CHAPTER 3

ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

The PEIR assessed potential impacts for each CEQA category for long-term planning strategies and short-term projects in the District's 20-year Strategic Plan. The following sections augment that analysis by evaluating impacts of the proposed Project that were not evaluated at a project-level in the PEIR.

3.1 AESTHETICS

This section describes the aesthetic characteristics of the area in the vicinity of the two treatment plants, evaluates the consistency of the proposed Project with established visual resources policies, and assesses potential impacts associated with the proposed Project.

3.1.1 SETTING

In general, Orange County is characterized by a variety of landforms including coastal shorelines, flatlands, hills, mountains, and canyons. Broad sandy beaches, coastal bluffs, uplifted marine terraces, and marshes characterize the Pacific shoreline. Major ridgelines occur in the Santa Ana Mountains, Lomas de Santiago, and the San Joaquin Hills. More than half of Orange County is urbanized including most of the District's Service Area.

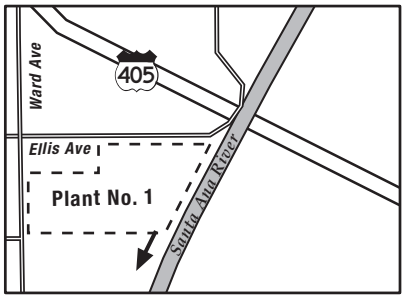
RECLAMATION PLANT NO. 1

Reclamation Plant No. 1, which has been used as a water treatment facility by OCSD for more than 65 years, is located in southwestern Fountain Valley, along the western bank of the concretized portion of the SAR. This 108-acre site is bounded by Ellis Avenue to the north, Garfield Avenue to the south, OCWD and Ward Avenue to the west, and the SAR to the east.

The City of Fountain Valley, which spans approximately 8.9 square miles and is located approximately 38 feet above sea level, is an entirely land-locked city with no direct contact with the Pacific Ocean. The city is predominantly flat and heavily urbanized with a mix of commercially, residential, and industrial uses. Visual elements considered to contribute positively to the City include the Casa de Tortuga (House of the Tortoises), David L. Baker Memorial Golf Course, and Mile Square Park.

Existing Views

Figures 3.1-1 through **3.1-5** show views of Plant No. 1 from the surrounding areas. Plant No. 1 is not readily visible from surrounding areas and is not located within a scenic vista. Views of the plant from Ellis Avenue are impaired by existing landscaping (trees and bushes) and an architectural wall.

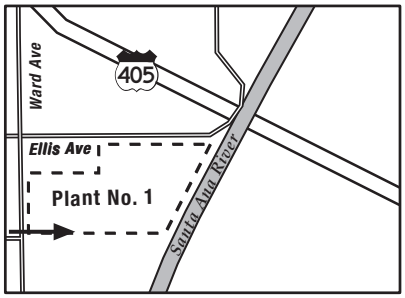


OCSD Secondary Treatment and Plant Improvement / 203472 ■

SOURCE: Environmental Science Associates

Figure 3.1-1

View of the Southern California Edision property looking southwest.

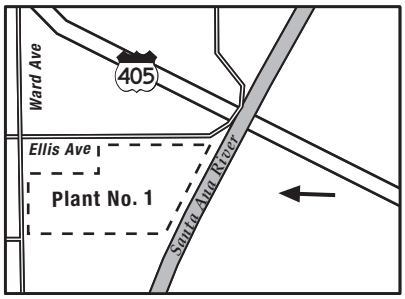


OCSD Secondary Treatment and Plant Improvement / 203472 ■

SOURCE: Environmental Science Associates

Figure 3.1-2

View towards Reclamation Plant No. 1 from the existing residences looking east.



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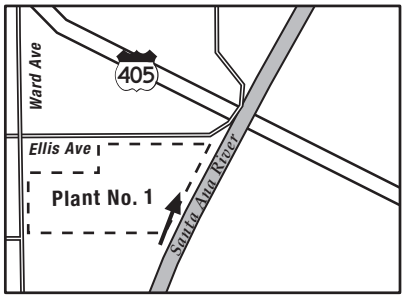
SOURCE: Environmental Science Associates

Figure 3.1-3

View towards Reclamation Plant No. 1 from existing residences looking west.

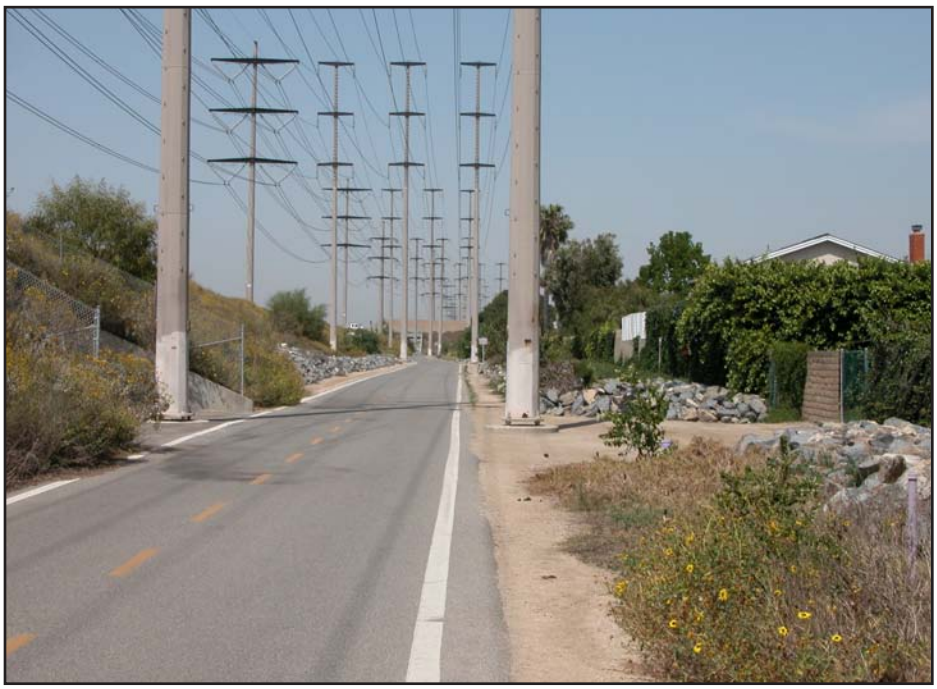


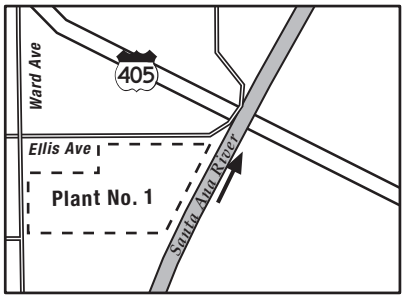
OCSD Secondary Treatment and Plant Improvement / 203472 ■

SOURCE: Environmental Science Associates

Figure 3.1-4

View of Reclamation Plant No. 1 looking north.

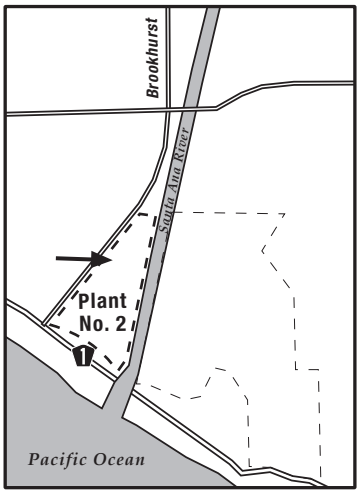




SOURCE: Environmental Science Associates

Figure 3.1-5

View of existing earthen berm, two-story house, and recreational path looking north.



SOURCE: Environmental Science Associates

Figure 3.1-6

View of Treatment Plant No. 2 looking east.

The residences located on the west side of Ward Avenue have similarly impaired views of Plant No. 1. The existing residences located along Ward Avenue also have an architectural wall that screens views from Ward Avenue. In addition to OCSD's landscaping and the architectural walls on both sides of Ward Avenue, OCWD's facility and landscaping further screen views of Plant No. 1 from the residences located to the west of the plant site. Views of the treatment plant from the south are impaired by the existing SCE facility. The treatment plant is subject to long distance views from one- and two-story residences located to the east, across the SAR. These views of Plant No. 1 are screened by the existing earthen berms on either side of the SAR, 40-50' eucalyptus trees along the OCSD property line, and various landscaping spread throughout the existing residential neighborhood.

TREATMENT PLANT NO. 2

Treatment Plant No. 2 is located in southern Huntington Beach adjacent to the SAR, roughly 1,500 feet from the Pacific Ocean. The plant is located on approximately 110-acres bounded by Brookhurst Street on the northwest, PCH on the southwest, and the SAR on the east.

A sequence of mesas and small bays exist along the coast. The inland areas of Huntington Beach is relatively flat. Views of the Pacific Ocean and coastlines are available from the bluffs of Costa Mesa to the northeast of Plant No. 2, Bolsa Chica mesa to the north, and from portions of PCH. Visual elements considered to contribute positively to the City include the Pacific Ocean, Bolsa Chica Wetlands, Huntington Harbor, and mature landscaping.

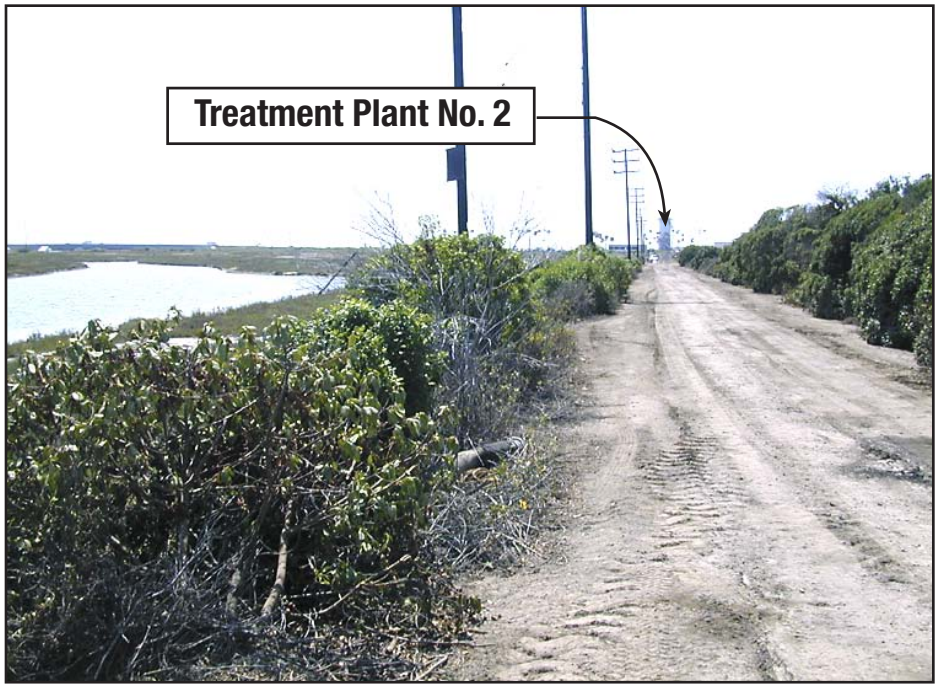
Existing Views

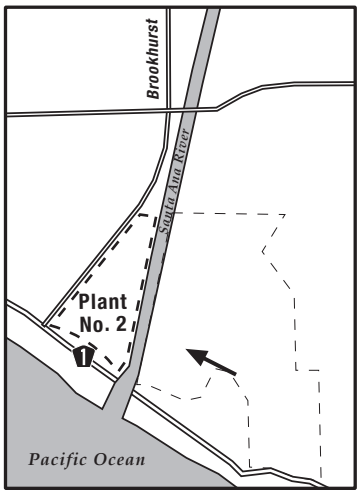
Figures 3.1-6 through **3.1-10** show views of Plant No. 2. Plant No. 2 is not located within a scenic vista or view designated by the County or Caltrans. However, the site is visible to several single family residences and the PCH. The residential properties with views of the treatment plant are located in the cities of Huntington Beach to the northwest, Costa Mesa to the northeast, and Newport Beach to the southeast.

Single family residences located directly north and west of the site along Brookhurst Street in the City of Huntington Beach are separated from the treatment plant by a screening wall enhanced with landscaping. However, some of the homes have partial views of the plant and its facilities. Figure 3.1-6 displays the existing view of Plant No. 2 from residences located to the west.

The plant can also be seen from several homes adjacent to the wetlands in the City of Newport Beach, the nearest of which is approximately 1,800 feet southeast. The views from the east are partially impaired by the SAR levee. Several oil extraction pumps are located between the Newport Beach residences and the SAR. Figure 3.1-7 shows the existing view from the wetland area in the City of Newport Beach, located to the east of Plant No. 2.

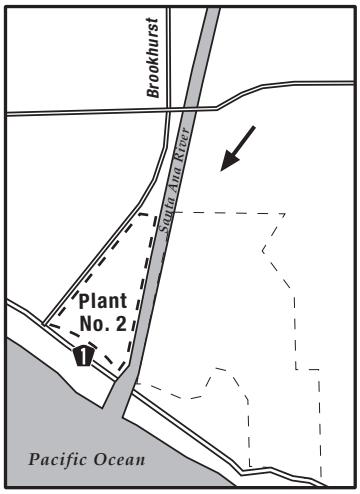
Several homes are situated on the bluffs of Costa Mesa overlooking the wetlands and the SAR. The houses located on the mesa have views of the ocean, the wetlands, oil drilling operations, crude oil storage tanks, and the existing facilities at Plant No. 2. These houses are located approximately one mile east with long-range views of the treatment plant. Figure 3.1-8 displays the existing view from a house located along the mesa.





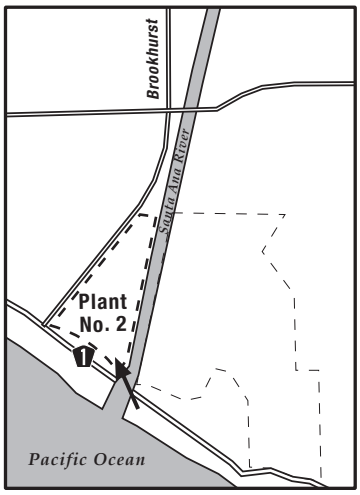
SOURCE: Environmental Science Associates

Figure 3.1-7
View of Service Road Entering ACOE Property



SOURCE: Environmental Science Associates

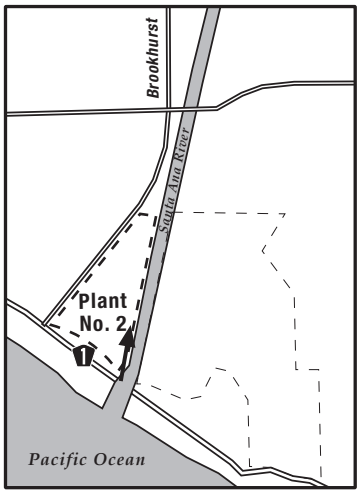
Figure 3.1-8
View from mesa overlooking SAR and Treatment Plant No. 2



SOURCE: Environmental Science Associates

Figure 3.1-9

View of Treatment Plant No. 2 looking Northwest across PCH



SOURCE: Environmental Science Associates

Figure 3.1-10

View of recreation path and Treatment Plant No. 2 looking North

Plant No. 2 is also visible looking north from PCH. PCH is located south of the site across the Talbert Marsh, which lies along the southwest boundary of the treatment plant.

3.1.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

A project would be considered to have a significant impact if it would have a substantial, demonstrable negative aesthetic effect. The significance of impacts related to the visual quality of the environment is analyzed from two perspectives: the temporary impacts of construction activities and the long-term impacts associated with operation. The Project would pose a significant impact, if it:

- Has a substantial adverse effect on a scenic vista
- Substantially damages scenic resources, including trees, rock outcroppings, and historic buildings within a state scenic highway
- Substantially degrades the existing visual character of the site and its surroundings
- Creates a new source of substantial light or glare which would adversely affect day or nighttime views in the area

Impact 3.1-1: Although several of the new structures would be visible from adjacent residential neighborhoods, the Project would not substantially alter or degrade the existing visual character of the site and surroundings.

