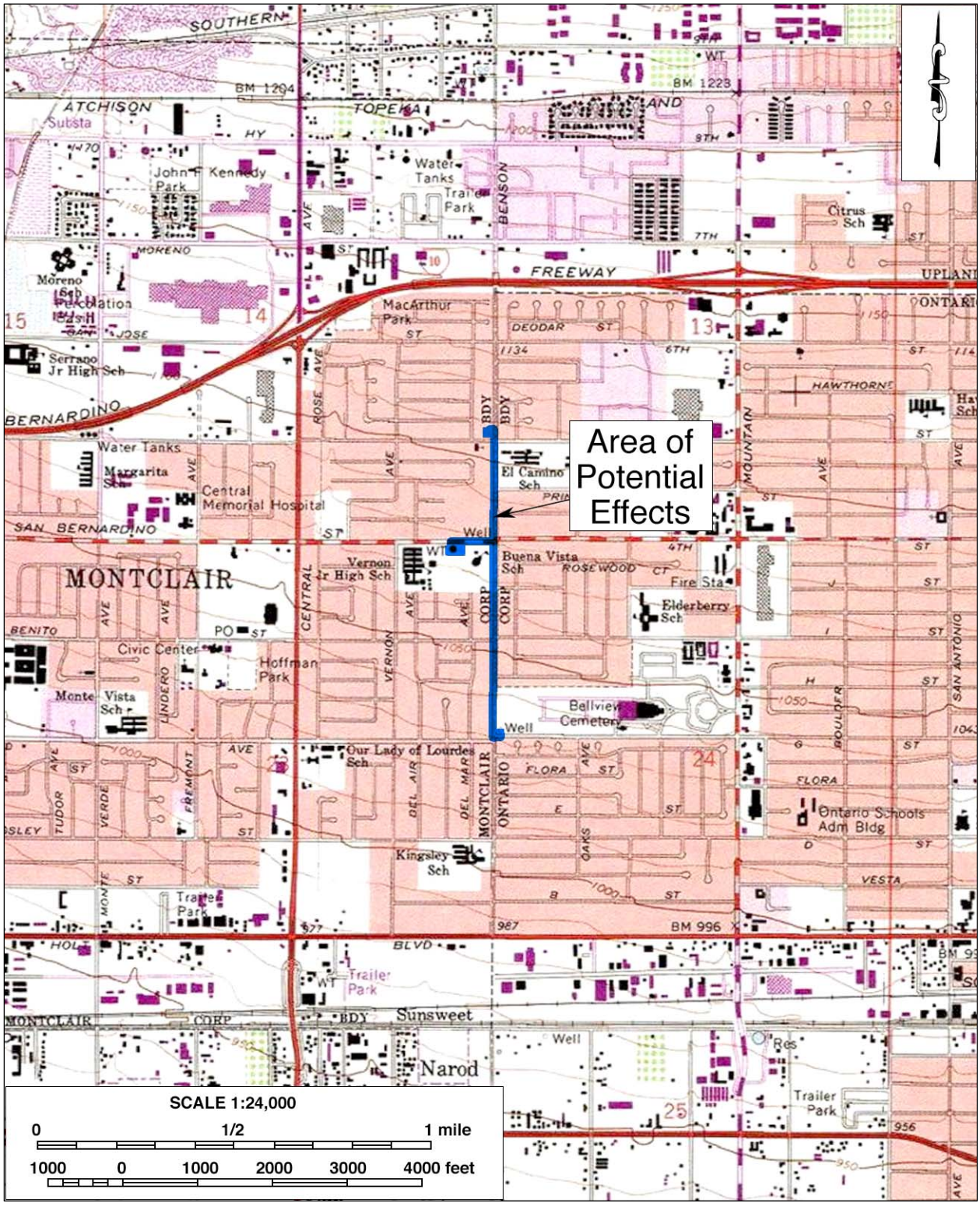

Figure 2. Project location. (Based on USGS Ontario, Calif., 7.5' quadrangle [USGS 1981])

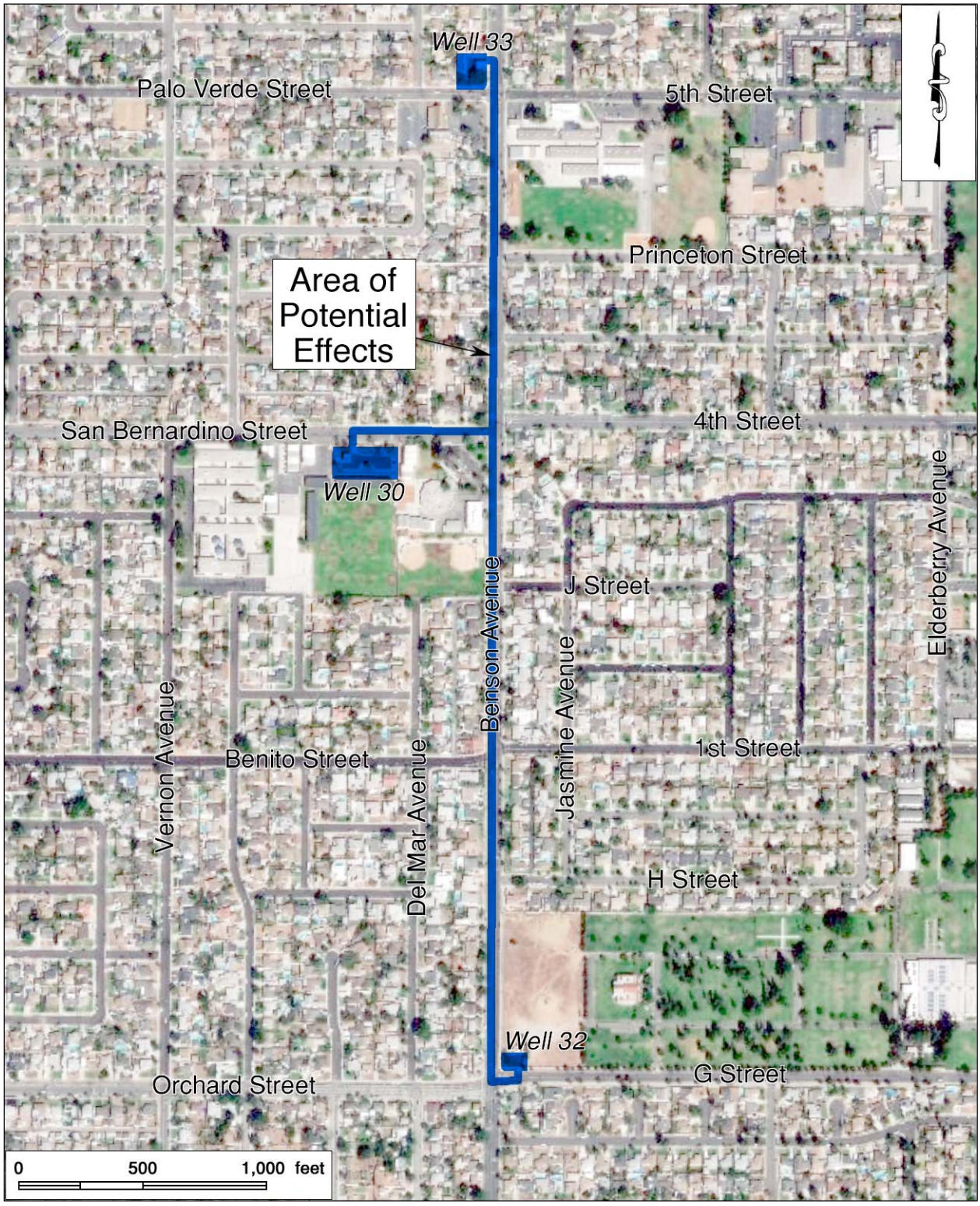

Figure 3. Area of Potential Effects.