Neither plant site is located within a state-designated scenic highway or scenic vista. The plant sites are zoned for public facilities and possess visual characteristics of an industrial complex. The 1999 Strategic Plan includes an Urban Design Element that describes architectural design standards for industrial buildings on the site. New structures would adhere to the design standards of the Urban Design Element to ensure that the visual character of the plant sites does not adversely affect views from surrounding areas.

Views of the existing treatment plants are largely shielded from residential areas and other potential sensitive receptors by screening walls and various types of vegetation (up to 30 feet tall). Residential areas located across the SAR from both plants already have long-range views of the structures within the plant sites under existing conditions. The bike paths on either side of the SAR also have close up views of the existing treatment plant structures of each plant.

Many of the proposed projects would rehabilitate existing structures and would not add new structures to the treatment plant sites. These projects would have no effect on the overall visual character of the plants. However, some projects would construct new structures as shown in Figures 2-1 and 2-2. **Table 3.1-1** summarizes the height of each proposed new structure. Two projects would result in substantial new structures: P1-102 at Plant No. 1 and P2-90 at Plant No. 2. The new clarifiers proposed for P1-102 at Plant No. 1 would be approximately 30 feet tall and would appear similar to the existing clarifier

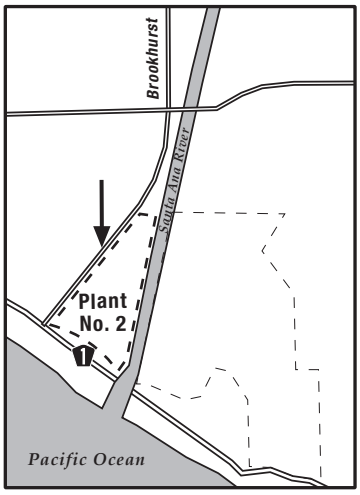
Table 3.1-1
Area and Height of New Structures and Facilities

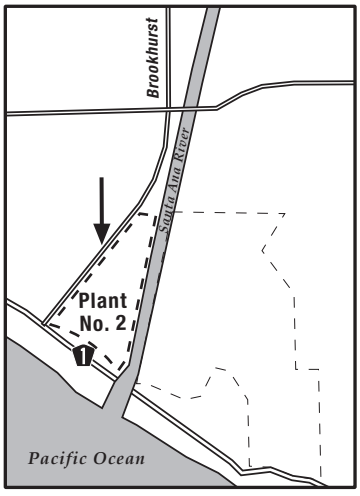
Project	New Structure/Facility	Area (sf)	Height (ft)
Plant No. 1			
P1-82 Rehabilitation of the Activated Sludge Plant	Secondary Clarifiers	70,000	1
P1-97 Plant No. 1 66 KV Substation	66KV Substation	15,000	20
P1-100 Sludge Digester Rehab.	Expansion of Power Building	1,500	20
P1-101 Sludge Dewatering and Odor Control	New Dewatering Building	20,000	40
	Expansion of Solids Storage Facility	500	25
P1-102 Secondary Activated Sludge Facility	Aeration Basins	117,100	12
	Clarifiers	18,900	5
	Primary Effluent Pump Station	2,600	20
	Blower Building	11,500	30
	Thickening Building	6,100	22
	Electrical Building	2,000	22
P1-106 Truck Wash and Dewatering Beds	Drying Beds (relocation)	15,400	5
	Truck Wash	2,800	On grade
Plant No. 2			
P2-74 Rehabilitation of the Activated Sludge Plant	No new structures	NA	NA
P2-80 Primary Treatment Rehab/Refurbish	No new structures	NA	NA
P2-89 Rehabilitation of Solids Storage Silos C & D	No new structures	NA	NA
P2-90 New Trickling Filters	Trickling Filters	200,000	53
	Trickling Filter Clarifiers	180,000	15
	Solids Contact Tanks	30,000	20
	TF Pump Station	4,800	25
	Odor Control System	10,000	50
	Electrical Building	17,600	25
P2-91 Digester Rehabilitation	2 Storage (Sludge Holding) Tanks	200	20
	Electrical Building	500	15
	Pump Station	1,500	15
P2-92 Sludge Dewatering and Odor Control	No new structures	NA	NA
P2-93 Relocation of Dewatering Beds	Drying Beds (relocation)	18,200	5
	Truck Wash	2,800	On grade

Source: Orange County Sanitation District.

buildings nearby. They would be located near the center of the plant site and would not substantially alter views of Plant No. 1.

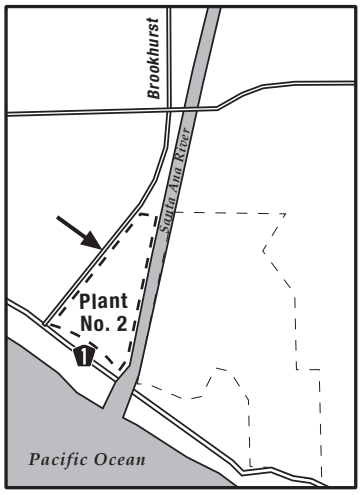
The trickling filters proposed for project P2-90 at Plant No. 2 would be greater than 50 feet tall. These structures would be visible from residential areas located across the SAR and potentially from residential areas across Brookhurst Street. **Figures 3.1-11** through **3.1-14** provide simulated views of the trickling filter site before and after construction. The simulated views show that although the facilities would be visible from various angles surrounding Plant No. 2, the structures would be designed to match the surrounding facilities and would not impede or significantly alter views of the area. Long distance views of the ocean from Newport Beach and Costa Mesa would not be significantly affected since the projects would be designed to look similar to the existing facilities. Views from the residential areas across Brookhurst Street would be shielded by the existing eucalyptus trees. Landscape vegetation would be included as part of the project design consistent with the Urban Design Element to ensure that

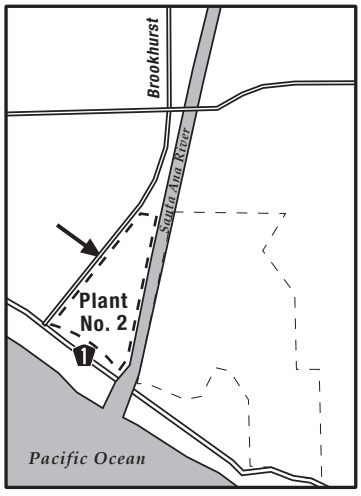




SOURCE: Environmental Science Associates

Figure 3.1-11
Simulated View of Proposed P2-90 Trickling Filters
from across Brookhurst Street

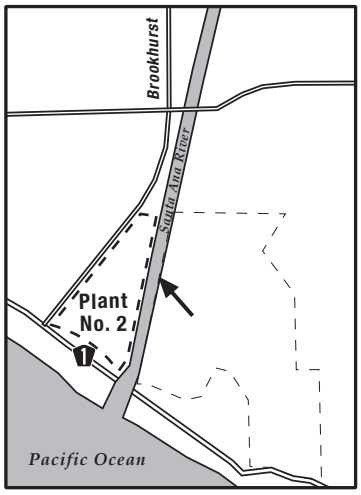


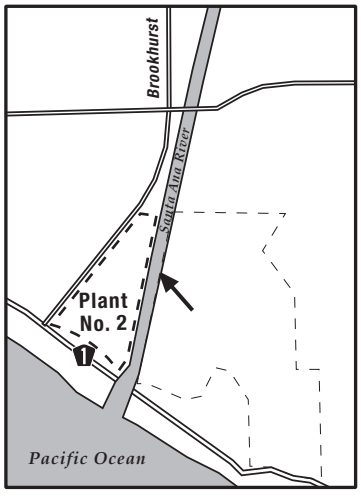


SOURCE: Environmental Science Associates

Figure 3.1-12

Simulated Short-Range View of Proposed P2-90 Trickling Filters from Brookhurst Street

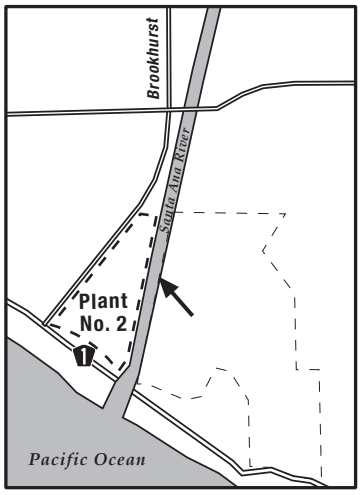


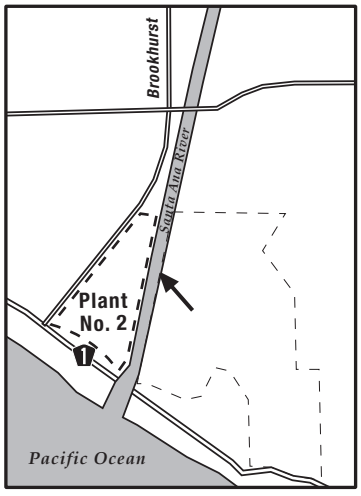


SOURCE: Environmental Science Associates

Figure 3.1-13

Simulated View of Proposed P2-90 Trickling Filters and Power Building from Bike Path across the Santa Ana River





SOURCE: Environmental Science Associates

Figure 3.1-13

Simulated View of Proposed P2-90 Trickling Filters and Power Building from Bike Path across the Santa Ana River

surrounding views of the plant sites are softened. In addition, the District will coordinate with the City of Huntington Beach, allowing the City to review facility and landscape designs.

The design of the new buildings would be similar to the character and height of the surrounding facilities and would not change the industrial character of the site. There are several structures at the plants over 40 feet tall such as the digesters at Plant No. 2 and the central generation facilities at Plant No. 1. The surge towers in Plant No. 2 are approximately 100 feet tall. The proposed facilities will be sized as efficiently as possible to accommodate the needed equipment and meet current codes and regulatory requirements. The tallest of the new buildings would be roughly half the height of the existing surge towers (100 feet) at Plant No. 2, which are the tallest existing structures from either plant site. The new structures would be constructed along the eastern and southern portions of each plant site, which house predominantly low-profile structures. These areas are currently within the long-range views of the residential structures located across the SAR. However, when considering the views of each plant site as a whole, the visual character and long range views of each plant site would not be substantially altered. In most cases, the new buildings would be constructed where existing/temporary structures would be demolished/removed. The impact to long-range and short-range views would be considered a less than significant impact.

Some existing landscaping may require removal during construction activities. The following mitigation measure would ensure that the landscaping was adequately replaced to avoid visual impacts to the local neighborhoods.

Mitigation Measures

New Mitigation:

Measure 3.1-1: The contractor shall replace damaged landscaping and restore the construction area near each plant's property boundary to a condition similar to existing conditions.

Significance after Mitigation

Less than significant.

3.2 AIR QUALITY

This air quality section is summarized from the PEIR which is incorporated by reference herein. For a complete description of the setting, refer to the PEIR. The PEIR also includes information regarding regional air quality as well as local air quality permits and regulations.

3.2.1 SETTING

The treatment plants are located within the jurisdictional boundaries of the South Coast Air Quality Management District (SCAQMD) in the South Coast Air Basin (SCAB). The SCAB encompasses 6,745 square miles and includes some portions of San Bernardino, Riverside, Los Angeles, and Orange Counties. The SCAQMD stretches from the Pacific Ocean in the west, to the Angeles National Forest in the north, to Orange County in the south, and to Riverside and San Bernardino Counties in the east.

REGIONAL CLIMATE

The SCAB climate is influenced by a semi-permanent high-pressure system that lies off the coast. The resulting weather is mild, tempered by a daytime sea breeze and a nighttime land breeze. This mild climate is infrequently interrupted by periods of extremely hot weather, winter storms, and Santa Ana winds (strong, seasonal westward wind). Rainfall in the SCAB is primarily restricted to November through April, with rainfall totals being highly variable from year to year.

The Orange County coast experiences an average wind speed of 7.7 miles per hour (mph). Inland areas record slightly lower wind speeds. Because of the low average wind speed, air contaminants in the SCAB do not readily disperse. On spring and summer days most pollution is moved out of the SCAB through mountain passes or is lifted by the warm vertical currents produced by the heating of the mountain slopes. From late summer through the winter months, lower wind speeds and the earlier appearance of offshore breezes combine to trap pollution in the SCAB.

In the SCAB, a persistent temperature inversion layer limits vertical dispersion of air pollutants. In an inversion condition, temperature increases with altitude. As the pollution rises it reaches an area where the ambient temperature exceeds the temperature of the pollution. This causes the pollution to sink back to the surface. This phenomenon acts to trap air pollution near the surface.

In summer, the longer daylight hours and bright sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form ozone. In winter, the greatest pollution problems are carbon monoxide and nitrogen oxides, which are trapped and concentrated by the inversion layer.

Criteria Air Pollutants

Ozone (O_3). O_3 is a secondary pollutant produced through a series of photochemical reactions involving reactive organic compounds (ROCs) and nitrogen oxides (NO_x). O_3 creation requires ROCs and NO_x to be available for approximately three hours in a stable atmosphere with strong sunlight. O_3 is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources generating ROCs and NO_x emissions. O_3 effects include eye and respiratory irritation, reduction of resistance to lung

infection, and possible aggravation of pulmonary conditions in persons with lung disease. O_3 is also damaging to vegetation and untreated rubber.

Carbon Monoxide (CO). CO is a non-reactive pollutant that is a product of incomplete combustion. Ambient CO concentrations usually follow the spatial and temporal distributions of vehicular traffic and are also influenced by meteorological factors such as wind speed and atmospheric mixing. Under inversion conditions, CO concentrations may be distributed more uniformly over an area out to some distance from vehicular sources.

Nitrogen Oxides (NO_x). There are two oxides of nitrogen which are important in air pollution: nitric oxide (NO) and nitrogen dioxide (NO_2). NO and NO_2 are both emitted from motor vehicle engines, power plants, refineries, industrial boilers, aircraft and railroads. NO_2 is primarily formed when NO reacts with atmospheric oxygen. NO_2 gives the air the "whiskey brown" color associated with smog.

Particulate Matter (PM_{10}). PM_{10}, particulate matter with a diameter less than 10 micrometers, can be inhaled deep into the lungs and cause adverse health effects. PM_{10} in the atmosphere results from many kinds of dust and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter such as demolition and construction activities are more local in nature, while others such as vehicular traffic have a more regional effect.

Sulfur dioxide (SO_2). SO_2 is formed through the oxidation of elemental sulfur; suspended sulfates are the product of further oxidation of SO_2. In some parts of the state, elevated levels can be due to natural causes, such as wind-blown dust and sea salt spray. Suspended sulfates contribute to overall particulate concentrations in ambient air which, if high enough, are suspected to be a cause of premature death in individuals with pre-existing respiratory disease.

Toxic Air Contaminants (TACs). TACs, also known as hazardous air pollutants, are pollutants known or suspected to cause cancer or other serious health effects such as birth defects. TACs may also have significant adverse environmental and ecological effects. Examples of TACs include benzene, diesel particulates, hydrogen sulfide, methyl chloride, 1,1,1-trichloroethane, toluene, and metals such as cadmium, mercury, chromium, and lead. Health effects from TACs vary depending on the toxicity of the specific pollutant but may include cancer, immune system damage, as well as neurological, reproductive, developmental, and respiratory problems.

According to EPA, approximately 50 percent of the TACs we are exposed to come from mobile source emissions. The CARB approved a comprehensive diesel risk reduction plan in September 2000. The EPA published its final rule to control emissions of hazardous air pollutants from mobile sources in the March 29, 2001 Federal Register.

AIR QUALITY REGULATIONS, PLANS AND POLICIES

State and federal agencies have set ambient air quality standards for certain air pollutants. National Ambient Air Quality Standards (NAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), inhalable particulate matter (PM_{10}), and lead (Pb). The state standards for these criteria pollutants are more stringent than the corresponding federal standards.

Areas are classified under the Federal Clean Air Act (CAA) as either "attainment" or "non-attainment" areas for each criteria pollutant based on whether the NAAQS have been achieved or not. According to the SCAQMD, the SCAB is designated as a non-attainment area for O_3, CO, and PM_{10}; the basin is classified as an attainment area for NO_2, SO_2 and Pb.

In 1967, California's legislature passed the Mulford-Carrel Act, which established the California Air Resources Board (CARB). The CARB set state air quality standards for criteria pollutants. The state standards for these pollutants are more stringent than the corresponding federal standards (see **Table 3.2-1**). As in the Federal CAA, the California CAA classifies areas as either being in "attainment" or "non-attainment" for these criteria pollutants. Areas designated as non-attainment are then given a set time frame to achieve attainment.

The SCAB's first Air Quality Management Plan (AQMP), adopted in 1979, established air pollution control strategies intended to attain federal air quality standards by the December 31, 1987 deadline specified by the CAA Amendments of 1977. Using better data and modeling tools, the 1982 Revision of the AQMP concluded that the Basin could not demonstrate attainment by the 1987 deadline required by the federal CAA. Therefore, the 1982 Revision of the AQMP proposed a long range strategy that could result in attainment in 20 years. In 1987, a federal court ordered the U.S. EPA to disapprove the 1982 AQMP Revision because it did not demonstrate attainment of the federal standards by the 1987 deadline (SCAQMD and SCAG, 1989).

Currently, the SCAQMD is operating under the 1997 AQMP and the 1999 amendment to the 1997 ozone portion of the AQMP. The 1997 AQMP relies on short-term and intermediate-term attainment measures which were to be adopted by 2000, and long term attainment measures utilizing advances in technology reasonably expected to be available by the year 2010. On January 12, 1999, the U.S. EPA proposed a partial disapproval of the ozone portion of the 1997 AQMP. The AQMD responded with the 1999 Ozone State Implementation Plan revision, which the EPA indicated would be approvable. Currently, the SCAQMD has adopted the Proposed 2003 AQMP for the SCAB. The 2003 AQMP seeks to demonstrate attainment with state and federal air quality standards and will incorporate a revised emissions inventory, the latest modeling techniques, updated control measures remaining from the 1997/1999 State Implementation Plan (SIP), and new control measures based on current technology assessments. The U.S. EPA is currently reviewing the AQMP.

EXISTING AIR POLLUTION SOURCES

The SCAQMD estimates that approximately 12,000 tons of air pollutants are emitted to the SCAB per day. The SCAB is in non-attainment for both the federal and state ozone, carbon monoxide, and PM_{10} standards. The state one-hour ozone standard in the SCAQMD was exceeded 5 days in 1998 and at least once per year from 1998 through 2002 (see **Table 3.2-2**). The PM_{10} standard was exceeded 15 times in 1999, and at least 5 times a year from 1998 to 2002. The carbon monoxide standard has not been exceeded in the project area for the last five years. The SCAB is a maintenance area for the federal and state NO_x standards, which means it had once been in non-attainment.

Emissions of Air Toxics

Air toxic emissions are generated at the treatment facilities through two mechanisms: 1) through the release into the air of the toxic compounds that are present in the wastewater discharges from industrial,

Table 3.2-1
Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Pollutant Health and Atmospheric Effects	Major Pollutant Sources
O_3	1 hour	0.09 ppm	0.12 ppm	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.	Motor vehicles.
	8 hours	---	0.08 ppm		
CO	1 hour	20 ppm	35 ppm	Classified as a chemical asphyxiant, CO interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9 ppm	9.0 ppm		
NO_2	Annual Average	---	0.05 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.25 ppm	---		
	24 hours	0.04 ppm	0.14 ppm		
PM_{10}, $PM_{2.5}$	Annual Geometric Mean	30 ug/m^3 (PM_{10})	65 ug/m^3 ($PM_{2.5}$)	May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.	Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).
	Annual Arithmetic Mean	---	50 ug/m^3 (PM_{10})		
	24 hours	50 ug/m^3 (PM_{10})	150 ug/m^3 (PM_{10}) 15 ug/m^3 ($PM_{2.5}$)		
Pb	Monthly	1.5 ug/m^3	---	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction (in severe cases).	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	---	1.5 ug/m^3		

Source: California Air Resources Board, Ambient Air Quality Standards, January 25, 1999.

commercial, and residential sources, and 2) through the release of the toxic compounds through the combustion of gaseous fuels, such as digester and natural gases. The first of these mechanisms includes raw sewage emissions at the treatment plants, biosolids treatment and dewatering processes, and the secondary treatment aeration process.

Emissions of Criteria Pollutants

Stationary emissions sources include the Central Power Generator System (CGS), portable and stationary combustion engines, boilers, flares, and wastewater treatment process units. The CGS combustion equipment is the largest source of criteria pollutants at the OCSD facilities. A summary of the amount of each criteria pollutant emissions at Plant No. 1 and Plant No. 2 during the last five years is presented in **Table 3.2-3**.

Table 3.2-2
Project Area Air Pollutant Summary, 1998-2002[a]

Pollutant		Standard[b]	1998	1999	2000	2001	2002
O_3	Highest 1-hr average, ppm[c]	0.09	0.12	0.10	0.10	0.11	0.10
	Number of standard excesses[d]		5	NA	1	2	3
CO	Highest 1-hr average, ppm[c]	20.0	9.0	8.0	8.0	8.0	7.0
	Number of standard excesses[d]		0	0	0	0	0
	Highest 8-hr average, ppm[c]	9.1	7.0	6.4	6.3	4.71	5.4
	Number of standard excesses[d]		0	0	0	0	0
NO_2	Highest 1-hr average, ppm[c]	0.25	0.12	0.12	0.11	0.12	0.10
	Number of standard excesses[d]		0	0	0	0	0
PM_{10}*	Highest 24-hr average, $\mu g/m^3$ [c]	50	81	122	126	93	69
	Number of standard excesses[d,e]		12	15	8	9	5
	Annual Geometric Mean, $\mu g/m^3$ [c]	30	33.0	43.4	35.7	33.4	33.6
	Violation		Yes	Yes	Yes	Yes	Yes

Source: South Coast Air Quality Management District, Air Quality Data Summaries, 1998-2002.
Note: Underlined values indicate an excess of applicable standard.
* Central Orange County Air Monitoring Station Location.
a. Data are from the SCAQMD monitoring station located at the intersection of Mesa Verde Dr. and Adams Ave in the City of Costa Mesa. 1999 air quality data is incomplete.
b. State standard, not to be exceeded.
c. ppm - parts per million; $\mu g/m^3$ - micrograms per cubic meter.
d. Refers to the number of days in a year during which at least one excess was recorded.
e. Measured every six days.
NA = Not Available.

Table 3.2-3
Criteria Pollutants Emissions for Fiscal Years 1999-2003

	Emissions in Tons/Year				
Location/Fiscal Year	**VOC****	**NO_x**	**SO_x**	**CO**	**PM_{10}**
Plant No. 1					
1998 – 1999	42.5	45.7	0.7	122.4	1.8
1999 – 2000	45.1	49.6	0.5	131.4	2.0
2000 – 2001	42.7	46.1	0.5	124.3	2.0
2001 – 2002	41.1	43.9	0.4	116.1	1.8
2002 – 2003	40.5	49.3	0.4	116.1	1.8
Plant No. 2					
1998 – 1999	45.6	76.5	2.6	299.8	5.7
1999 – 2000	45.9	77.2	2.9	307.8	5.7
2000 – 2001	45.6	75.7	3.1	299.4	5.4
2001 – 2002	44.8	82.1	3.5	308.3	6.3
2002 – 2003	44.8	65.5	3.0	300.1	5.9

Source: Orange County Sanitation District, 2003 Annual Report: Operations & Maintenance, 2003.
** expressed as volatile organic compounds

Odor

Hydrogen sulfide (H_2S) is the major source of odor problems at wastewater treatment plants. Numerous other odorous substances, including organic sulfides, organic amines, organic acids, and ammonia, are also present. All of these substances are produced by biological decomposition of organic matter in wastewater. Some may be added directly to wastewater from industrial or household chemical discharges.

OCSD has prepared a comprehensive Odor Control Master Plan covering both treatment plants. The Master Plan identifies odor control facilities needed to reduce odor emissions in the future. Currently, OCSD has SCAQMD permits for the operation of the foul air scrubbers. OCSD also maintains records of H_2S concentration in the discharge of the foul air scrubbers as well as other process information, such as pH and differential pressure across each scrubber. Odor complaints received at Plant No. 1 and Plant No. 2 have been logged since 1981.

SENSITIVE RECEPTORS

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill and the chronically ill, especially those with cardio-respiratory diseases.

Residential areas are also considered to be sensitive to air pollution for CEQA purposes because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present (*CEQA Air Quality Handbook*, Chapter 5). Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial and commercial areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

The sensitive receptors in the immediate vicinity of Plant No. 1 in Fountain Valley are residential uses. Residential areas are located immediately west of the treatment facility across Ward Street and southeast across the Santa Ana River. The residences abutting Ward Street are less than 100 feet from the western boundary of the treatment facility. The air emissions produced by the CGS facility are emitted an additional 1,800 feet from the Ward Street boundary line. The residences across the Santa Ana River are approximately 450 feet from the Plant property line and an additional 450 feet from the CGS facility.

The sensitive receptors in the immediate vicinity of Plant No. 2 in Huntington Beach are residential uses. Residential areas are located immediately west of the treatment facility across Brookhurst Street. The residences abutting Brookhurst Street are located approximately 100 feet northwest of the western boundary of the treatment facility, and another 900 feet from the CGS.

3.2.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Significance criteria establish a means by which impacts can be quantitatively evaluated. Thresholds impose barriers beyond which significant impacts could reasonably be expected. As a means of determining significance from non-permitted air emissions, the SCAQMD has established the following air quality thresholds of significance for construction activities and new project operations for non-permitted equipment:

	Project Construction	Project Operation
Carbon Monoxide	550 lbs. per day	550 lbs. per day
Reactive Organic Compounds	75 lbs. per day	55 lbs. per day
Nitrogen Oxides	100 lbs. per day	55 lbs. per day
Sulfur Oxides	150 lbs. per day	150 lbs. per day
Particulates (10 microns)	150 lbs. per day	150 lbs. per day

(These thresholds are established in the *CEQA Air Quality Handbook* prepared by the SCAQMD, 1993.)

The SCAQMD considers permit limits established for existing stationary source equipment to constitute thresholds over which significant impacts would be expected (*CEQA Guidelines*, Section 15064(h)).

Impact 3.2-1: Construction of the project would emit criteria pollutants. Some estimated daily average construction-phase emissions would exceed significance thresholds set by the SCAQMD.

Construction of the proposed project would generate air emissions. Construction-related emissions would primarily be off-road construction vehicle exhaust and fugitive dust, worker commute exhaust, and haul truck exhaust. Fugitive dust emissions would vary depending on the level and type of activity, silt content of soil, and prevailing weather.

Vehicle exhaust emits criteria air pollutants, including CO, ROC, and NO_x. Construction-phase air quality impacts were quantitatively analyzed utilizing construction emissions estimation worksheets (Appendix E). The worksheets follow the methodology outlined in the SCAQMD CEQA Air Quality Handbook and utilize emissions factors found in the EMFAC-2002 air emissions models and CARB Emission Inventory Publication number MO99-32.3. Fugitive dust emissions were calculated utilizing emissions factors found in U.S. EPA's AP-42 compilation of emissions factors and SCAQMD CEQA Air Quality Handbook. **Table 3.2-4** summarizes construction equipment assumptions used to calculate air emissions for each construction phase of each project. **Table 3.2-5** summarizes construction phase duration assumptions.

Table 3.2-6 summarizes air emissions estimates associated with the construction phases of each project at each plant. Emissions were estimated for site clearing activities, excavation operations, and construction activities. The overall construction period is anticipated to last from 2005 to 2012. For purposes of emissions calculations, site clearing, excavation, and construction activities are estimated to be finished by different years for each projects as indicated in the Table. The emissions estimates are based on the equipment list provided in Table 3.2-4. Each piece of equipment is assumed to operate up to eight hours per day. The number of soil haul trucks are averaged over the entire excavation period. Based on these assumptions, the large projects could exceed NO_x daily emissions thresholds during certain periods of construction.

Each project will have a slightly different construction schedule. The peak construction period, during which the greatest cumulative daily air emissions would occur, is expected in 2008. **Table 3.2-7** summarizes the construction phase emissions at Plant No. 1 and Plant No. 2 during 2008. During this period, NO_x emissions would exceed the SCAQMD thresholds of significance.

Table 3.2-4
Construction Equipment List

Projects	Clearing / Demolition	Excavation	Concrete / Construction / Finishing
Plant No. 1			
P1-82: Activated Sludge Rehabilitation	Small bulldozer-1, Trucks- 3 to 5, Loaders-2	Excavator-1, Trucks- 3 to 5, Loaders-2	Trucks- 3 to 5
P1-97: Plant No. 1 66KV Substation	Small bulldozer-1 or backhoe-1, pole line truck-1	Backhoe-1	Backhoe-1, Pole Line Truck-1, 2 Large Trucks
P1-100: Sludge Digester Rehabilitation at Plant No. 1	Small bulldozer-1 or backhoe-1, pole line truck-1	Excavator-1, Trucks- 3 to 5, Loaders-2	Sludge Pumper-1, End Pumps-2, Sludge Hauling Trucks-2, Small Crane-1, Boom Trucks-2, Support Trucks, Compressors.
P1-101: Sludge Dewatering and Odor Control at Plant No. 1	Bulldozer-1, Backhoe-1-	Scraper-1, Excavator-1, Loaders-2, Dump Trucks, Groundwater Dewatering Pumps.	Pile Driver-1, Concrete Pumper-1, Concrete Mixer Trucks, Large Crane-1, Boom Trucks-2, Support Trucks, Compressors.
P1-102: Secondary Activated Sludge Facility 2 at Plant No. 1	Scraper-1, Loaders-2	Excavators-3, Loaders-2, Crane-1, Dump Trucks-2, End Dumps-4, Flatbed-1	Large Cranes-3, Concrete Pumper Trucks-2, Welding Rigs-4, Compressor Trailers-2, Boom Truck-1, Support Trucks, Concrete Trucks
P1-106: Truck Wash and Dewatering Beds at Plant No. 1	Trucks- 3 to 5, Loaders-2	Trucks- 3 to 5, Loaders-2	Trucks- 3 to 5
Plant No. 2			
P2-74: Rehabilitation of the Activated Sludge Plant	None	None	None
P2-80: Primary Treatment Rehab/Refurbish	None	None	Cranes and Trucks
P2-89: Rehabilitation of Solids Storage Silos C & D	None	None	None
P2-90: Trickling Filters	Bulldozer-1, Scraper-1	Excavators-2, Loaders-2, Crane-1, Dump Trucks-2, End Dumps-4, Flatbed-, Backhoe-1	Large Cranes-3, Concrete Pumper Trucks-2, Welding Rigs-4, Compressor Trailers-2, Boom Truck-1, Support Trucks
P2-91: Digester Rehabilitation at Plant No. 2	None	None	Excavator-1, Trucks- 3 to 5, Loaders-2, Cranes-2
P2-92: Sludge Dewatering and Odor Control at Plant No. 2	Bulldozer-1, Backhoe-1	Scraper-1, Excavator-1, Loaders-2, Dump Trucks, Groundwater Dewatering Pumps.	Pile Driver-1, Concrete Pumper-1, Concrete Mixer Trucks, Large Crane-1, Boom Trucks-2, Support Trucks, Compressors.
P2-93 Relocation of Dewatering Beds at Plant No. 2	Trucks- 3 to 5, Loaders-2	Trucks- 3 to 5, Loaders-2	Trucks- 3 to 5

Source: Orange County Sanitation District.