The purpose of the study is to provide MVWD and SWRCB with the necessary information and analysis to determine whether the proposed undertaking would have an effect on any "historic properties" or "historical resources," as defined by the pertinent federal and state statutes and regulations, that may exist in or near the APE. In order to accomplish this objective, CRM TECH conducted a cultural resources records search, pursued historical and geoarchaeological background research, contacted Native American representatives, and carried out a systematic field survey of the entire APE. The following report is a complete account of the methods, results, and final conclusion of the study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

SETTING

CURRENT NATURAL SETTING

The City of Montclair is situated in the western portion of the San Bernardino Valley, a broad inland valley defined by the San Gabriel and San Bernardino Mountain Ranges on the north and a series of low rocky hills on the south. It lies on an alluvial fan extending south from the foothills of the mountain ranges, within a floodplain of San Antonio Creek, which is confined within a concrete-lined channel today. The natural environment of the region is characterized by a temperate Mediterranean climate, with seasonal average temperatures ranging between 43 and 91 degrees Fahrenheit. Precipitation is typically less than 15 inches annually, occurring mostly between November and March.

The APE consists of segments of the existing rights-of-way of Benson Avenue, San Bernardino Street, and G Street as well as three small parcels of disturbed and developed land at the existing well sites (Figures 3, 4). Among the three well sites, Well 30 and Well 33 are located in the City of Montclair, while Well 32 is located in the adjacent City of Ontario, with Benson Avenue marking the city boundary. The APE lies across a fully urbanized area, surrounded by residential neighborhoods mixed with schools, parks, churches, and a memorial park. The terrain in the APE in generally level, with a gradual incline to the north and elevation ranging approximately from 1,030 to 1,100 feet above mean sea level. The existing vegetation in the vicinity consists primarily of introduced landscaping plants as very little remains of the native landscape (Figures 3, 4).

Figure 4. Typical landscapes in the APE. *Left*: site of Well 30, view to the west; *right*: Benson Avenue, view to the north. (Photographs taken on April 3, 2019)

CULTURAL SETTING

Prehistoric Context

The earliest evidence of human occupation in inland southern California was discovered below the surface of an alluvial fan in the northern portion of the Lakeview Mountains, overlooking the San Jacinto Valley, with radiocarbon dates clustering around 9,500 B.P. (Horne and McDougall 2008). Another site found near the shoreline of Lake Elsinore, close to the confluence of Temescal Wash and the San Jacinto River, yielded radiocarbon dates between 8,000 and 9,000 B.P. (Grenda 1997). Additional sites with isolated Archaic dart points, bifaces, and other associated lithic artifacts from the same age range have been found in the nearby Cajon Pass area, typically atop knolls with good viewsheds (Basgall and True 1985; Goodman and McDonald 2001; Goodman 2002; Milburn et al. 2008).

The cultural history of southern California has been summarized into numerous chronologies, including the works of Chartkoff and Chartkoff (1984), Warren (1984), and others. The prehistory of Riverside County specifically has been addressed by O'Connell et al. (1974), McDonald, et al. (1987), Keller and McCarthy (1989), Grenda (1993), Goldberg (2001), and Horne and McDougall (2008). Although the beginning and ending dates of different cultural horizons vary regionally, the general framework of the prehistory of inland southern California can be divided into three primary periods:

- Paleoindian Period (ca. 18,000-9,000 B.P.): Native peoples of this period created fluted spearhead bases designed to be hafted to wooden shafts. The distinctive method of thinning bifaces and spearhead preforms by removing long, linear flakes leaves diagnostic Paleoindian markers at tool-making sites. Other artifacts associated with the Paleoindian toolkit include choppers, cutting tools, retouched flakes, and perforators. Sites from this period are very sparse across the landscape and most are deeply buried.
- Archaic Period (ca. 9,000-1,500 B.P.): Archaic sites are characterized by abundant lithic scatters of considerable size with many biface thinning flakes, bifacial preforms broken during manufacture, and well-made groundstone bowls and basin metates. As a consequence of making dart points, many biface thinning waste flakes were generated at individual production stations, which is a diagnostic feature of Archaic sites.
- Late Prehistoric Period (ca. 1,500 B.P.-contact): Sites from this period typically contain small lithic scatters from the manufacture of small arrow points, expedient groundstone tools such as tabular metates and unshaped manos, wooden mortars with stone pestles, acorn or mesquite bean granaries, ceramic vessels, shell beads suggestive of extensive trading networks, and steatite implements such as pipes and arrow shaft straighteners.

Ethnohistoric Context

The present-day Montclair area lies in the eastern portion of the traditional territory of the Gabrielino, a Takic-speaking people considered to be the most populous and most powerful ethnic group in aboriginal southern California (Bean and Smith 1978:538). The Gabrielino's territory spanned from the San Clemente Island to the San Bernardino-Riverside area and south into southern

Orange County, and their influence spread as far as the San Joaquin Valley, the Colorado River, and Baja California. The leading ethnographic sources on Gabrielino culture and history include Bean and Smith (1978), Miller (1991), and McCawley (1996). The following summary is based mainly on these sources.

According to archaeological records, the Gabrielino first arrived in the Los Angeles Basin around 500 B.C., slowly replacing the indigenous Hokan speakers (Howard and Raab 1997; Porcasi 1998). In response to the varying natural environment of their territory, different groups of the Gabrielino adopted different subsistence economies, albeit all based on some combination of gathering, hunting, and/or fishing. In inland areas, the predominant food sources were acorns, sage, deer, and various small animals, including birds. Because of the similarities to other southern California tribes in economic activities, inland Gabrielino groups' industrial arts, dominated by basket weaving, demonstrated no substantial difference from those of their neighbors. Coastal Gabrielino material culture, on the other hand, reflected an elaborately developed artisanship most recognized through the medium of steatite, which was rivaled by few other groups in southern California.

The intricacies of Gabrielino social organization are not well known, although evidence suggests the existence of a moiety system in which various clans belonged to one or the other of two main social/ cultural divisions. There also seems to have existed at least three hierarchically ordered social classes, topped with an elite consisting of the chiefs, their immediate families, and the very rich. Some individuals owned land, and property boundaries were marked by the owner's personalized symbol. Villages were politically autonomous, composed of nonlocalized lineages, each with its own leader. The dominant lineage's leader was usually the village chief, whose office was generally hereditary through the male line. Often several villages were allied under the leadership of a single chief. The villages were frequently engaged in warfare against one another, resulting in what some consider to be a state of constant enmity between coastal and inland Gabrielino groups.

As early as 1542, the Gabrielino were in contact with the Spanish during the historic expedition of Juan Rodríguez Cabrillo, but it was not until 1769 that the Spaniards took steps to colonize Gabrielino territory. Shortly afterwards, most of the Gabrielino people were incorporated into Mission San Gabriel and other missions in southern California. Due to introduced diseases, dietary deficiencies, and forceful reduction, Gabrielino population dwindled rapidly. By 1900, they had almost ceased to exist as a culturally identifiable group (Bean and Smith 1978:540). In recent decades, however, there has been a renaissance of Native American activism and cultural revitalization among a number of groups of Gabrielino descendants.

Historic Context

In 1772, three years after the beginning of Spanish colonization of Alta California, Pedro Fages, *comandante* of the new province, and a small force of soldiers under his command became the first Europeans to set foot in the San Bernardino Valley (Beck and Haase 1974:15; Schuiling 1984:23). They were followed in the next few years by two other famed Spanish explorers, Juan Bautista de Anza and Francisco Garcés, who traveled through the valley in the mid-1770s (Beck and Haase 1974:15). Despite these early visits, for the next 40 years the inland valley received little impact from the Spanish colonization activities in Alta California, which were concentrated predominantly in the coastal regions.

Following the establishment of Mission San Gabriel in 1771, the San Bernardino Valley became nominally a part of the landholdings of that mission. In the 1830s-1840s, during secularization of the mission system, the Mexican authorities in Alta California made a number of large land grants of former mission properties in the valley. However, the area around the APE was not included in any of these land grants, and remained public land when California became a part of the United States in 1848.

Used primarily as cattle ranches, the San Bernardino Valley saw little development until the mid-19th century, when the U.S. annexation brought waves of American immigrants into the once sparsely populated territory. In the late 19th century, however, the Montclair area remained open grazing land between the towns of Pomona and Ontario (Reeder Heritage Foundation n.d.). In 1897, the "Township of Marquette" was founded by the Frasers, a family of early settlers in the area (*ibid.*; City of Montclair n.d.). Ten years later, Los Angeles-based land developer Emil Firth began marketing 5- to 40-acre lots in a 1,000-acre tract named Monte Vista, with special incentives to encourage home building and orchard planting (*ibid.*).

Initially an agrarian settlement focusing on citrus cultivation, Monte Vista experienced a boom in residential development after World War II (Reeder Heritage Foundation n.d.; City of Montclair n.d.). During the late 1940s and the 1950s, virtually all citrus acreage in Monte Vista gave way to suburban housing tracts (Reeder Heritage Foundation n.d.). Fearing annexation by the neighboring cities, the residents of Monte Vista voted to incorporate in 1956 (*ibid.*). Two years later, the new city was renamed Montclair to avoid confusion with a community in northern California (*ibid.*; City of Montclair n.d.). Since that time, Montclair has functioned largely as a "bedroom community" in support of the Greater Los Angeles area.

RESEARCH METHODS

RECORDS SEARCH

On April 16, 2019, CRM TECH archaeologist Ben Kerridge completed the records search at the South Central Coastal Information Center (SCCIC), California State University, Fullerton. During the records search, Kerridge examined maps and records on file at the SCCIC for previously identified cultural resources and existing cultural resources reports within a one-mile radius of the APE. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or San Bernardino County Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

HISTORICAL BACKGROUND RESEARCH

Historical background research for this study was conducted by CRM TECH principal investigator/ historian Bai "Tom" Tang on the basis of published literature in local and regional history, U.S. General Land Office (GLO) land survey plat maps dated 1865, U.S. Geological Survey (USGS) topographic maps dated 1903-1981, and aerial photographs taken in 1938-2018. The historic maps are collected at the Science Library of the University of California, Riverside, and the California

Desert District of the U.S. Bureau of Land Management, located in Moreno Valley, and the aerial photographs are available from the Nationwide Environmental Title Research (NETR) Online website and the Google Earth software.

FIELD SURVEY

On April 3, 2019, Ben Kerridge carried out the field survey of the APE. The three well sites in the APE were surveyed at an intensive level by walking parallel east-west transects spaced 15 meters (approximately 50 feet) apart. The pipeline alignments were surveyed at a reconnaissance level by driving the route and visually inspecting the ground surface for any indication of cultural remains. In this way, the entire APE was systematically inspected for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Throughout the course of the survey, little vestige of the native ground surface was observed as the APE is almost entirely covered with pavement, landscaping, imported fill soil, or mulch.

GEOARCHAEOLOGICAL ANALYSIS

As a part of the research procedures, Ben Kerridge pursued geoarchaeological analysis to assess the APE's potential for the deposition and preservation of subsurface cultural deposits from the prehistoric period, which cannot be detected through a standard surface archaeological survey. Sources consulted for this purpose included primarily topographic and geologic maps and reports pertaining to the surrounding area. Findings from these sources were used to develop a geomorphologic history of the APE and address geoarchaeological sensitivity of the vertical APE.

NATIVE AMERICAN PARTICIPATION

On March 20, 2019, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. Following the NAHC's recommendations and previously established consultation protocol, between April 8 and 30 CRM TECH further contacted a total of nine tribal representatives in the region, both in writing and by telephone, for additional information on potential Native American cultural resources in or near the APE. The correspondence between CRM TECH and the Native American representatives is attached to this report as Appendix 2.

RESULTS AND FINDINGS

RECORDS SEARCH

According to SCCIC records, except for a 2005 linear survey that coincided with the short segment of pipeline alignment along San Bernardino Street (Figure 5), the APE had not been surveyed for cultural resources prior to this study, and no cultural resources had been recorded within or adjacent to its boundaries. Outside the APE but within the one-mile radius, 21 other previous studies have been reported to the SCCIC, covering mostly linear features or relatively small parcels of land (Figure 5). In all, less than 10 percent of the land within the scope of the records search has been surveyed.

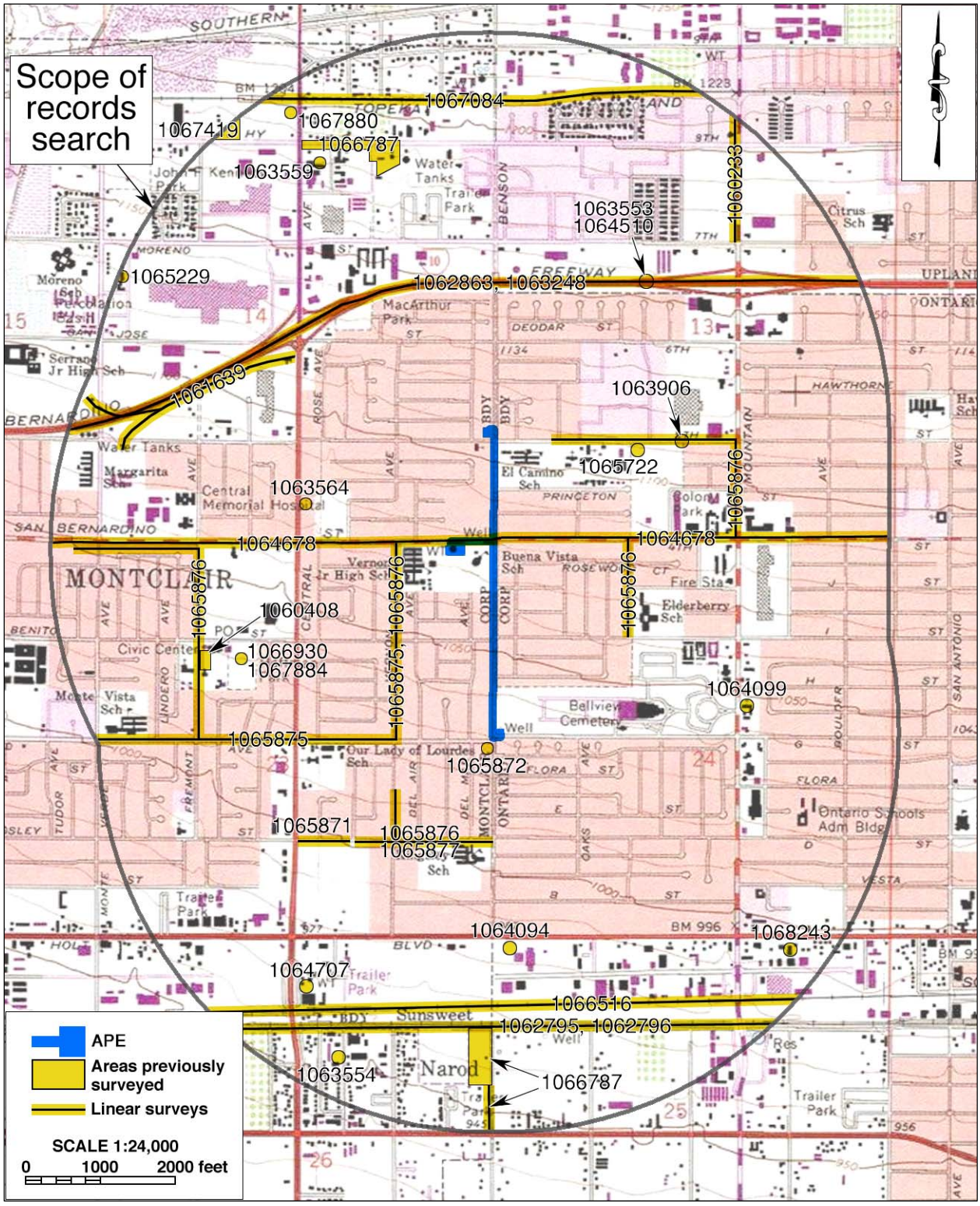

Figure 5. Previous cultural resources studies in the vicinity of the APE, listed by SCCIC file number. (See Appendix 3 for locations of recorded sites)