Table 3.2-5
Construction Phase Duration Assumptions (months)

Projects	Clearing / Demolition	Excavation	Concrete / Construction / Finishing	TOTAL
Plant No. 1				
P1-82: Activated Sludge Rehabilitation	2	4	9	15
P1-97: Plant No. 1 66KV Substation	2	2	20	24
P1-100: Sludge Digester Rehabilitation at Plant No. 1	2	4	24	32
P1-101: Sludge Dewatering and Odor Control at Plant No. 1	4	4	16	24
P1-102: Secondary Activated Sludge Facility 2 at Plant No. 1	6	8	40	54
P1-106: Truck Wash and Dewatering Beds at Plant No. 1	2	1	9	12
Plant No. 2				
P2-74: Rehabilitation of the Activated Sludge Plant	0	0	28	28
P2-80: Primary Treatment Rehab/Refurbish	0	0	37	37
P2-89: Rehabilitation of Solids Storage Silos C & D	0	0	47	47
P2-90: Trickling Filters	6	12	31	49
P2-91: Digester Rehabilitation at Plant No. 2	0	0	42	42
P2-92: Sludge Dewatering and Odor Control at Plant No. 2	2	3	30	35
P2-93 Relocation of Dewatering Beds at Plant No. 2	2	1	9	12

Source: Orange County Sanitation District.

Table 3.2-6
Estimated Emissions for each Construction Phase (lbs/day)

Air Pollutant	Site Clearing	Excavation	Construction	Significance Criteria
Plant No. 1				
P1-82	*2005*	*2006*	*2006*	
CO	30.08	31.47	26.0	550
ROC	4.24	4.58	2.21	75
NO_x	54.09	63.27	18.61	100
PM_{10}	11.89	4.78	3.72	150
P1-97	*2005*	*2005-2006*	*2006-2007*	
CO	8.77	7.59	74.67	550
ROC	1.44	0.91	5.14	75
NO_x	19.39	9.68	21.48	100
PM_{10}	8.58	1.10	10.18	150
P1-100	*2007-2008*	*2008-2009*	*2008-2010*	
CO	6.52	14.78	10.72	550
ROC	0.39	3.67	1.54	75
NO_x	0.54	61.43	23.23	100
PM_{10}	0.87	2.46	1.75	150
P1-101	*2008*	*2008-2009*	*2009-2010*	
CO	15.22	22.13	16.41	550
ROC	2.4	5.5	3.44	75
NO_x	34.25	92.13	52.85	100
PM_{10}	9.65	68.36	2.89	150
P1-102	*2007-2008*	*2007-2008*	*2008-2010*	
CO	37.05	94.55	41.42	550
ROC	5.52	19.24	14.19	75
NO_x	71.10	**401.91**	**146.6**	100
PM_{10}	57.43	18.55	46.3	150

Table 3.2-6 (cont.)
Estimated Emissions for each Construction Phase (lbs/day)

Air Pollutant	Site Clearing	Excavation	Construction	Significance Criteria
P1-106	*2007-2008*	*2007*	*2007*	
CO	13.07	15.65	9.39	550
ROC	2.8	4.29	0.88	75
NO_x	44.29	79.38	11.17	100
PM_{10}	2.35	2.72	1.45	150
Plant No. 2				
P2-74	*2006-2007*	*2007-2008*	*2007-2008*	
CO	0	0	7.44	550
ROC	0	0	0.45	75
NOx	0	0	0.62	100
PM10	0	0	0.99	150
P2-80	*2006-2007*	*2007-2008*	*2007-2008*	
CO	0	0	15.37	550
ROC	0	0	2.01	75
NOx	0	0	27.6	100
PM10	0	0	2.41	150
P2-89	*2006-2007*	*2008-2010*	*2008-2010*	
CO	0	0	9.36	550
ROC	0	0	0.88	75
NOx	0	0	11.17	100
PM10	0	0	1.44	150
P2-90	*2007-2008*	*2008-2010*	*2008-2011*	
CO	2.55	30.68	25.41	550
ROC	3.79	6.5	12.01	75
NOx	53.66	**110.35**	**122.40**	100
PM10	62.45	44.05	43.83	150
P2-91	*2008*	*2008-2009*	*2008-2009*	
CO	0	0	9.36	550
ROC	0	0	0.88	75
NOx	0	0	11.17	100
PM10	0	0	1.44	150
P2-92	*2008-2009*	*2009-2011*	*2009-2011*	
CO	16.14	23.11	16.11	550
ROC	2.45	5.21	4.21	75
NOx	34.32	89.53	45.09	100
PM10	9.77	3.77	12.45	150
P2-93	*2008-2009*	*2009-2011*	*2009-2011*	
CO	13.07	15.65	9.39	550
ROC	2.8	4.29	0.88	75
NOx	44.29	74.38	11.17	100
PM10	2.35	2.72	1.45	150

Source: Air calculation worksheets are included as Appendix E.

Notes: Assumes equipment list shown in Table 3.2-4. Emissions estimates assume equipment usage of 6 hours per day for each piece of equipment.

The PEIR estimated that construction-related emissions for both Scenarios 2 and 4 would exceed SCAQMD significance thresholds. The PEIR assumed that construction emissions would result in a significant, unavoidable effect of the project. This SEIR confirms that the construction of new treatment facilities would be similar to 1999 estimates, and would remain a significant, unavoidable impact of the

Table 3.2-7
Estimated Cumulative Project Air Emissions During 2008 (lbs/day)

Air Pollutant	Plant No. 1	Significance Criteria
CO	197.64	550
ROC	37.84	75
NO_x	**669.33**	100
PM_{10}	83.81	150

project. The daily emissions for NO_x would exceed SCAQMD significance thresholds during construction. Mitigation measures identified in the PEIR would remain applicable to the proposed Project and are restated below.

Mitigation Measures

New Mitigation

Measure 3.2-1a: Soil binders shall be used on site in appropriate areas (generally non-traffic areas such as disturbed areas awaiting next phase of construction activity) where they can effectively reduce dust generation.

From the PEIR MMRP:

Measure 6.5-1a: General contractors shall maintain equipment engines in proper tune and operate construction equipment so as to minimize exhaust emissions. Such equipment shall not be operated during second stage smog alerts.

Measure 6.5-1b: During construction, trucks and vehicles in loading or unloading queues shall be kept with their engines off, when not in use, to reduce vehicle emissions. Construction activities shall be phased and scheduled to avoid emissions peaks, and discontinued during second-stage smog alerts.

Measure 6.5-1c: General contractors shall use reasonable and typical watering techniques to reduce fugitive dust emissions. All unpaved demolition and construction areas shall be wetted at least twice a day during excavation and construction, and temporary dust covers shall be used to reduce dust emissions and meet SCAQMD District Rule 403.

Measure 6.5-1e: Ground cover shall be re-established on the construction site through seeding and watering.

Significance after Mitigation

Significant, unavoidable.

Impact 3.2-2: Operation of the proposed project would emit criteria pollutants. Estimated daily average emissions would exceed significance thresholds set by the SCAQMD.

Operational emissions would include stationary and mobile source emissions. Stationary sources including power generation facilities, wastewater treatment process units, and odor control equipment

would require Permits to Operate from the SCAQMD. Stationary source emissions are not anticipated to change substantially from emissions projected in the PEIR. However, the increased treatment would increase energy usage and associated on-site combustion emissions. In addition, overall VOC emissions from the facility would also increase as a result of the increased treatment processes. Substantial emissions control technology would be included in the project designs in order to comply with the Title V permit issued by the SCAQMD. The District is anticipating approval of the initial Title V permit for each plant by the end of 2004. Prior to the construction of the proposed Project, the District will obtain revisions to the Title V permit from the SCAQMD as necessary to accommodate the additional treatment facilities. Compliance with the SCAQMD-approved Permits to Operate would ensure that the District's facilities comply with the Air Quality Management Plan, resulting in a less than significant effect to air quality from stationary sources.

Mobile sources of emissions associated with operation of the treatment plants include chemical delivery trucks, solids haul trucks, and employee worker commute. **Table 3.2-8** summarizes daily vehicle miles traveled for the proposed Project compared with the PEIR estimates. The estimates assume 30 miles each way for chemical delivery trips and employee trips (with 1.3 vehicle occupancy rate), 200 miles each way for biosolids haul trips, and 60 miles each way for grit and screening trips. As noted in the table, estimated daily vehicle miles traveled under the proposed Project would be less than estimated for either Scenario 2 or Scenario 4 in the PEIR. Worker commute and biosolids hauling constitute the majority of vehicle miles traveled. Biosolids trips would be slightly reduced and grit and screening trips and chemical deliveries would be increased slightly under the proposed Project.

Table 3.2-8
Estimated Vehicle Miles Traveled per Day

	Chemical Deliveries	Employee Trips	Biosolids Hauling	Grit and Screenings	Total
Plant No. 1					
2002/03	340*	4,981*	5,723**	37***	11,081
PEIR 2020 (Scenario 2)	1,040	5,487	7,014	14	13,555
PEIR 2020 (Scenario 4)	1,363	5,487	8,986	14	15,850
Proposed Project 2020	595*	5,192*	8,369**	79***	14,235
Plant No. 2					
2002/03	796*	4,981*	7,508**	42***	13,327
PEIR 2020 (Scenario 2)	1,040	5,488	7,978	19	14,525
PEIR 2020 (Scenario 4)	1,300	5,488	9,468	19	16,275
Proposed Project 2020	765*	5,192*	6,523**	169***	12,649

Source: Orange County Sanitation District Annual Report 2003; PEIR.
* Assumes 30 miles for each one-way trip for chemical deliveries and employee trips
** Assumes 200 miles for each one-way trip for biosolids hauling
*** Assumes 60 miles for each one-way trip for grit and screenings hauling
Note: PEIR estimates from Table 6.2-1 of Final PEIR, Response to Comments. Estimates of proposed Project solids are based on wet tons per year generation shown in Table 2-3. Estimates of proposed Project chemical deliveries are based on annual deliveries as shown in Table 3.4-1.

Table 3.2-9 summarizes air emissions calculations for mobile sources associated with the proposed Project. Emissions calculations follow methodology outlined in the SCAQMD CEQA Air Quality Handbook and utilize emissions factors found in the EMFAC-2002 air emissions models. As shown in

Table 3.2-9
Proposed Project Mobile Source Operational Emissions (lbs/day)

Air Pollutant	Chemical Deliveries	Employee Trips	Biosolids Hauling	Grit and Screenings Hauling
Plant No. 1				
CO	7.67	43.9	107.31	1.53
ROC	1.72	2.65	24.05	0.34
NO_x	42.21	3.64	**590.96**	8.44
PM_{10}	1.8	5.94	25.24	0.36
Plant No. 2				
CO	9.96	43.9	84.32	2.30
ROC	2.23	2.65	18.9	0.52
NOx	54.87	3.64	**464.33**	12.66
PM10	2.34	5.94	19.83	0.54

Source: ESA 2003; SCAQMD.
Air calculation worksheets are included in Appendix E.

the Table, nitrogen oxides associated with biosolids hauling and chemical deliveries in heavy diesel powered trucks would exceed the SCAQMD thresholds of significance for daily operations. The greatest emissions would be generated from daily biosolids transport since the estimated one way trip length is 200 miles within the SCAB. Emissions associated with the proposed Project would be similar if slightly less than the PEIR Scenario 2 and 4. The PEIR concluded that operational emissions would be considered a significant unavoidable impact of the project. The proposed Project would not alter that conclusion. Mitigation measures provided in the PEIR for operational mobile source emissions would apply to the project and are restated below.

Mitigation Measures

From the PEIR MMRP:

Measure 6.5-3a: The District will maintain its ride-share programs to reduce commuter traffic and air quality impacts.

Significance after Mitigation

Significant, Unavoidable.

Impact 3.2-3: Neither construction or operation of the proposed Project would result in objectionable odors affecting a substantial number of people.

Construction. During construction, the project could generate odors temporarily as the trunk lines and pump station wetwells are disconnected and reconnected with the rehabilitated facilities. These activities would be temporary. Implementation of the following mitigation measures would minimize the potential generation of nuisance odors.

Operation. As part of the project, the rehabilitated treatment plants' odor control facility would be constructed that would substantially improve the existing odor control equipment. This improvement would be considered a beneficial impact of the project. The District has prepared an Odor Control Master

Plan for the treatment plants that will implement new odor control technologies. The rehabilitated treatment plants' odor control facility is a key part of this new Odor Control Master Plan. New facilities including sludge drying beds will be constructed in compliance with the Odor Control Master Plan.

Mitigation Measures

New Mitigation:

Measure 3.2-2: The District shall ensure that contractors remove salvaged/demolished equipment from the treatment plants to minimize potential odors during the removal of existing facilities. Staging areas shall not be used to store salvaged/demolished equipment.

Significance after Mitigation

Less than significant.

3.3 GEOLOGY AND SOILS

This geology setting section is summarized from the PEIR which is incorporated by reference herein. The PEIR includes information regarding the regional as well as local setting.

3.3.1 SETTING

Plant Nos. 1 and 2 are located on the Orange County coastal plain, characterized by gently sloping alluvial deposits and coastal mesas. Natural soils characteristic of the Southern California coastal plain consist of alluvial deposits and floodplain soils. Fill material consisting of loose to medium dense silty sand and clayey sand underlie much of the plant sites. Natural alluvial soils consist predominantly of interbedded layers of damp to saturated medium dense to dense silty sand, poorly graded sand, and stiff to very stiff silty clay. Portions of both plant sites are underlain by historical peat bogs. Due to the sites' proximity to the ocean, groundwater is present at shallow depths.

The geologic substructure is subject to considerable tectonic stress and numerous faults traverse the region. **Figure 3.3-1** shows the locations of major fault systems in the region that would cause ground shaking at the treatment plant sites. The Newport-Inglewood fault zone is the major structural feature of the coastal area. Plant No. 2 is located within the Newport-Inglewood Fault Zone, however, no surface rupture zones have been identified within the plant boundaries.[1] Plant No. 1 is not. The fault zone consists of a series of short, discontinuous, northwest-trending right-lateral faults, relatively shallow anticlines, and subsidiary normal and reverse faults extending approximately 36 miles from the Santa Monica Mountains to offshore Newport Beach. Other major faults in the region include the Whittier Fault Zone and the Palos Verdes Fault.

The strongest earthquake on the Newport-Inglewood Fault in the last 70 years was the 6.3 Richter scale magnitude 1933 Long Beach quake. The Newport-Inglewood fault is capable of a maximum moment magnitude of 6.9.[2]

In 1994, Law/Crandall prepared a fault hazard study for the entire Plant No. 2 site. Multiple fault splays associated with the Newport-Inglewood Fault Zone were found to traverse the site. Each splay was assigned an activity level based on the most recent deformation associated with it. "High" activity splays are those associated with more recent displacement of Holocene-age materials, while "moderate" and "low" activity are associated with splays that offset Pleistocene or older sediments. Five high activity and one low activity fault were identified on Plant No. 2.