SCCIC records further indicate that only two historical/archaeological sites have been recorded within the one-mile radius (see Appendix 3). Both of these sites, designated 36-006847 and 36-010330 in the California Historical Resources Inventory, represent rail lines from the 1870s-1880s era, namely the Atchison, Topeka and Santa Fe (now Burlington Northern Santa Fe) Railway and the Southern Pacific (now Union Pacific) Railroad, respectively. Since neither of these sites is located within a half-mile of the APE (see Appendix 3), neither of them requires further consideration during this study.

HISTORICAL BACKGROUND RESEARCH

In the 1850s-1860s, when the U.S. government conducted the earliest systematic surveys in the San Bernardino Valley, a road crossing the northern end of the APE in a roughly east-west direction, undoubtedly a part of the historic San Bernardino-Sonora Road, was the only man-made feature to be observed in the project vicinity (Figure 6). By the 1890s, this early road was no longer extant in or near the APE (Figure 7). Instead, the area featured a regular grid of roads lined by scattered buildings, including the forerunners of present-day Benson Avenue, San Bernardino Street, and G Street (Figure 7).

During the early and mid-20th century, the area surrounding the APE was almost entirely occupied by orchards, presumably citrus groves, with few other notable features present except the roads (Figures 8, 9; NETR Online 1938; 1946). Between 1948 and 1959, however, the area underwent a complete transformation from agriculture to suburbia, and virtually all of the residential neighborhoods adjacent to the APE were developed during that period (NETR Online 1948; 1959).

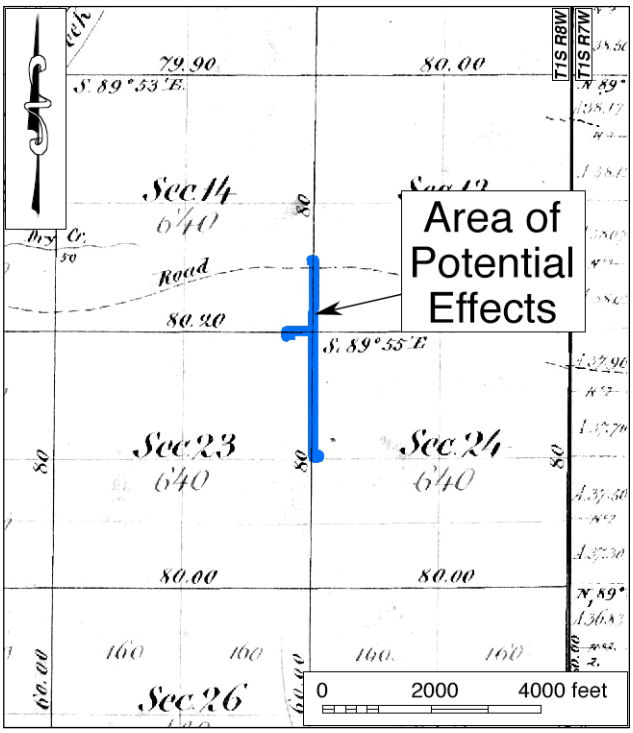

Figure 6. The APE and vicinity in 1852-1865. (Source: GLO 1865)

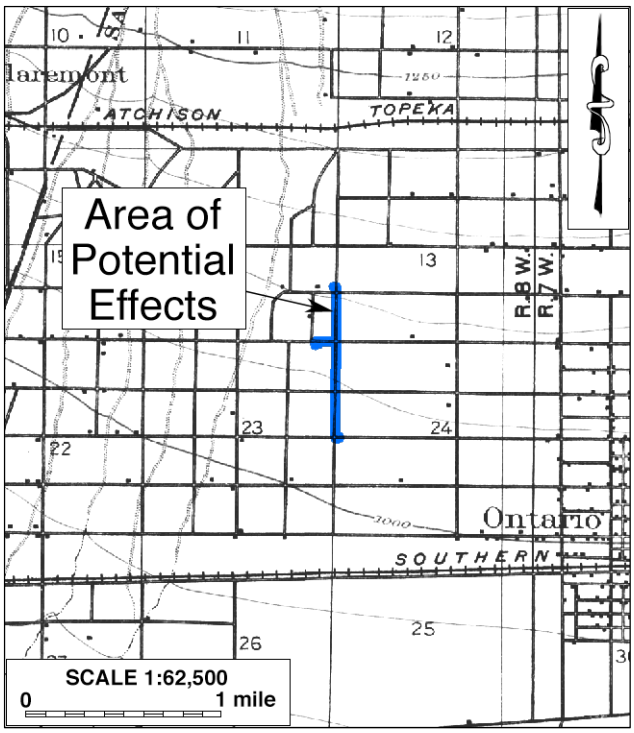

Figure 7. The APE and vicinity in 1894. (Source: USGS 1903)

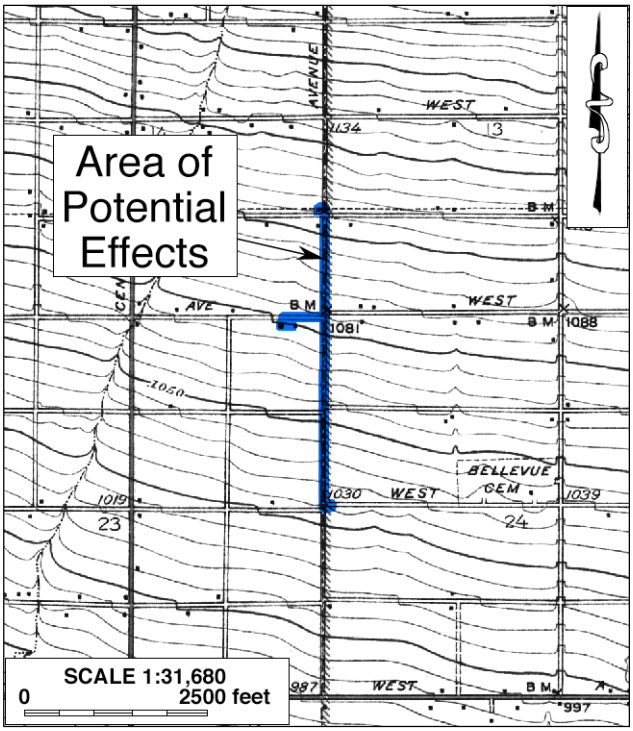

Figure 8. The APE and vicinity in 1933. (Source: USGS 1942)

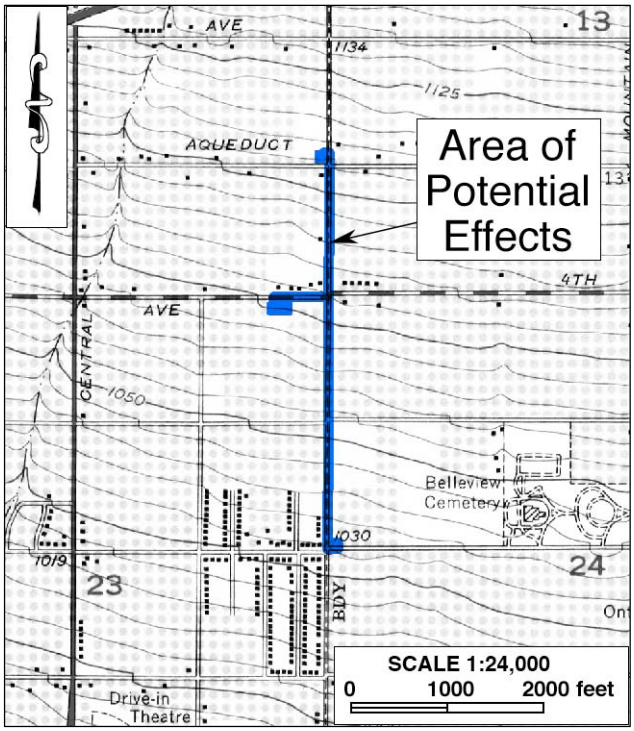

Figure 9. The APE and vicinity in 1952-1954. (Source: USGS 1954)

At the site of Well 30, a round storage tank, presumably a water reservoir, was known to be extant by the 1930s (Figure 8; NETR Online 1938). It remained there until sometime between 1980 and 1994, when the tank was removed and the current well facility was built (NETR Online 1946-1994). Well 33 dates only to 2007-2009, after a former residence at this location was demolished in 2006-2007 (Google Earth 2006-2009). At Well 32, what may have been a similar facility was present in the 1960s-1970s, but that earlier facility was completely demolished in 2007 before the current one was built during the next two years (NETR Online 1965-1972; Google Earth 2007; 2009). Other than the roads, therefore, all existing developments within the APE are of modern origin.

FIELD SURVEY

The field survey encountered no potential "historic properties" or "historical resources" within the APE. No archaeological remains of prehistoric origin were noted throughout the course of the survey, nor were any physical remains of the 1850s-1860s San Bernardino-Sonora Road observed at or near the location where it once crossed the APE. The only features of historical origin found in the APE were Benson Avenue, San Bernardino Street, and G Street. All of these roads, however, have undergone repeated upgrading and constant maintenance over the years. As a result, they are essentially modern in appearance today (Figures 4, 10).

GEOARCHAEOLOGICAL ANALYSIS

Dibblee (2002) mapped the surface geology in and around the APE as alluvial gravel and sand of valley areas, and Morton and Miller (2006) mapped it as young alluvial fan deposits of middle

Figure 10. Public roads containing the proposed pipeline route. *Left*: San Bernardino Street, view to the east; *right*: G Street, view to the east. (Photographs taken on April 3, 2019)

Holocene age. Generally, these Holocene-age deposits were established concurrently with the earliest human occupation of the region and, thus, are young enough to be possibly mixed with prehistoric cultural remains. Furthermore, the location of the APE some 1.5 miles east of San Antonio Creek suggests that the area may be considered a possible—although not likely, given the distance—candidate for primary or secondary settlement in prehistoric times (Bean and Smith 1978:538).

However, as noted above, the entire APE consists of existing well sites and paved public roadways, where the subsurface sediments have been extensively disturbed by construction activities associated with the roads, underground utility lines, and other facilities and are composed largely of artificial fill. In light of the extent of the prior ground disturbance, the vertical APE is unlikely to contain any intact, potentially significant prehistoric archaeological remains in buried deposits.

NATIVE AMERICAN PARTICIPATION

In response to CRM TECH's inquiry, the NAHC reported that the Sacred Lands File identified no Native American cultural resources within the APE but recommended that local Native American groups be contacted for further information. For that purpose, the NAHC provided a list of potential contacts in the region (see Appendix 2). Upon receiving the NAHC's reply, CRM TECH sent written requests for comments to all nine tribal organizations on the referral list (see Appendix 2). For some of the tribes, the designated spokespersons on cultural resources issues were contacted in lieu of the tribal political leaders on the referral list, as recommended in the past by tribal government staff. The nine tribal representatives contacted during this study are listed below:

- Andy Salas, Chairperson, Gabrieleño Band of Mission Indians–Kizh Nation;
- Sandonne Goad, Chairperson, Gabrielino/Tongva Nation;
- Anthony Morales, Chairperson, Gabrieleno/Tongva San Gabriel Band of Mission Indians;
- Robert Dorame, Chairperson, Gabrielino Tongva Indians of California Tribal Council;
- Charles Alvarez, Chairperson, Gabrielino Tongva Tribe;
- Travis Armstrong, Tribal Historic Preservation Officer, Morongo Band of Mission Indians;
- Donna Yocum, Chairperson, San Fernando Band of Mission Indians;
- Lee Clauss, Director of Cultural Resources, San Manuel Band of Mission Indians;
- Mark Cochrane, Chairperson, Serrano Nation of Indians.

The written requests for comments were sent to the tribal representatives on April 8, 2019, and follow-up telephone solicitations were carried out on April 23-30. As of this time, four of the tribes have responded in writing, and two others have provided their comments by telephone (see Appendix 2). Among them, the San Manuel Band indicated that the APE was outside the Serrano ancestral territory and declined to participate in further consultation over this undertaking. The San Fernando Band had no comments regarding the undertaking, and the Morongo Band stated that "we have no additional information to provide at this time but may provide other information to the lead agency during the AB 52 consultation process."

The Gabrieleño Band–Kizh Nation also requested to be included in AB-52 consultation process, while the Serrano Nation requested to be notified immediately if any Native American cultural resources or human remains were discovered during ground-disturbing activities. Citing the presence of known Native American encampments and travel routes nearby, the Gabrieleno/ Tongva San Gabriel Band requested archaeological and Native American monitoring during the undertaking.

MANAGEMENT CONSIDERATIONS

The purpose of this study is to identify any "historic properties" or "historical resources" that may exist within the APE. "Historic properties," as defined by the Advisory Council on Historic Preservation, include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior" (36 CFR 800.16(l)). The eligibility for inclusion in the National Register is determined by applying the following criteria, developed by the National Park Service as per provision of the National Historic Preservation Act:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
> (b) that are associated with the lives of persons significant in our past; or
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> (d) that have yielded, or may be likely to yield, information important in prehistory or history. (36 CFR 60.4)

For CEQA-compliance considerations, the State of California Public Resources Code (PRC) establishes the definitions and criteria for "historical resources," which require similar protection to what NHPA Section 106 mandates for "historic properties." "Historical resources," according to PRC §5020.1(j), "includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria of historical significance, CEQA guidelines mandate that "generally a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

In summary of the research results outlined above, no potential "historic properties" or "historical resources" were previously identified within or adjacent to the APE, and none were encountered during this survey. The only features in the APE that are more than 50 years of age, Benson Avenue, San Bernardino Street, and G Street, remain working components of the modern transportation infrastructure today. As a result of extensive later alterations, none of them demonstrates any distinctively historical characteristics. In addition, Native American input during this study did not identify any properties of Native American traditional cultural value. Based on these findings, and in light of the criteria listed above, this study concludes that no "historic properties" or "historical resources" are present within the APE.

CONCLUSION AND RECOMMENDATIONS

Section 106 of the National Historic Preservation Act mandates that federal agencies take into account the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate any adverse effects on such properties (36 CFR 800.1(a)). Similarly, CEQA establishes 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" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

As stated above, the results of this study indicate that no "historic properties" or "historical resources" are known to be present within the APE, and the heavily disturbed subsurface sediments in the APE appear to be relatively low in archaeological sensitivity. Therefore, pursuant to 36 CFR 800.4(d)(1) and Calif. PRC §21084.1-2, CRM TECH presents the following recommendations to MVWD and SWRCB:

- No "historic properties" or "historical resources" will be affected by the proposed undertaking.
- No further cultural resources investigation will be necessary for the undertaking unless project plans undergo such changes as to include areas not covered by this study.