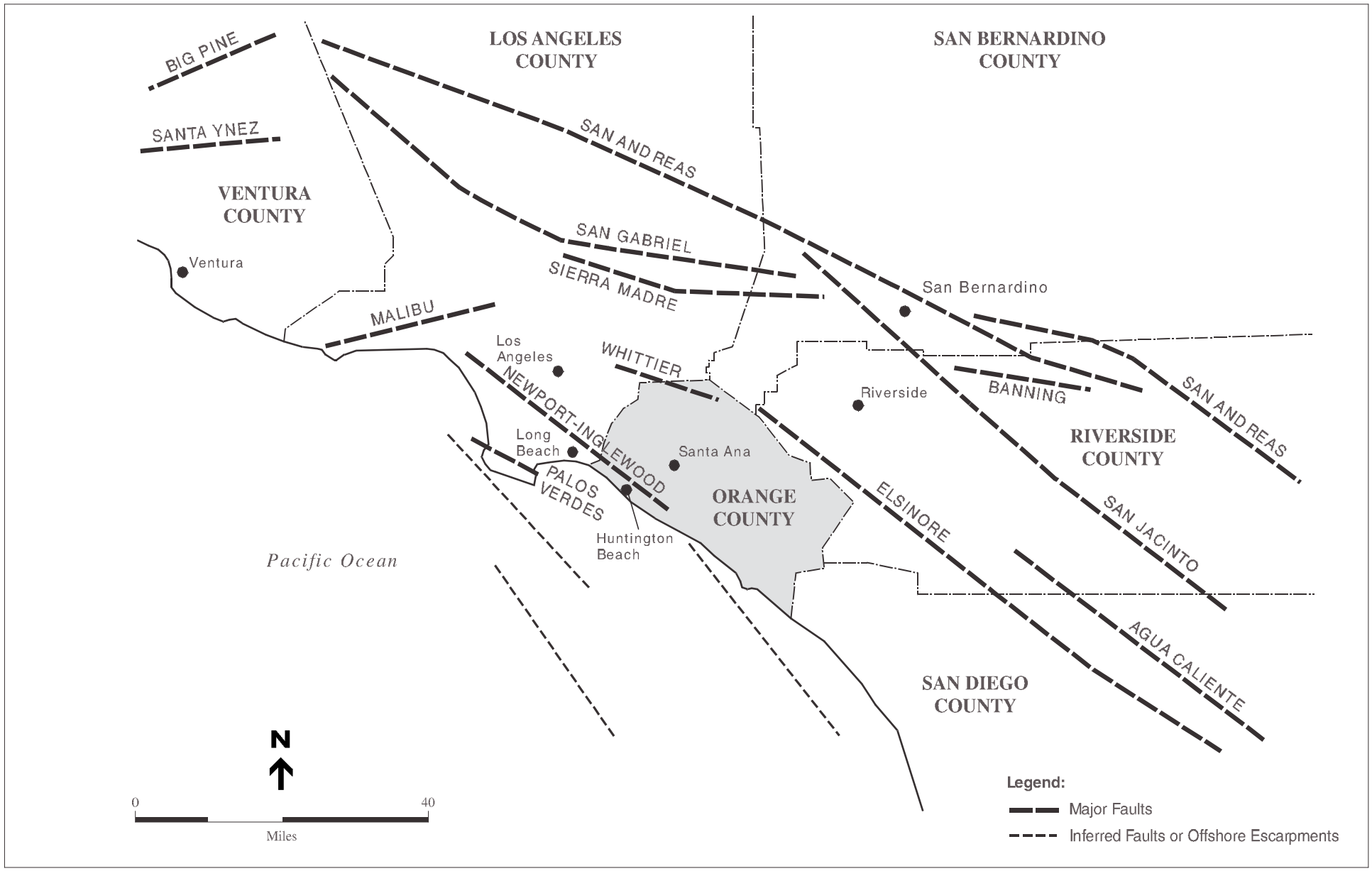
GEOLOGIC HAZARDS

Expansive Soils

Expansive soils possess a "shrink-swell" behavior that occurs in fine-grained clay sediments from the process of wetting and drying, which may result in structural damage over a long period of time. A

[1] Alquist Priolo Surface Rupture Zone Newport Beach Quad.

[2] The maximum moment magnitude is an estimate of the size of a characteristic earthquake capable of occurring on a particular fault. Moment magnitude is related to the physical size of a fault rupture and movement across a fault. Richter magnitude scale reflects the maximum amplitude of a particular type of seismic wave and can be generally higher than moment magnitude estimations.



SOURCE: Orange County Emergency Management Division

Figure 3.3-1
Regional Fault Zones

geotechnical investigation at Plant No. 1 found that alluvium underlying the site contained some soft clay and scattered interbeds of clayey silt and sandy silt.[3] These clay deposits may have the potential for expansiveness. The City of Huntington Beach General Plan indicates that the northern half of the Plant No. 2 site is located in an area of generally moderate to high soil expansion potential and the southern half of the site has a moderate potential for expansive soils.[4]

Settlement

Loose, soft soil material comprised of sand, silt, clay, and peat has the potential to settle after a building is placed on the surface. Settlement of the loose soils generally occurs slowly, but over time can damage structures. A geotechnical investigation at Plant No. 1 found that settlement up to approximately 6 inches could occur with construction of new buildings due to consolidation of clay and organic deposits.[5] According to the City of Huntington Beach General Plan, the site of Plant No. 2 is not located in an area subject to settlement.[6] However, the geotechnical investigation for Plant No. 2 found that differential settlement could occur in the isolated medium dense sandy layers of fill material and below 40 feet. Settlement of approximately one inch or less is expected for the Plant No. 2 site.

Subsidence

The extraction of water, mineral, or oil resources can result in subsidence from the removal of supporting layers in the geologic formation. Neighboring oil extraction activities could promote localized subsidence. The impacts of subsidence could include lowering of the land surfaces, increased potential for flooding, potential disturbance to buried pipelines and associated structures, and damage to structures designed with minimal tolerance for settlement. Plant No. 2 could be located in an area with potential for subsidence due to near by historical oil extraction activities. However, according to the City of Huntington Beach General Plan, Plant No. 2 is not located within an area that has been subject to subsidence.[7]

Landslides

The CGS has prepared maps identifying Seismic Hazard Zones, which indicate areas prone to liquefaction and earthquake-induced landslides. According to CGS, no portions of either site are classified as earthquake-induced landslide hazard areas.[8]

Ground Shaking

Shaking intensity can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material underlying the area. Intensities generally are highest at the fault and decrease with distance from the fault. However, the composition of underlying soils in areas located

[3] Ninyo & Moore, Geotechnical Evaluation, Trickling Filters/New Clarifiers – Job No. P1-76, Orange County Sanitation District – Plant No. 1, Fountain Valley, California, March 22, 2002, revised May 17, 2002.
[4] City of Huntington Beach General Plan, Environmental Hazards Element, December 12, 1995.
[5] Ninyo & Moore, Geotechnical Evaluation, Trickling Filters/New Clarifiers – Job No. P1-76, Orange County Sanitation District – Plant No. 1, Fountain Valley, California, March 22, 2002, revised May 17, 2002.
[6] City of Huntington Beach General Plan, Environmental Hazards Element, December 12, 1995.
[7] *Ibid.*
[8] California Geological Survey website, accessed April 23, 2004, http://gmw.consrv.ca.gov/shmp/download/pdf/ozn_newb.pdf.

relatively distant from faults can intensify ground shaking. Areas that are underlain by bedrock tend to experience less ground shaking than those underlain by unconsolidated sediments such as artificial fill.

Plant No. 1 and Plant No. 2 are located near the active Newport-Inglewood Fault. Potentially damaging earthquakes have occurred every few years along this fault zone. In addition, there are several other active faults in the region, including the Whittier Fault Zone and the Palos Verdes Fault. Seismic activity on any of these faults could cause considerable ground shaking at each treatment plant.

Surface Fault Rupture

Rupture of the surface during an earthquake is generally limited to the narrow strip of land immediately adjacent to the fault on which the earthquake is occurring. Surface fault rupture may occur suddenly during an earthquake or slowly in the form of fault creep and almost always follows pre-existing faults, which are zones of weakness. Not all earthquakes will result in surface rupture. No fault rupture zones have been identified at either Plant No. 1 or Plant No. 2.

Liquefaction Ground Failures

Liquefaction occurs when water-saturated sandy soil materials lose strength and become susceptible to failure during strong ground shaking in an earthquake. Liquefaction of sandy layers can also cause seismically induced settlement to occur. Liquefaction potential is greatest in areas with shallow groundwater and saturated soils. The CGS Seismic Hazard Zone Map for the area shows that both sites are located within areas subject to liquefaction.[9]

APPLICABLE REGULATIONS

Alquist-Priolo Earthquake Fault Zones

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 required that special geologic studies be conducted to locate and assess any active fault traces in and around known active fault areas prior to development of structures for human occupancy. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures.

The Alquist-Priolo Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults or within fifty feet of an active fault. The Act defines "a structure for human occupancy" as any structure expected to have a human occupancy rate of more than 2,000 person-hours per year. Alquist Priolo Maps identify areas of potential surface rupture.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides. The purpose of the Act is to protect public safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic

[9] *Ibid.*

hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects with these zones. Seismic Hazard maps have been completed for much of the Southern California region.

California Building Code

The *California Building Code* (CBC) is certified in the California Code of Regulations (CCR), Title 24, Part 2, which is a portion of the California Building Standards Code. Title 24 is assigned to the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. Published by the International Conference of Building Officials, the Uniform Building Code (UBC) is a widely adopted model building code in the United States. The CBC incorporates by reference the UBC with necessary California amendments. About one-third of the text within the CBC has been tailored for California earthquake conditions.

City of Huntington Beach and City of Fountain Valley General Plans

Cities and county governments typically develop as part of the General Plans, safety and seismic elements that identify goals, objectives, and implementing actions to minimize the loss of life, property damage and disruption of goods and services from non-seismic geologic hazards and earthquakes. General Plans can provide policies and develop ordinances to ensure acceptable protection of people and structures from risks associated with these hazards. Ordinances can include those addressing unreinforced masonry construction, erosion, or grading.

3.3.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The proposed Project may result in a significant impact if it would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
    - Rupture of 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 California Division of Mines and Geology Special Publication 42.
    - Strong seismic ground shaking.
    - Seismic-related ground failure, including liquefaction.
    - Landslides.
- Result in substantial soil erosion or the loss of topsoil;

- Be located on strata or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; or,

- Be located on expansive soil, as defined in Table 18-1-B of the UBC, creating substantial risks to life or property;

- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Impact 3.3-1: The proposed Project could expose people or structures to potential adverse effects due to geologic and seismic hazards.

The PEIR identified geologic and seismic hazards associated with constructing within the treatment plant boundaries. The SEIR incorporates by reference the conclusions of the PEIR. The following sections summarize this analysis. No new seismic hazards or mitigation measures have been identified.

Surface Fault Rupture

Neither plant site is located within an Alquist-Priolo Act Surface Fault Rupture Hazard Zone identified by the CGS. As such, potential surface rupture hazards are not likely to occur on either plant site.

Ground Shaking and Liquefaction Hazards

Seismic activity could generate moderate to strong ground shaking at both sites. Several fault splays of the Newport-Inglewood fault are known to underlie the Plant No. 2 site, some of which have experienced displacement of Holocene sediments and therefore can be considered "active" by CGS criteria. The proposed Project, in and of itself, would not expose people or structures to unusual risks due to seismic activity. None of the existing or proposed buildings and structures are intended for human occupancy. New structures would be designed to comply with the CBC to minimize the adverse effects of potential ground shaking.

The CGS Seismic Hazard Zone Map for the area shows that both sites are located within areas subject to liquefaction.[10] In order to minimize impacts of ground shaking and liquefaction at the plant sites, site-specific, design-level geotechnical investigations would be performed prior to any construction involving ground-breaking, as detailed in PEIR mitigation measure **6.6-1a**. All new structures, would incorporate design features appropriate to mitigate impacts due to the potential for seismic activity at the site, in compliance with CBC standards supported by site-specific geotechnical investigations. Typical design mitigation could include removing soils, densifying soils, or providing piles or stone columns to support new structures. Final designs will depend on the results of geotechnical investigations as required in mitigation measure **6.6-1a**. Mitigation measure **6.6-1b** in the PEIR requires that new structures comply with the CBC.

[10] *Ibid.*

Differential Settlement and Expansive Soils

Soils on both plant sites could be subject to settlement and expansiveness. In order to minimize the impacts of settlement and expansive soils on proposed structures, prior to ground-breaking activities for any construction or rehabilitation project, site-specific geotechnical studies would be performed, as detailed in mitigation measure **6.6-1a**. Studies would include analysis of the potential for differential settlement and, if necessary, recommendations for design features that would minimize impacts of settlement on proposed structures. Recommended mitigation would be incorporated into each project.

Mitigation Measures

From the PEIR MMRP:

Measure 6.6-1a: Geotechnical Evaluations. During the project design phase for all facilities, the District will perform design-level geotechnical evaluations. The geotechnical evaluations will include subsurface exploration and review of seismic design criteria to ensure that design of the facilities meet seismic safety requirements of the UBC.

Site-specific testing for soils susceptible to liquefaction shall be conducted. If testing results indicates that conditions are present that could result in significant liquefaction and damage to project facilities, appropriate feasible measures will be developed and incorporated into the project design. The performance standard to be used in the geotechnical evaluations for mitigating liquefaction hazards will be minimization of the hazards. Measures to minimize significant liquefaction hazards could include the following:

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

Recommendations of the geotechnical report will be incorporated into the design and construction of proposed facilities.

Measure 6.6-1b: Seismic Safety. The District will design and construct new facilities in accordance with District seismic standards and/or meet or exceed seismic, design standards in the most recent edition of the CBC.

Significance after Mitigation

Less than significant.

Impact 3.3-2: Dewatering could create unstable soil conditions, creating potential risk of property damage to proposed and nearby existing structures.

Several of the proposed projects involve excavation and dewatering. Groundwater at both sites is known to be very near the ground surface, due to the proximity of the ocean. In the event that excavation would reach groundwater levels, soils could loosen at the bottom of an excavation, resulting in unstable soil

conditions. Additionally, dewatering could promote land settlement in surrounding areas, which could damage nearby existing structures on the plant site.

For projects that involve dewatering and where excavation could encroach on the groundwater table, during the design phase a geotechnical evaluation would be conducted to develop recommendations for design and construction measures to address poor soil conditions and dewatering. The recommendations would provide design criteria for the dewatering system for each particular project so that engineering methods can be developed to protect the stability and integrity of existing and proposed structures. The District would implement recommendations to minimize the risk of settlement and unstable soil conditions from dewatering and ensure conformance with UBC standards.

Mitigation Measures

New Mitigation:

Measure 3.3-2: The District or its consultant shall conduct a geotechnical investigation during the design phase of each facility project to develop measures to address poor soil conditions and dewatering requirements to be implemented during project design and construction that will protect people and structures. District shall include the measures in its project design and construction specifications and shall oversee contractor implementation.

Significance after Mitigation

Less than significant.

3.4 HAZARDS AND HAZARDOUS MATERIALS

This section addresses possible hazards associated with the construction and operation of the proposed projects. This section updates the PEIR.

3.4.1 SETTING

Hazardous substances include chemicals regulated by both the United States Department of Transportation's (DOT) "hazardous materials" regulations and the EPA "hazardous waste" regulations, including emergency response. Hazardous materials are substances which, by their nature and reactivity, have the capacity of causing harm or a health hazard during normal exposure or an accidental release or mishap, and are characterized as being toxic, corrosive, flammable, reactive, an irritant, or strong sensitizer. Hazardous wastes require special handling and disposal because of their potential to damage public health and the environment. The District currently stores and uses the following chemicals in the treatment process.

- **Hydrogen peroxide (H_2O_2)** is used for odor control. It is a moderately powerful oxidizing agent. It is a stable, easy-to-use chemical and a good source of active oxygen. It can oxidize numerous chemical compounds and can control anaerobic organisms.

- **Caustic Soda** (Sodium hydroxide (NaOH)) is a highly basic substance used in air scrubbers to neutralize hydrogen sulfide odors. This material is considered the most hazardous chemical stored in large quantities at the site. Caustic soda can cause severe burns to skin and clothing and can severely corrode equipment coming in contact with it. It constitutes a worker safety hazard; however, it does not readily vaporize or pose a threat to off-site receptors.

- **Ferric chloride** is added to the wastewater as part of advanced primary treatment. With its slight negative ionic charge, it acts as a coagulant precipitating solids removal in conjunction with positively charged polymers.

- **Sodium Hypochlorite (NaOCl) (Bleach),** used in place of gaseous chlorine, is unstable and some chlorine vapor can be released in the event of a spill. However, chlorine vapor production is minimal in comparison to pressurized gaseous chlorine. Equipment used within the spill containment areas must have corrosion protection. The District will continue to use NaOCl for disinfection and process control.

- **Sodium bisulfate ($NaHSO_3$)** is a white powder granule used as a dechlorination agent at Plant No. 2.

- **Anionic Polymer and Cationic Polymer (Dewatering and DAF Units)** are non-hazardous materials added in the primary treatment and solids handling processes to facilitate solids removal.

- **Liquid Oxygen** is generated at Plant No. 2. There are two approximately 40,000 gallon tanks at Plant No. 2 for storage of the liquid oxygen. Liquid oxygen is a hazardous chemical and represents both a fire and explosion hazard. Worker safety training conducted for all workers within the activated sludge facility emphasizes precautions when working near the system.

Both of the District's treatment facilities have hazardous materials storage areas. The laboratory at Plant No. 1 has a separate hazardous materials storage area. Hazardous waste is also collected in centralized locations and disposed of in accordance with regulations.

Applicable Regulations

Federal and State

In California, Title 22 and Title 23 of the CCR address hazardous materials and wastes. Title 22 defines, categorizes, and lists hazardous materials and wastes. Title 23 addresses public health and safety issues related to hazardous materials and wastes and specifies disposal options.

The U.S. DOT regulates hazardous materials transportation. State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials emergencies are the California Highway Patrol and local Fire Departments.

Worker safety is regulated through Occupational Health and Safety Administration (OSHA) as well as the State version, Cal/OSHA. Federal OSHA establishes in the Code of Federal Regulations Title 29 (CFR 29) 40 hours of training for hazardous materials operators. The training includes personal safety, hazardous materials storage and handling procedures, and emergency response procedures.

The Hazardous Materials Release Response Plans and Inventory Law (California Health and Safety Code, Section 25500 *et. seq.*) governs hazardous materials handling, reporting requirements, and local agency surveillance programs. It requires businesses that store hazardous materials on-site prepare an inventory and submit it to local health and fire departments.

Local

The proposed projects would take place within existing treatment plant boundaries in the cities of Fountain Valley and Huntington Beach. The proposed projects would be subject to the local plans and policies of both cities and the County. The General Plan for each jurisdiction contains goals, policies, and implementation measures that are designed to protect public health and safety from a variety of hazards.

Integrated Emergency Response Program

The District has implemented the Integrated Emergency Response Program (IERP), which covers worker safety, spill prevention, emergency response, and hazardous materials management at the treatment plants. The IERP includes the Spill Prevention Containment and Countermeasure (SPCC) Plan required by the Santa Ana RWQCB which includes structural specifications for storage tanks, visual monitoring schedules for aboveground storage tanks, underground storage tank tightness testing schedules, emergency response procedures, and reporting requirements. The IERP also includes safety procedures for operations and maintenance workers, including worker safety training, hazard communications, personal protective equipment, site security, and departmental organization. Training in and implementation of the Incident Command System for managing crisis situations is also included in the IERP.

3.4.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The criteria used to determine the significance of an impact are based on the model initial study checklist in Appendix G of the State CEQA Guidelines.

The proposed Project may result in a significant impact if it would:

- create a significant hazard to the public or environment through the routine transport, storage, use, or disposal of hazardous materials;
- create a significant hazard to the public through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- emit hazardous emissions or handles hazardous or acutely hazardous materials, substances, or waste be within ¼-mile of an existing or proposed school;
- be located on a site that is known to contain hazardous materials or is listed on a site compiled pursuant to Government Code Section 65962.5, and as a result could create a significant hazard to the public or the environment;
- result in a safety hazard for people residing or working in the project area for a project located within an airport land use plan, within two miles of a public airport or within the vicinity of a private airstrip;
- impair or interfere with the implementation of an adopted emergency response plan or emergency evacuation plan; or,
- expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Impact 3.4-1: Increasing the level of treatment would increase quantities of the existing hazardous materials used in the treatment process. However, continued implementation of the District's existing plan to comply with applicable regulations regarding transport, storage, use and disposal of these chemicals as well as spill prevention and response would reduce potential effects to the environment, the public and plant workers to less than significant.

Table 3.4-1 compares chemical usage for the fiscal year 2002/03 with Scenarios 2 and 4 from the PEIR and for the proposed Project in the year 2020 for both treatment plants. The table shows that current chemical usage for some chemicals exceeds volumes predicted for 2020 in the PEIR. In addition, the proposed Project would result in substantially greater chemical usage for some chemicals than estimated for the full secondary alternative (Scenario 4) assessed in the PEIR. This is due in part to the implementation of the disinfection program and to the increased odor control now applied to primary treatment processes.

Table 3.4-1
Past and Projected Annual Monthly Average Process Chemical Usage (gallons)

Fiscal Year	Hydrogen Peroxide	Caustic Soda	Ferric Chloride	Anionic Polymer Adv. Prim.	Sodium Hypochlorite (Bleach) – Plant	Sodium Hypochlorite (Bleach) – Effluent	Cationic Polymer Dewatering	Cationic Polymer DAF Units	Sodium bisulfite
Plant No. 1									
2002/03	38,000	20,350	148,600	2,300	25,400	131,900	64,400	22,190	NA
PEIR 2020 (Scenario 2)	18,359	3,741	182,000	-	11,457	NA	110,000	11,120	NA
PEIR 2020 (Scenario 4)	23,866	4,863	236,600	-	14,894	NA	143,000	14,456	NA
Proposed Project 2020	77,172	41,241	302,300	4,672	51,584	140,988	130,980	45,135	NA
Plant No. 2									
2002/03	22,000	11,900	196,400	1,300	6,700	631,600	86,700	NA	98,700
PEIR 2020 (Scenario 2)	30,507	11,043	220,000	-	NA	21,810	55,000	NA	NA
PEIR 2020 (Scenario 4)	39,659	14,355	286,000	-	NA	28,353	71,500	NA	NA
Proposed Project 2020	20,880	11,260	186,000	6,200	604,800	84,960	NA	103,663	2,510

Sources: Orange County Sanitation District, Annual Report 2003; 1999 Strategic Plan.

Sodium hypochlorite (bleach) is now used to disinfect the effluent as well as for disinfection and process and odor control at the plant sites. In addition, hydrogen peroxide and caustic soda are used substantially more under existing and proposed conditions than had been predicted in the PEIR due to the increased primary treatment odor control. The activated sludge plant increased its flow from an average of 69 mgd in fiscal year 2001/02 to 79 mgd in fiscal year 2002/03. This brought the District's overall secondary treatment for both plants up to 64 percent of the effluent discharged to the ocean.[1] Ferric chloride and polymer doses were increased to provide this increased secondary treatment capacity. In addition, greater quantities of ferric chloride and anionic polymer are added to the primary clarifiers to enhance removal of biochemical oxygen demand (BOD), total suspended solid (TSS), and settleable solids in the primary treatment facilities.

Future chemical usage estimates assume an increase in chemical usage commensurate with wastewater flow increases, assuming that secondary treatment and disinfection will be provided for the entire average flow. The projected average annual daily flow for the year 2020 is 321 mgd plus an additional 12 mgd of brine anticipated from the GWR system.

Chemical delivery trucks per month are listed in **Table 3.4-2**. The estimated chemical deliveries will increase under the proposed Project from those estimated for Scenario 4 in the PEIR, due primarily to disinfection and odor control chemicals.

The PEIR identifies hazards associated with usage of liquid oxygen. The proposed Project would not increase liquid oxygen use. Storage of the other chemicals would not constitute a significant public health risk as concluded in the PEIR. Implementation of the IERP would ensure that chemicals were stored and handled to minimize spills and protect the environment and public health. Chemical deliveries would increase 30 percent over the PEIR Scenario 4 2020 estimate. This constitutes approximately 7 additional deliveries per day. Much of the increase is associated with disinfection chemicals. The

[1] Orange County Sanitation District Annual Report, 2003.

Table 3.4-2
Estimated One-Way Truck Trips per Month for Chemical Deliveries

	Plant No. 1	Plant No.2	Total
2002/2003*	226	531	757
PEIR 2020 (Scenario 2)	270	270	540
PEIR 2020 (Scenario 4)	350	350	700
Proposed 2020*	397	510	907

Sources: Orange County Sanitation District, 2003Annual Report; and 1999 Strategic Plan.
* Assumes 4,000 gallons per delivery. Two one-way trips per delivery.

proposed Project would increase daily chemical deliveries from existing conditions by approximately 5 trips per day. This increase in chemical transportation, storage, and usage would not substantially increase risk of upset or increase hazards associated with catastrophic chemical releases. As noted above, none of the chemicals present public health risks to neighboring land uses.

The District's worker safety program as managed through the IERP covers chemical handling procedures. Workers would be provided appropriate training and safety equipment in compliance with OSHA regulations. Implementation of the District's IERP would ensure that chemical handling would pose a less than significant impact and no further mitigation is required.

Mitigation Measures

No mitigation measures are required.

Significance after Mitigation

Less than significant.

Impact 3.4-2: Abandoned oil wells could be encountered during excavation at Plant No. 2 and represent both a safety hazards for workers as well as a potential conduit for surface contamination to reach groundwater if wells are not properly abandoned.

Figure 3.4-1 shows oil wells in the area of Plant No. 2 as recorded on the California Division of Oil and Gas map[2]. During excavation at Plant No. 2, particularly for facility project P2-90, abandoned oil wells could be encountered. In addition, abandoned wells that are not recorded on the map may exist on the plant site. The condition of these wells is unknown. Abandoned oil wells may act as conduits for surface contamination to reach groundwater. In addition, well shafts can pose safety, fire and explosion hazards during construction activities and for the life of the project.

The proposed Project would be subject to Mitigation Measures 7.8-3e and 7.8-3f of the PEIR, which address identification and proper abandonment of any wells discovered during project construction.

[2] Division of Oil, Gas and Geothermal Resources, Map 136, Newport and West Newport, August 17, 2002.

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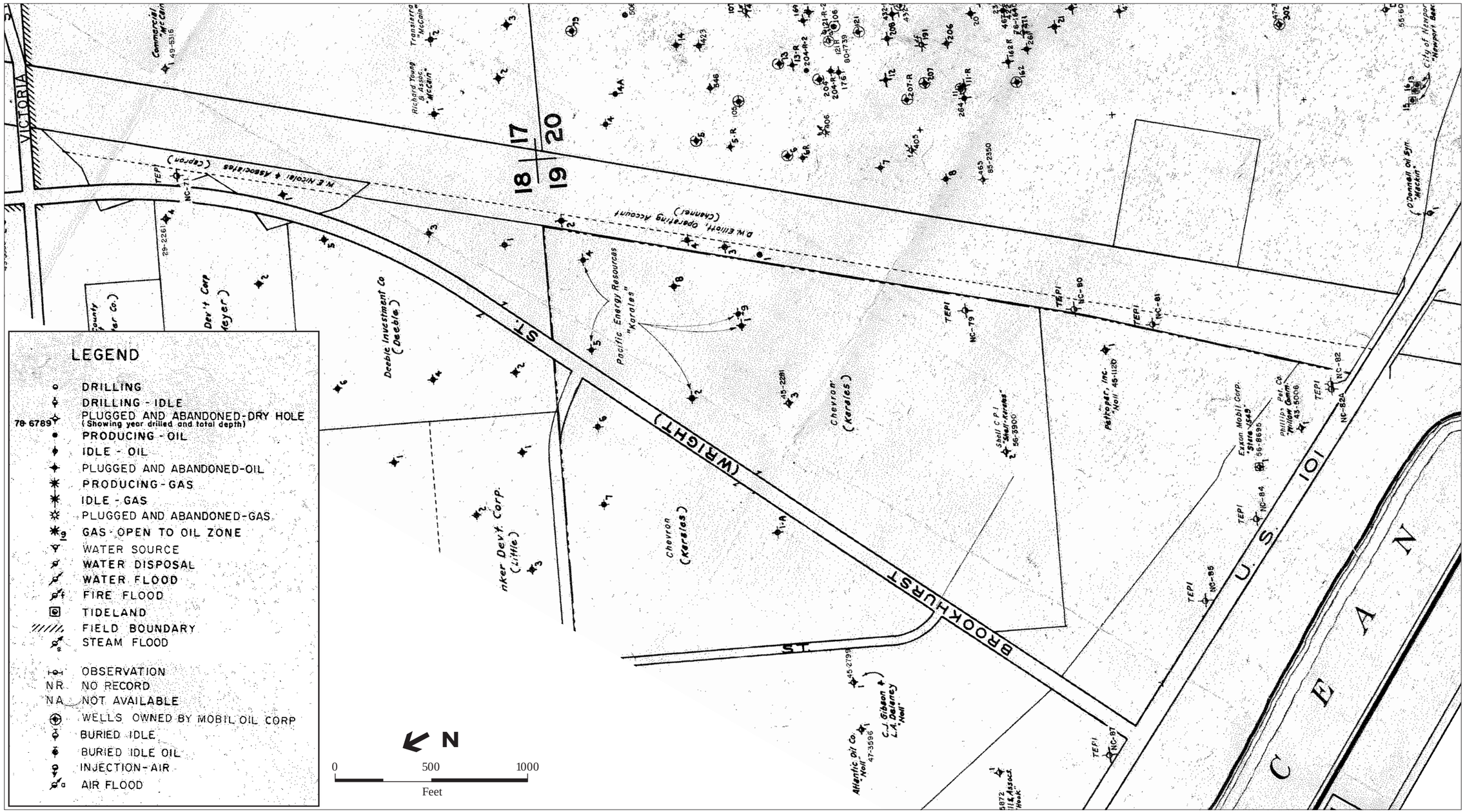


SOURCE: State of California Department of Conservation - Division of Oil, Gas, and Geothermal Resources, August 17, 2002

Figure 3.4-1
Location of Known Wells at Plant No. 2

Existing abandoned oil wells would be capped at a deeper depth if necessary to accommodate the excavation depths of the proposed projects. Support piles or columns would be situated to avoid underground well shafts. Implementation of the mitigation measures to identify wells and abandon them properly in accordance with state Department of Health Services and Division of Oil and Gas standards would reduce the potential impact to less than significant.

Mitigation Measures

From the PEIR MMRP:

Measure 7.8-3e: Identify Abandoned Oil Wells. Prior to construction, the District shall identify existing and abandoned oil production wells within the project area using the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR), District 1 well location maps. Access to identified non-abandoned oil wells will be maintained. Previously abandoned wells identified beneath proposed structures or utility corridors may need to be plugged to current DOGGR specifications including adequate gas venting systems.

Measure 7.8-3f: Abandon Wells. Should construction activities uncover previously unidentified oil production wells, the DOGGR will be notified, and the well will be abandoned following DOGGR specifications for well abandonment.

Significance After Mitigation

Less than significant.

Impact 3.4-3: Soils contaminated from previous activities in the area could be encountered during excavation activities and create a significant hazard to the public or environment if not properly contained and disposed of.

Some areas of the plant sites have been used for industrial activities such as sludge drying and automobile storage. Soils in these areas may contain petroleum hydrocarbons, elevated levels of metals, or other industrial contaminates. Implementation of the following mitigation measure would ensure that if contaminated soils were encountered, removal would be handled in accordance with applicable regulations.

Mitigation Measures

New mitigation:

Measure 3.4-1: Any contaminated soils encountered on the project site during site clearance or excavation shall be removed from the project site and disposed of off-site in accordance with applicable hazardous waste regulations. The District will notify the Orange County Health Care Agency of remedial actions.

Significance of Impact

Less than significant.

Intentionally left blank.

3.5 HYDROLOGY AND WATER QUALITY

This section assesses the potential impacts to surface water hydrology, surface water quality, groundwater hydrology, and groundwater quality resulting from the construction and operation of the proposed Project. This section also focuses on the proposed Project's consistency with state, regional, and local water quality policies/regulations and applicable standards and discharge permit conditions.

3.5.1 SETTING

Surface water in the region primarily consists of the SAR and its tributaries, which drain the southern portion of the eastern San Gabriel Mountains and southern parts of the San Bernardino Mountains. The SAR flows are diverted to groundwater recharge spreading basins near Anaheim by the OCWD. Summer flows from the upper SAR rarely reach beyond the basins to Burris Pit located more than 20 miles upstream from the ocean. Only occasional winter storm flows reach the ocean.

The lower reach of the SAR channel runs adjacent to each plant site on the east. The Santa Ana RWQCB Basin Plan has not established numeric water quality standards for this reach; only narrative objectives apply. Beneficial uses identified by the Santa Ana RWQCB include non-contact water recreation, warm freshwater habitat, and wildlife habitat.