- If buried cultural materials are inadvertently discovered during earth-moving operations associated with the undertaking, all work in the immediate area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

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1969 Map: San Bernardino, Calif. (1:250,000); 1958 edition revised.
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APPENDIX 1
PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR/HISTORIAN
Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, UC Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1993-2002	Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, UC Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, UC Riverside.
1988-1993	Research Assistant, American Social History, UC Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST
Michael Hogan, Ph.D., RPA*

Education

1991	Ph.D., Anthropology, University of California, Riverside.
1981	B.S., Anthropology, University of California, Riverside; with honors.
1980-1981	Education Abroad Program, Lima, Peru.
2002	"Section 106—National Historic Preservation Act: Federal Law at the Local Level," UCLA Extension Course #888.
2002	"Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002	"Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992	"Southern California Ceramics Workshop," presented by Jerry Schaefer.
1992	"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

Registrations

*Registered Professional Archaeologist 28576644

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1999-2002	Project Archaeologist/Field Director, CRM TECH, Riverside.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands.
1992-1998	Assistant Research Anthropologist, University of California, Riverside
1992-1995	Project Director, Archaeological Research Unit, U.C. Riverside.
1993-1994	Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College.
1991-1992	Crew Chief, Archaeological Research Unit, U.C. Riverside.
1984-1998	Project Director, Field Director, Crew Chief, and Archaeological Technician for various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Principal investigator for, author or co-author of, and contributor to numerous cultural resources management study reports since 1986.

Memberships

Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

PROJECT ARCHAEOLOGIST/REPORT WRITER
Ben Kerridge, M.A.

Education

2014	Archaeological Field School, Institute for Field Research, Kephallenia, Greece.
2010	M.A., Anthropology, California State University, Fullerton.
2009	Project Management Training, Project Management Institute/CH2M HILL, Santa Ana, California.
2004	B.A., Anthropology, California State University, Fullerton.

Professional Experience

2015-	Project Archaeologist/Report Writer, CRM TECH, Colton, California.
2015	Teaching Assistant, Institute for Field Research, Kephallenia, Greece.
2009-2014	Publications Delivery Manager, CH2M HILL, Santa Ana, California.
2010-	Naturalist, Newport Bay Conservancy, Newport Beach, California.
2006-2009	Technical Publishing Specialist, CH2M HILL, Santa Ana, California.
2002-2006	English Composition/College Preparation Tutor, various locations, California.

Memberships

Society for California Archaeology; Pacific Coast Archaeological Society.

PROJECT ARCHAEOLOGIST/NATIVE AMERICAN LIAISON
Nina Gallardo, B.A.

Education

2004	B.A., Anthropology/Law and Society, University of California, Riverside.

Professional Experience

2004-	Project Archaeologist, CRM TECH, Riverside/Colton, California.

APPENDIX 2

CORRESPONDENCE WITH NATIVE AMERICAN REPRESENTATIVES*

* Nine local Native American representatives were contacted during this study; a sample letter is included in the appendix.

SACRED LANDS FILE & NATIVE AMERICAN CONTACTS LIST REQUEST

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916)373-3710
(916)373-5471 Fax
nahc@pacbell.net

Project: Proposed Plant 30 Wellhead Treatment Plant and Pipeline Project (CRM TECH No. 3457)

County: San Bernardino

USGS Quadrangle Name: Ontario, Calif.

Township 1 South **Range** 8 West SB **BM; Section(s)**: 13, 14, 23 and 24

Company/Firm/Agency: CRM TECH

Contact Person: Nina Gallardo

Street Address: 1016 E. Cooley Drive, Suite A/B

City: Colton, CA **Zip:** 92324

Phone: (909) 824-6400 **Fax:** (909) 824-6405

Email: ngallardo@crmtech.us

Project Description: The primary component of the project is to install approximately one mile of pipeline alignments and improvements at an existing facility, mostly along N. Benson Avenue between Palo Verde Street and Orchard Street, in the City of Montclair, San Bernardino County, California.

March 20, 2019

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
Twitter: @CA_NAHC

April 5, 2019

Nina Gallardo
CRM Tech

VIA Email to: ngallardo@crmtech.us

RE: Proposed Plant 30 Wellhead Treatment Plant and Pipeline Project, San Bernardino County

Dear Ms. Gallardo:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,

Steven Quinn
Associate Governmental Program Analyst

Attachment

Native American Heritage Commission
Native American Contact List
San Bernardino County
4/5/2019

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 — Gabrieleno
Covina, CA, 91723
Phone: (626) 926 - 4131
admin@gabrielenoindians.org

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 — Gabrieleno
San Gabriel, CA, 91778
Phone: (626) 483 - 3564
Fax: (626) 286-1262
GTTribalcouncil@aol.com

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 — Gabrielino
Los Angeles, CA, 90012
Phone: (951) 807 - 0479
sgoad@gabrielino-tongva.com

Gabrielino Tongva Indians of California Tribal Council
Robert Dorame, Chairperson
P.O. Box 490 — Gabrielino
Bellflower, CA, 90707
Phone: (562) 761 - 6417
Fax: (562) 761-6417
gtongva@gmail.com

Gabrielino-Tongva Tribe
Charles Alvarez,
23454 Vanowen Street — Gabrielino
West Hills, CA, 91307
Phone: (310) 403 - 6048
roadkingcharles@aol.com

Morongo Band of Mission Indians
Robert Martin, Chairperson
12700 Pumarra Rroad — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

Morongo Band of Mission Indians
Denisa Torres, Cultural Resources Manager
12700 Pumarra Rroad — Cahuilla, Serrano
Banning, CA, 92220
Phone: (951) 849 - 8807
Fax: (951) 922-8146
dtorres@morongo-nsn.gov

San Fernando Band of Mission Indians
Donna Yocum, Chairperson
P.O. Box 221838 — Kitanemuk, Vanyume, Tataviam
Newhall, CA, 91322
Phone: (503) 539 - 0933
Fax: (503) 574-3308
ddyocum@comcast.net

San Manuel Band of Mission Indians
Lee Clauss, Director of Cultural Resources
26569 Community Center Drive — Serrano
Highland, CA, 92346
Phone: (909) 864 - 8933
Fax: (909) 864-3370
lclauss@sanmanuel-nsn.gov

Serrano Nation of Mission Indians
Goldie Walker, Chairperson
P.O. Box 343 — Serrano
Patton, CA, 92369
Phone: (909) 528 - 9027

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

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Proposed Plant 30 Wellhead Treatment Plant and Pipeline Project, San Bernardino County.

April 8, 2019

Robert F. Dorame, Tribal Chairperson
Gabrielino Tongva Indians of California Tribal Council
P. O. Box 490
Bellflower, CA 90707

RE: Monte Vista Water District Plant 30 Wellhead Treatment Project
One Well Site and 1.36 Linear Miles of Pipeline Alignments
In the Cities of Montclair and Ontario, San Bernardino County, California
CRM TECH Contract # 3457

Dear Mr. Dorame:

I am writing to bring your attention to an ongoing CEQA-Plus study for the proposed project referenced above, which entails the installation of wellhead treatment apparatus within the existing Well 30 facility along with approximately 1.36 miles of pipeline that will connect the new treatment equipment to other existing wells within the Monte Vista Water District (MVWD) service area. The Area of Potential Effects (APE) for the undertaking encompasses a portion of the Well 30 facility located near the southwest corner of Benson Avenue and San Bernardino Street and the planned pipeline alignments within the existing public right-of-way of San Bernardino Street and of Benson Avenue between Palo Verde Street and Orchard Street, in the Cities of Montclair and Ontario. The accompanying map, based on the USGS Ontario, Calif., 7.5' quadrangle, depicts the location of the APE in Sections 13, 14, 23 and 24, T1S R8W, SBBM.

In a letter dated April 5, 2019, the Native American Heritage Commission reports that the sacred lands record search identified no Native American cultural resources within the APE but recommends that local Native American groups be contacted for further information (see attached). Therefore, as part of the cultural resources study for this project, I am writing to request your input on potential Native American cultural resources in or near the APE.

Please respond at your earliest convenience if you have any specific knowledge of sacred/religious sites or other sites of Native American traditional cultural value in or near the APE, or any other information to consider during the cultural resources investigations. Any information or concerns may be forwarded to CRM TECH by telephone, e-mail, facsimile, or standard mail. Requests for documentation or information we cannot provide will be forwarded to our client and/or the lead agencies, namely the MVWD and State Water Resources Control Board.

We would also like to clarify that, as the cultural resources consultant for the APE, CRM TECH is not involved in the AB 52-compliance process or in government-to-government consultations. The purpose of this letter is to seek any information that you may have to help us determine if there are cultural resources in or near the APE that we should be aware of and to help us assess the sensitivity of the project area. Thank you for your time and effort in addressing this important matter.

Respectfully,

Nina Gallardo
Project Archaeologist/Native American liaison
CRM TECH
Email: ngallardo@crmtech.us

Encl.: NAHC response letter and project location map

From: donna <ddyocum@comcast.net>
Sent: Monday, April 8, 2019 2:20 PM
To: ngallardo@crmtech.us
Subject: RE: NA Scoping Letter for the Proposed Monte Vista Water District Plant 30 Wellhead Treatment Project, in the Cities of Montclair and Ontario, San Bernardino County (CRM TECH # 3457)

Nina

Thank you for the information. San Fernando Band of Mission Indians does not have comment on this project.

Thank you

Donna Yocum

From: Administration Gabrieleno <admin@gabrielenoindians.org>
Sent: Monday, April 8, 2019 3:08 PM
To: Nina Gallardo
Subject: Re: NA Scoping Letter for the Proposed Monte Vista Water District Plant 30 Wellhead Treatment Project, in the Cities of Montclair and Ontario, San Bernardino County (CRM TECH # 3457)

Hello Nina

Thank you for your letter dated April 8,2019. If there will be any ground disturbance taking place our Tribal government would like to consult with your lead agency.

Thank you

Sincerely,

Brandy Salas
Admin Specialist
Gabrieleno Band of Mission Indians - Kizh Nation
PO Box 393
Covina, CA 91723
Office: 844-390-0787
website: www.gabrielenoindians.org

From: Jessica Mauck <JMauck@sanmanuel-nsn.gov>
Sent: Tuesday, April 23, 2019 2:45 PM
To: ngallardo@crmtech.us
Subject: FW: NA Scoping Letter for the Proposed Monte Vista Water District Plant 30 Wellhead Treatment Project, in the Cities of Montclair and Ontario, San Bernardino County (CRM TECH # 3457)

Hi Nina,

I just listened to your voicemail. Our admin sent an e-mail noting the project is out of territory on April 9, but the final character on your e-mail was missing so it bounced back. Please use the attached for your records.

Thank you,

Jessica Mauck
CULTURAL RESOURCES ANALYST
O: (909) 864-8933 x3249
M: (909) 725-9054
26569 Community Center Drive Highland California 92346

Mary Vizcaino

From: Mary Vizcaino
Sent: Tuesday, April 9, 2019 12:25 PM
To: ngallardo@crmtech.u
Cc: Mary Vizcaino
Subject: NA Scoping Letter for the Proposed Monte Vista Water District Plant 30 Wellhead Treatment Project, in the Cities of Montclair and Ontario, San Bernardino County (CRM TECH # 3457)
Attachments: NA Scoping Letter for the MVWD Plant 30 Wellhead Treatment Project (CRM TECH # 3457).pdf

Dear Ms. Gallardo,

Thank you for contacting the San Manuel Band of Mission Indians (SMBMI) regarding the above referenced project. I write to you on behalf of Lee Clauss, the Director of the Cultural Resources Management Department. SMBMI appreciates the opportunity to review the project documentation, which was received by the Cultural Resources Management Department on April 8, 2019. The proposed project(s) are located outside of Serrano ancestral territory and, as such, SMBMI will not be requesting consulting party status with the lead agency or requesting to participate in the scoping, development, and/or review of documents created pursuant to these legal and regulatory mandates.

Kind regards,

Mary

Mary Vizcaino
SENIOR ADMINISTRATIVE ASSISTANT, TFS
O: (909) 864-8933 x502262
Internal: 50-2262
M: (909) 633-5497
26569 Community Center Highland CA 92346
SAN MANUEL
BAND OF MISSION INDIANS

From: Tribal Historic Preservation Office <thpo@morongo-nsn.gov>
Sent: Wednesday, April 24, 2019 4:23 PM
To: 'ngallardo@crmtech.us'
Subject: RE: NA Scoping Letter for the Proposed Monte Vista Water District Plant 30 Wellhead Treatment Project, in the Cities of Montclair and Ontario, San Bernardino County (CRM TECH # 3457)

Hello,

Regarding the above referenced project, we have no additional information to provide at this time but may provide other information to the lead agency during the AB 52 consultation process.

Thank you for reaching out to our office.

Sincerely,

Travis Armstrong
Tribal Historic Preservation Officer
Morongo Band of Mission Indians
951-755-5259
Email: thpo@morongo-nsn.gov