The 40-foot wide Talbert Marsh, maintained by the Huntington Beach Wetlands Conservancy, lies between the southwest border of Plant No. 2 and PCH. In addition, wetlands are being restored by the U.S. Army Corps of Engineers (ACOE) directly across the SAR from Plant No. 2 to the east.

The closest water body on the 2002 EPA-approved 303(d) list is Huntington Beach State Beach, which is located across PCH from Plant No. 2 and north approximately one mile. The beach is listed as impaired by Enterococci bacteria within 50 yards around the storm drain at Magnolia Street and the potential source is listed as unknown. Lower Newport Bay, the inlet to which is located approximately six miles south of Plant No. 2, is listed for metals and pesticides.

GROUNDWATER

Much of the groundwater beneath the OCSD service area is recharged with diverted SAR water by OCWD. Both treatment plants are located over the Santa Ana pressure groundwater basin. According to the SAR Basin Plan, this basin has several designated beneficial uses: municipal and domestic, agricultural, industrial service, and industrial process supply. The basin is the primary source of local drinking water supplies. Heavy pumping in the past has caused seawater intrusion into the aquifer as much as five miles inland. To prevent further intrusion, OCWD operates a hydraulic barrier system consisting of 23 injection wells located four miles inland that deliver recycled water into the aquifer. Plants Nos. 1 and 2 are located between the coast and the barrier system.

At Plant No. 1 groundwater can be found at varying depths between 20 and 30 feet below the ground surface.[1] Groundwater beneath Plant No. 2 is found at shallower depths due to its close proximity to the ocean. The depth to groundwater at Plant No. 2 is tidally influenced and varies from season to season and

[1] Ninyo & Moore. *Geotechnical Evaluation Trickling Filters/New Clarifiers – Job No. P1-76 Orange County Sanitation District – Plant No. 1, Fountain Valley, California.* March 22, 2002.

from year to year. Consequently, dewatering operations have been necessary during past construction activities. The OCSD has established dewatering operation standards for contractors performing work within the boundaries of its treatment plants. Discharge from dewatering is governed by a NPDES permit (No. CAG998001) issued by the Santa Ana RWQCB. Water from dewatering activities is typically disposed of through the plant's treated effluent system and ultimately discharged through the ocean outfall.

FLOODING

A flood hazard may occur when land within a flood plain area is developed. Historically, Orange County has been vulnerable to flooding during peak rainfall events. Encompassing over 3,200 square miles, the SAR Basin is the largest watershed in Southern California. Since 1989, the ACOE has significantly reduced flood risks along the SAR by completing the construction of concrete-lined levees and flood control channels along much of the river and its tributaries.

With the newly constructed levees, both treatment plants are no longer within the 100-year floodplain. The treatment plants are protected from flooding by walls and levees which were completed by the ACOE in 1995. The Flood Insurance Rate Map for the area was recently revised by Federal Emergency Management Agency (FEMA) as Zone X, an area "protected from the one percent annual chance flood by levee, dike, or other structures subject to possible failure or overtopping during larger floods."[2,3]

Earthquakes can cause flooding due to tsunamis, seiches, or by causing dam failure. Tsunamis are a potential hazard at this site due to the close proximity of the coast and elevation of roughly eight feet above mean sea level. Orange County has not experienced a tsunami of magnitude greater than high storm tides, however the coastal area can be subject to potential tsunami damage when combined with high tides. The offshore islands provide some protection to the coastline from the impacts of tsunamis originating from distant seismic events. Plant No. 2 is within an area classified as a Moderate Tsunami Run-Up Area according to the City of Huntington Beach General Plan, Environmental Hazards Element.

Seiches are earthquake-induced waves in an enclosed or partially enclosed body of water, which may produce flooding in local areas. The Project is not located near a body of water that could experience seiches. The nearest reservoir is Prado Dam, located near the city of Corona in Riverside County. The Dam was completed in 1941 by the ACOE to control flooding in the Lower SAR Basin. Flood Inundation Maps prepared by the ACOE show that both treatment plants are located within the Prado Dam Inundation Area.[4,5]

DRAINAGE

Both plant sites are located in areas of relatively flat topography. Both plants have internal drainage systems that are designed to collect and treat storm water and collect wastewater and chemical spills from

[2] FEMA, Flood Insurance Rate Map Number 06059C0054F, February 13, 2002.
[3] FEMA, Flood Insurance Rate Map Number 06059C0037F, February 18, 2004.
[4] Ibid; and U.S. Army Corps of Engineers website, http://www.spl.usace.army.mil/resreg/htdocs/PrdoFIM/plate7.pdf, accessed May 6, 2004.
[5] Ibid; and U.S. Army Corps of Engineers website, http://www.spl.usace.army.mil/resreg/htdocs/PrdoFIM/plate4.pdf, accessed May 6, 2004.

industrial areas of each site. Storm water runoff associated with the treatment process area is currently captured, treated, and disposed through the ocean outfall.

APPLICABLE REGULATIONS AND EXISTING PERMITS

The EPA is the federal agency responsible for water quality management and administration of the federal CWA. The EPA has delegated most of the administration of the CWA in California to the SWRCB. The State Water Resources Control Board (SWRCB) was established through the California Porter-Cologne Water Quality Act of 1969 and is the primary State agency responsible for water quality management issues in California. Much of the responsibility for implementation of the SWRCB's policies is delegated to the nine RWQCBs. The plants are located in the Santa Ana RWQCB.

Section 402 of the CWA established the NPDES to regulate discharges into "navigable waters" of the United States. The EPA authorized the SWRCB to issue NPDES permits in the State of California in 1974. The NPDES permit establishes discharge pollutant thresholds and operational conditions for industrial facilities and wastewater treatment plants. Non-point source NPDES permits are also required for municipalities and unincorporated communities of populations greater than 100,000 to control urban stormwater runoff. These municipal permits require the preparation of Storm Water Management Plans (SWMPs) that reflect the environmental concerns of the local community. Currently, individual storm water NPDES permits are required for specific industrial activities and for construction sites greater than one acre. State-wide general storm water NPDES permits have been developed to expedite discharge applications. They include the State-wide industrial permit and the State-wide construction permit.

Stormwater compliance at the District's treatment plants is governed through the District's NPDES Ocean Discharge permit. The District collects stormwater onsite at both treatment plants and directs it through the wastewater treatment system for treatment. At no time is any industrial stormwater from the treatment process areas allowed to run off the plant site. Because all industrial stormwater is treated through the wastewater treatment process and discharged through the outfall, no surface water bodies are affected and the RWQCB determined that the District is exempt from the General Industrial Stormwater Permit. Instead, in compliance with the NPDES Ocean Discharge permit, the District prepared and submitted an Onsite Stormwater Management Plan (OSSWMP) to the Regional Board. The OSSWMP regulates stormwater management for the District's two treatment plants and addresses stormwater management during operation and construction activities.

There is one exception at the District's Plant No. 1 where there are two manholes in the parking lot of the District's Administration Building that are not connected back to the treatment plant process, but instead are connected to the local storm drains. Stormwater reaching these two manholes is not from any treatment process areas. In the event that any stormwater from the District's treatment plant area flows "off-site" and into the local system, then OCSD must comply with the RWQCB's General Municipal Stormwater Permit issued to Orange County. In such a case, OCSD would function as a contractor who must comply with the County's ordinances. The County's stormwater management requirements are presented in its Drainage Area Management Plan (DAMP). In addition, all off-site construction by the District must comply with the RWQCB's General Municipal Stormwater Permit issued to Orange County and the County's DAMP.

Section 303(d) of the CWA requires the SWRCB to list impaired water bodies in the State and determine total maximum daily loads (TMDLs) for pollutants or other stressors impacting water quality. The SAR

is listed as an impaired water body although TMDLs have not yet been determined for any of the identified impaired reaches.

3.5.2 IMPACTS AND MITIGATION

This section addresses potential hydrology and water quality impacts of the proposed Project from construction activities and operations at the District's two treatment plants. Please see Section 3.6 – Marine Environment for a review of water quality effects of the proposed effluent discharge on the marine environment.

SIGNIFICANCE CRITERIA

The proposed Project may have a significant impact on surface hydrology, water quality, and/or groundwater if it meets or exceeds the following thresholds:

- violate any water quality standards or waste discharge requirements;
- substantially deplete groundwater supplies or interfere substantially with groundwater recharge;
- substantially alter existing drainage patterns resulting in substantial erosion and/or flooding on- or off-site;
- create runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial sources of polluted runoff;
- substantially degrade overall water quality;
- place structures within a 100-year flood hazard zone that would impede or redirect flood flows;
- expose people or structures to significant risk of loss, injury or death involving flooding, including flooding from failure of a dam or levee; and,
- expose people or structures to significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow.

Impact 3.5-1: The construction of the proposed Project could result in erosion and receiving water quality impacts.

The existing plant sites are fairly flat and little erosion is anticipated to occur. The existing drainage system allows stormwater that comes in to contact with process areas to be captured, treated through the wastewater treatment process, and ultimately discharged to the ocean. The proposed Projects would increase impervious surfaces at both plant sites. Storm water runoff would be collected and sent through the treatment system as is currently the case. The proposed Project would not impact water quality in local surface bodies including the Santa Ana River.

The PEIR mitigation measures **6.7-1a, 6.7-1b, and 6.7-1c** address potential treatment plant storm water impacts of the proposed Project. These measures are shown below and have been updated to reflect the

OSSWMP the District prepared as required by the RWQCB instead of the SWMP. OCSD would ensure that construction contractors comply with the existing OSSWMP for construction on the plant sites and implement BMPs for construction and operation of the proposed headworks project in accordance with the requirements of its OSSWMP approved by the RWQCB as part of its NPDES for Ocean Discharge. Construction activities are not proposed in the Administration Building area where there are two manholes that connect to the local drainage system; thus, no construction run-off is expected to reach the local drainage system.

Proposed excavation would be deeper than local groundwater levels and would require dewatering during construction. Water from dewatering activities would be disposed of through the plant's treatment system and ultimately discharged through the ocean outfall after treatment. Mitigation measures for dewatering activities are discussed in the PEIR in Measures **6.7-2a** and **6.7-2b**, which are attached in Appendix A.

Mitigation Measures

From the PEIR MMRP

Measure 6.7-1a: Best Management Practices. The District will implement BMPs as outlined in the District's OSSWMP.

Measure 6.7-1b: Storm Water Management. The District will train construction and operation employees in stormwater pollution prevention practices. Individual contractors performing construction at each treatment facility shall be required to comply with provisions of the District's OSSWMP.

Measure 6.7-1c: Stormwater Facility Maintenance. The District will inspect and maintain all on-site stormwater drains and catch basins on plant property regularly.

Measure 6.7-2a: Groundwater Dewatering. Construction contractors will comply with the District's Dewatering Specifications.

Measure 6.7-2b: Groundwater Dewatering Disposal. Water from dewatering will be disposed of in a suitable manner in conformance with the District's OSSWMP as approved by the RWQCB.

Significance after Mitigation

Less than significant.

Impact 3.5-2: The proposed Project area would be susceptible to potential flooding impacts, which could damage facilities.

Plants Nos. 1 and 2 are located immediately adjacent to the SAR and protected from flooding by walls and levees that were constructed by the ACOE in 1995. The area where the plants are located was recently revised by FEMA as Zone X, an area "protected from the one percent annual chance flood by levee, dike, or other structures subject to possible failure or overtopping during larger floods."[7] This designation has been established since the certification of the PEIR. As mentioned above, both treatment

[7] FEMA, Flood Insurance Rate Map Number 06059C0054F, February 13, 2002.

plants are also located within the Prado Dam Inundation Area.[8] In addition, the City of Huntington Beach General Plan Environmental Hazards Element indicates that Plant No. 2 is located in a Moderate Tsunami Run-Up Area. The likelihood that the Prado Dam will fail or that a tsunami large enough to inundate either plant will occur is low. The proposed projects would not increase the risks of inundation by tsunami or dam failure.

Mitigation Measures

No mitigation measures are required.

Significance after Mitigation

Less than significant.

[8] Ibid; and U.S. Army Corps of Engineers website, http://www.spl.usace.army.mil/resreg/htdocs/PrdoFIM/plate7.pdf, accessed June 6, 2002.

3.6 MARINE ENVIRONMENT

This marine environment section incorporates setting information contained in the PEIR by reference. For a complete description of the setting, refer to the PEIR, Chapter 5. This section evaluates changes in the setting since the PEIR was prepared. MEC Analytical provided the evaluation of potential impacts to the marine environment in comparison to the analysis they provided in the PEIR.

3.6.1 SETTING

The District discharges treated wastewater effluent to the deep ocean environment; approximately four miles offshore of Huntington Beach and Newport Beach (see Figure 1-1). This section of the coast lies in the south-central portion of the Southern California Bight (SCB), a regional area that extends from Point Conception (Santa Barbara County) to a point just south of the United States/Mexico border, which encompasses the coastal watersheds and extends offshore to the California borderlands. The SCB is characterized by both beautiful beaches and rugged shoreline with a complex submarine topography of varying continental shelf widths interrupted by islands, canyons, and basins. The District's outfalls are located on the San Pedro Shelf bounded to the south by Newport Canyon and to the northwest by San Gabriel Canyon. The shelf sediments in this area are primarily sands with silts and clays, inhabited by biological communities typical for these environments.

The District has two ocean outfalls located off of Huntington Beach, California – an operational 120-inch diameter outfall and an emergency standby 78-inch diameter outfall. These two outfalls extend directly off the coast from Plant No. 2, near the mouth of the Santa Ana River. The 78-inch outfall extends 7,200 ft offshore and then turns upcoast, with a 970-foot diffuser section that terminates in a water depth of about 63 ft. The 78-inch outfall was completed in 1954 and was operational until 1971. Currently, the 78-inch outfall is maintained for emergency overflow operations and has not been used except for periodic testing since 1971.

The 120-inch outfall became operational in 1971. The 120-inch outfall extends 4 miles from the shoreline, with an extensive diffuser section extending upcoast for 6,000 ft and terminating in a water depth of 188 ft. Both outfalls are buried beneath the surface from onshore out to a water depth of about 27 ft. From this location to the diffuser terminus, the outfall pipes lie upon the seafloor and are heavily ballasted with rock. As such, the District's outfall pipes, diffuser structures, and ballast represent one of the largest artificial reefs in the SCB.

The District conducts an extensive ocean monitoring program of the coastal environment to assess effects from the wastewater discharges on water quality, bottom conditions, biological organisms, and beneficial uses. The program is a required element of compliance and monitoring under the District's NPDES permit. This includes shoreline water quality and offshore water quality, sediment quality, effects to fish and infauna, and bioaccumulation monitoring.

The District publishes an annual report to summarize the findings of the marine monitoring program. The Marine Monitoring Annual Report for 2003 describes the marine environment in substantial detail and is hereby incorporated by reference. Copies of this and annual reports for prior years in the monitoring

program are available for review at the District's offices, located at Plant No. 1 in Fountain Valley, California.[1]

CHANGES IN THE MARINE ENVIRONMENT SINCE THE PEIR

Demersal Fish and Macroinvertebrate Communities

Changes in ocean water temperatures, both short-term and long-term, have profoundly influenced species distribution and abundance in the SCB. In the 1980s and early 1990s there tended to be fewer macroinvertebrate species near the outfall, but more recently this has not been observed. The demersal fish and macroinvertebrate communities near the outfall form a diverse and abundant community of species typical to the SCB. Following are a few key findings identified since the PEIR was prepared as reported in the most recent annual monitoring report:

- Water depth was the most important factor that affected the composition and distribution of fish and macroinvertebrates. The data support the contention that the species near the outfall are similar to reference areas away from the outfall.

- The general long-term decline over the past three decades of the number of fish species in certain locations may in part be related to changes in long-term ocean temperatures. Temporal trends for fish abundance are less evident. The decline in diversity and spatial distributions of many species began to change around 1980, coinciding with the general long-term shift to a warmer water regime for ocean temperatures. Moreover, a shorter term analysis for 1998-2003 data shows that both number of species and their abundance are now increasing, correlating with the return to cooler water temperatures which also coincides with some species spatial patterns becoming more characteristic of cooler waters. The wastewater discharge has had no effect on these large-scale regional effects.