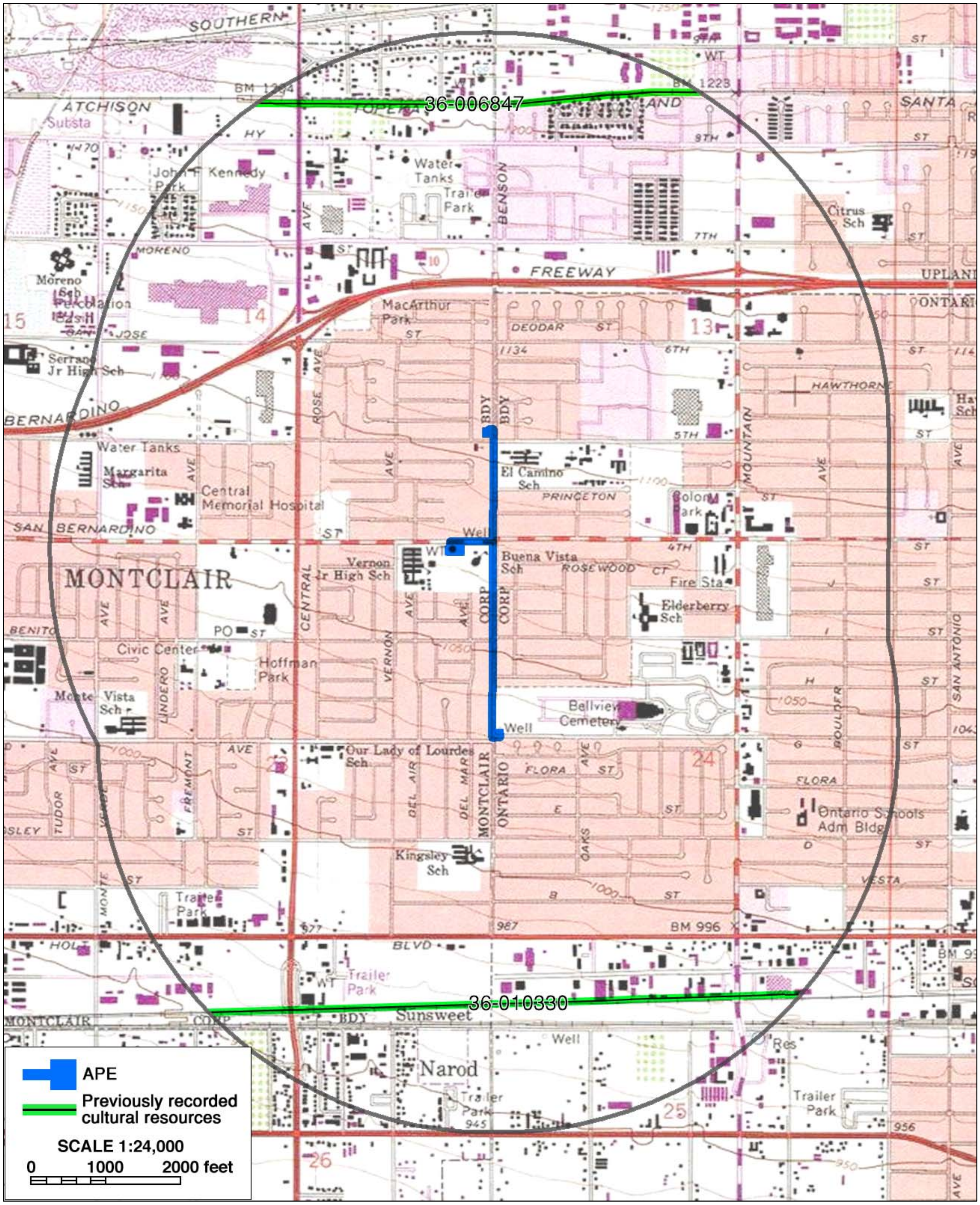
TELEPHONE LOG

Name	Tribe/Affiliation	Telephone Contacts	Note
Sandonne Goad, Chairperson	Gabrielino/Tongva Nation	2:00 pm, April 23, 2019; 3:59 pm, April 30, 2019	Left messages; no response to date.
Andrew Salas, Chairman	Gabrieleño Band of Mission Indians–Kizh Nation	None	Brandy Salas, Administrative Specialist, responded by e-mail on April 8, 2019 (copy attached).
Anthony Morales, Chairperson	Gabrieleno/Tongva San Gabriel Band of Mission Indians	1:53 pm, April 23, 2019	Mr. Morales states that the APE is located in an area that has known encampments along the waterways and has been used as a travel routes between Mission San Gabriel and the Inland Empire. He requests archaeological and Native American monitoring during the undertaking.
Charles Alvarez, Chairperson	Gabrielino-Tongva Tribe	2:09 pm, April 23, 2019; 4:02 pm, April 30, 2019	Left messages; no response to date.
Robert F. Dorame, Tribal Chairperson	Gabrielino Tongva Indians of California Tribal Council	2:06 pm, April 23, 2019; 3:57 pm, April 30, 2019	Mr. Dorame states that he has not reviewed the letter yet but plans to respond as soon as possible.
Travis Armstrong, Tribal Historic Preservation Officer	Morongo Band of Mission Indians	2:12 pm, April 23, 2019	Mr. Armstrong responded by e-mail on April 24, 2019 (copy attached).
Donna Yocum, Chairperson	San Fernando Band of Mission Indians	None	Ms. Yocum responded by e-mail on April 8, 2019 (copy attached).
Lee Clauss, Director of Cultural Resources	San Manuel Band of Mission Indians	2:15 pm, April 23, 2019	Mary Vizcaino, Senior Administrative Assistant, responded by e-mail on April 9, 2019 (copy attached).
Mark Cochrane, Chairperson	Serrano Nation of Mission Indians	2:17 pm, April 23, 2019; 4:09 pm, April 30, 2019	Mr. Cochrane requests to be notified immediately if any Native American cultural resources or human remains were discovered during ground-disturbing activities.

APPENDIX 3

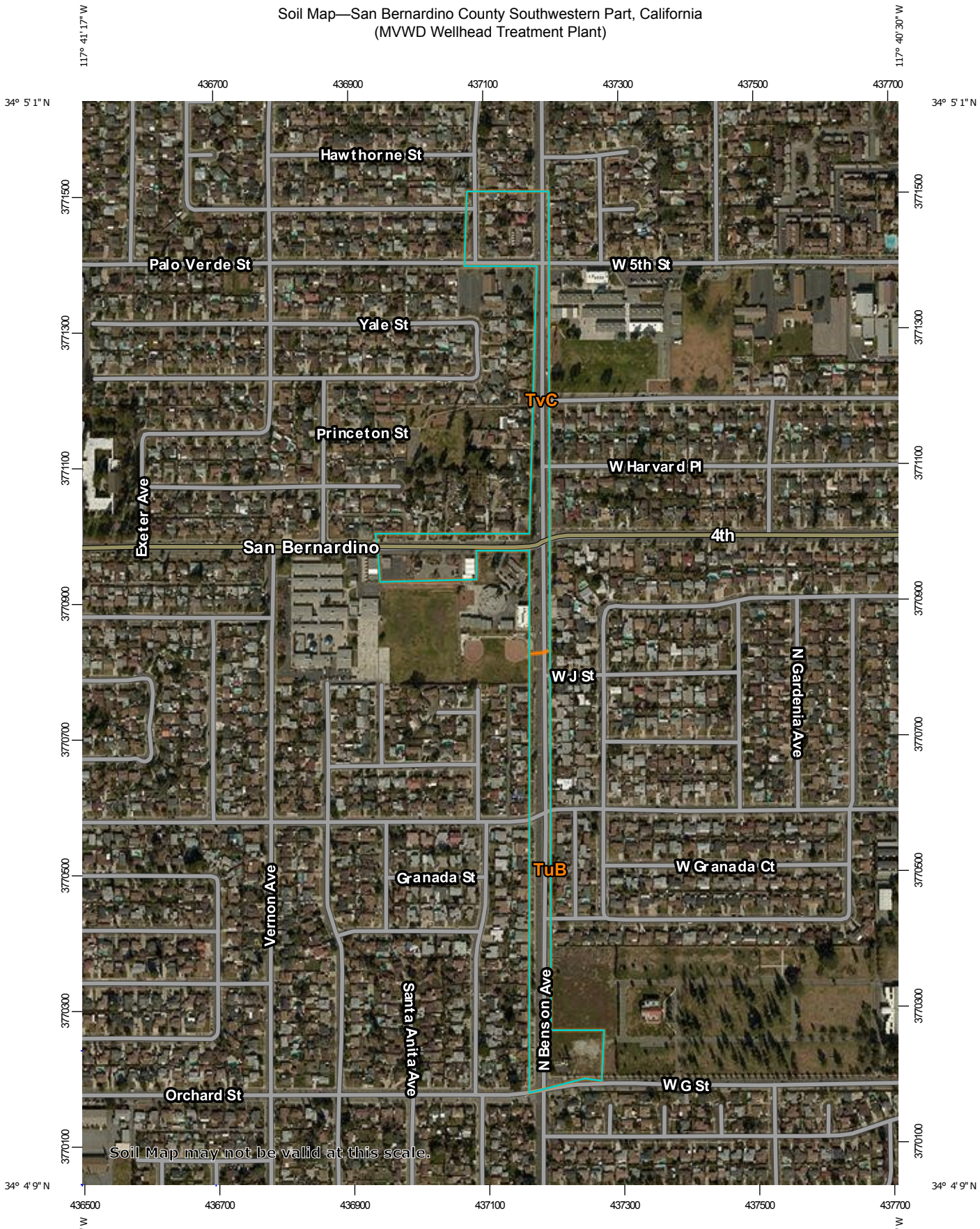
RECORDED CULTURAL RESOURCES WITHIN THE ONE-MILE SCOPE OF THE RECORDS SEARCH

(Confidential)


36-006847
36-010330
MONTCLAIR
APE
Previously recorded cultural resources
SCALE 1:24,000
0 1000 2000 feet

APPENDIX 5

Soil Map—San Bernardino County Southwestern Part, California
(MVWD Wellhead Treatment Plant)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 10, Sep 12, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 5, 2015—Jan 18, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
TuB	Tujunga loamy sand, 0 to 5 percent slopes	6.5	39.2%
TvC	Tujunga gravelly loamy sand, 0 to 9 percent slopes	10.0	60.8%
Totals for Area of Interest		**16.5**	**100.0%**