- A similar pattern of decreasing diversity was also seen for the macroinvertebrate community and apparently for the same reasons i.e., ocean temperature changes. However, the shorter-term trend analysis did not find any significant trends for these community measures coinciding with the return to cooler water temperatures.

- The changes seen for the demersal community measures summarized in the two preceding bullets were largely due to the response of the most common fish and a macroinvertebrate species. Because of their greater abundance the response of these species to the long-term temperature changes can strongly influence community measure values. Cold water species have become less abundant inshore and long-term trends for most of these species have been declining. Warm water species have increased during this warming period. While the dominant macroinvertebrate species showed fewer response to ocean temperature shifts some species followed the patterns seen for fish. Thus, there were distinct temporal changes coinciding with the shift in ocean temperatures but discharge effects were not evident. The outfall area was no different than the reference area and showed similar abundance temporal trends indicating that the outfall area is responding to regional influences in a similar pattern as seen throughout the SCB. Thus, the outfall area is not degraded or significantly different from reference areas.

[1] Orange County Sanitation District, 10844 Ellis Avenue, Foundation Valley, CA. (714) 962-2411.

Infaunal Invertebrate Communities

Natural features such as water depth are the dominant controlling influences for the distribution and abundance of invertebrates comprising the infaunal community. However, effects caused by the outfall are highly localized to near outfall diffuser section and within zone of initial dilution (ZID). Temporal patterns for some community measures correlate with regional influences possibly related to changes in ocean temperatures, shorter-term El Niño effects, and a general decreasing effect from the wastewater discharge. However, many of the community measures have shown little change during the past few years possibly indicating that the infaunal community is now in equilibrium with the present outfall discharges and sedimentary environment. Further significant changes or reductions of outfall effects should not be expected unless significant changes occur in the final effluent discharged or other regional influences occur. Following are a few key findings identified since the PEIR was prepared as reported in the most recent annual monitoring report:

- Natural features of the study area account for most of the observed variability in species distribution and abundance. Depth-related factors are the most important determinant of community composition followed by wastewater discharge and canyon effects.

- The 2002-2003 monitoring year data showed that the number of species beyond the ZID is similar to regional reference areas.

- Infaunal abundance is the community measure that most clearly demonstrates an outfall effect with enhanced abundances within the ZID and near the discharge location. Enhanced abundance of the tolerant target species *Euphilomedes carcharodonta* has returned to patterns typical of the area before the 1998 El Niño event.

- Infaunal abundance was similar to regional reference areas except for the farfield area where abundances were low. The factors contributing to the lower than normal abundances observed for much of the study area are unknown. However, abundances near and close to the outfall were representative of reference values indicating that infaunal abundance patterns are essentially normal and not representative of a degraded community. Both seasonal and discharge effects were less evident for the 2002-2003 year.

- All four diversity indices show a consistent pattern of lower diversity for deeper depths and canyons and a localized depression centered on the outfall. Diversity values beyond the ZID appear normal for all other areas.

- Historical decreases in infaunal abundance were most evident for the pollution sensitive brittlestar *Amphiodia urtica*. However, general increases in the abundance of this species near the outfall from 1985 to 1998 likely reflect lower mass emissions and improving sediment quality due to improved source control and wastewater treatment practices. Decreases observed in 1998-99 occurred at most stations indicating a regional effect, most likely related to the recent El Niño and La Niña events. Since 1999 *Amphiodia* abundances have show only small deviations suggesting that the recovery of this species may be reaching equilibrium and further improvements may not occur.

3.6.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

According to CEQA, an impact is significant or potentially significant when the project has 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, or reduce the number or restrict the range of a rare or endangered plant or animal (*CEQA Guidelines,* section 15065).

The significance of the above-mentioned impacts is evaluated in light of (1) alteration in fractions and absolute numbers of impacted populations; (2) duration of impact; and (3) the commercial, recreational, or ecological, significance of the resource. Impacts are considered significant if they (1) cause a long-term, widespread measurable change in species composition; (2) reduce the population of an endangered species; (3) cause or contribute to a measurable change in function of areas of special biological significance; or (4) cause a measurable change in a population of any (non-endangered) species of recognized commercial, recreational, or ecological concern.

Impact 3.6-1: The secondary effluent produced as a result of the proposed Project would improve effluent quality.

Table 2-3 in Chapter 2 – Project Description summarizes effluent quality and contaminant loading as estimated for Scenario 4 in the PEIR and for the proposed Project. Table 2-4 in Chapter 2 summarizes effluent quality and contaminant loading as estimated for PEIR Scenario 2 and for the proposed Project. In many areas measured there would be an improvement in effluent quality with the proposed Project compared to Scenario 4 and in all cases the effluent quality under the proposed Project would be better than that of Scenario 2.

The biggest improvements to effluent quality as a result of the proposed Project include significant reductions in the concentration of microorganisms, cadmium, chromium, lead, nickel, and zinc and most organic compounds, and total nitrogen. All these reductions would improve effluent quality and reduce any potential impacts associated with the wastewater discharge into the receiving waters. Most significant would be the reduction in pathogens (total and fecal coliforms and viruses) by over 96 percent. These reductions result from secondary treatment methods and chlorination of the final effluent. These reductions would significantly improve the water quality of the wastewater discharge for preserving and protecting the beneficial uses of the receiving waters. Final effluent concentrations for BOD, TSS, oil and grease, and total nitrogen would not change.

As summarized in Table 2-3, the concentration of some effluent parameters would increase under the proposed Project compared to PEIR Scenario 4 estimates because of the proposed changes to the treatment processes. The ammonium-nitrogen concentration would increase from 23 to 24 mg/l, a 4.3 percent change; COD would increase from 50 to 51 mg/l, a 2.0 percent change; copper would increase from 23.1 to 29 ug/l, a 25.5 percent change; and silver would increase from 1.9 to 2.6 ug/l, a 36.5 percent change. The increases expected for copper and silver appear to represent a large change; however, these estimated concentrations are less than those estimated for Scenario 2 (the originally approved project, which represents the existing conditions) and for copper less than the current effluent copper concentration of 31.6 ug/l. Silver

concentrations would be higher than the current concentration of 1.3 ug/l but still less than estimated silver concentrations for Scenario 2.

Various trace metals in excessive concentrations in seawater can be toxic to marine organisms and are regulated under the provisions of the California Ocean Plan. Present and proposed effluent and receiving water concentrations of trace metals (after initial dilution) will be below known toxic concentrations (as incorporated in the District's NPDES permit) and there appears to be no significant impact on the receiving waters.[2, 3]

Comparing the proposed Project to PEIR Scenario 4, mass loadings for some of the effluent constituents would also change as a result of changes in effluent concentrations and discharge volume. Mass loadings would decrease for ammonium-nitrogen (6 percent), oil and grease (1.9 percent), cadmium (70.5 percent), chromium (27.6 percent), lead (8.5 percent), nickel (6.1 percent), total organic compounds (>54 percent) and total nitrogen (3 percent). These changes would improve the effluent water quality and further reduce potential wastewater discharge impacts to water quality and the marine environment. Mass loading would increase for BOD (15.1 percent), TSS (3.3 percent), and COD (0.8 percent), copper (23 percent), and silver (40 percent). Estimated increases for BOD, TSS and COD represent minor increases over the original Scenario 4 estimates. These revised mass loading estimates are either comparable or substantially lower than the estimates for the same parameters evaluated for the other treatment scenarios in the PEIR. Similar considerations apply to the expected increases for copper and silver mass loadings. The revised estimates pose no additional impacts to the receiving waters.

Table 2-4 in Chapter 2 – Project Description summarizes projected effluent quality for the PEIR Scenario 2 in comparison to the proposed Project. As shown in the table, the proposed Project would significantly lower parameters for all contaminants of concern and thus have less potential impact on the marine environment than the previously approved Scenario 2.

The PEIR presented a comprehensive assessment of potential effects of six treatment alternatives on the marine environment in Chapter 5, addressing effluent quality and its potential effects on water quality, sediment quality, public health and biota. PEIR Section 5.2.3 provided a summary of the impact analysis. The proposed Project is most similar to Scenario 4 analyzed in the PEIR. No significant impacts to the receiving waters from the effluent discharges to the 120-inch outfall were identified in the PEIR for Scenario 4 and none are expected from the proposed changes in effluent quality associated with the proposed Project.

OCSD will continue its extensive annual monitoring of the ocean environment as required by its NPDES permit. Initiated in 1985, the program includes monitoring of shoreline and offshore water quality, sediment, fish and infaunal communities, and bioaccumulation. Figure 5-2 in the PEIR shows the extensive network of monitoring stations included in the program. The District has now completed 19 years of marine monitoring. Each year the District publishes an annual report to summarize the findings of the marine monitoring program.

Mitigation Measures

No mitigation measures are required.

[2] Orange County Sanitation District 1999 PEIR. Chapter 5.0 Ocean Discharge Setting, Impacts, and Mitigation.
[3] California State Water Resources Control Board, Water Quality Control Plan for Ocean Waters (California Ocean Plan), 2001.

Significance after Mitigation

Less than significant.

3.7 NOISE

This noise setting section is summarized from the PEIR which is incorporated by reference herein. The PEIR includes information regarding the regional as well as local setting.

3.7.1 SETTING

Environmental noise usually is measured in A-weighted decibels (dBA)[1]. Environmental noise typically fluctuates over time, and different types of noise descriptors are used to account for this variability. Typical noise descriptors include the energy-equivalent noise level (Leq) and the day-night average noise level (Ldn)[2]. The Ldn is commonly used in establishing noise exposure guidelines for specific land uses. Generally, a 3-dBA increase in ambient noise levels represents the threshold at which most people can detect a change in the noise environment; an increase of 10 dBA is perceived as a doubling of loudness. The Community Noise Equivalent Level (CNEL) is calculated as the average dBA level occurring during a 24-hour period with 5 dB added during the period from 7:00 PM to 10:00 PM and 10 dB added during the period from 10:00 PM to 7:00 AM.

There are two types of noise sources: stationary and mobile. Stationary noise sources are localized and include engine-powered facilities (i.e., wastewater pumping stations). The effect of a stationary noise source diminishes with distance. Mobile noise sources (i.e., automobiles) might affect a larger area and potentially more receptors due to their movement. Transportation vehicles such as automobiles, buses, and airplanes contribute the majority of noise in any urban setting. Construction activities, also common in an urban area, can create loud, short-term noise upon its receptors. Construction noise levels range from 71 to 101 Leq at 50 feet, depending on the type of equipment used. **Figure 3.7-1** summarizes typical noise levels generated from common activities compared with typical public reaction.

SENSITIVE RECEPTORS AND EXISTING NOISE ENVIRONMENT

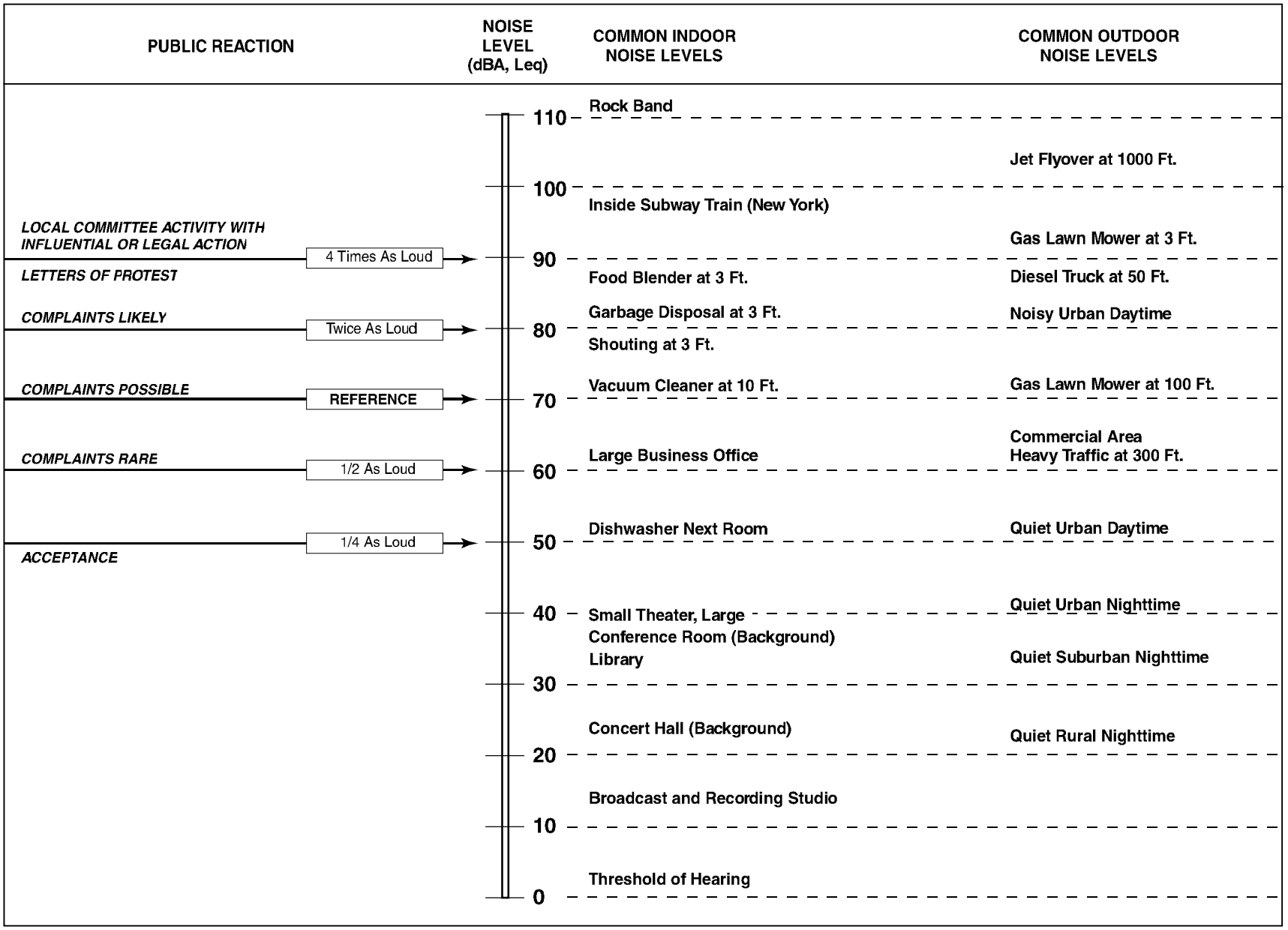
Some land uses are considered more sensitive to ambient noise levels than others are, due to the amount of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities typically involved. Residential areas, schools, and hospitals generally are more sensitive to noise than are commercial and industrial land uses. A brief discussion of sensitive receptors and the existing noise environment surrounding the OCSD's Plant No. 1 in Fountain Valley and Plant No. 2 in Huntington Beach is provided below. Neither treatment plant is located within an airport land use plan or within two miles of an airport.

RECLAMATION PLANT NO. 1

The primary source of noise in the City of Fountain Valley is vehicle traffic on Interstate 405 (I-405), major arterials, and collector streets. OCSD's Plant No. 1 is bordered by Ellis Avenue to the north,

[1] A decibel (dB) is a unit of sound energy intensity. Sound waves, traveling outward from a source, exert a sound pressure level (commonly called a "sound level") measured in dB. An A-weighted decibel (dBA) is a decibel corrected for the variation in frequency response of the typical human ear at commonly encountered noise levels.

[2] Leq, the energy-equivalent noise level (or "average" noise level), is the equivalent steady-state continuous noise level which, in a stated period of time, contains the same acoustic energy as the time-varying sound level that actually occurs during the same period. Ldn, the day-night average noise level, is a weighted 24-hour noise level. With the Ldn descriptor, noise levels between 10:00 p.m. and 7:00 a.m. are adjusted upward by ten dBA to take into account the greater annoyance of nighttime noise as compared to daytime noise.



SOURCE: Caltrans Transportation Laboratory Noise Manual, 1982; and Modification by Environmental Science Associates

Figure 3.7-1
Effect of Noise on People

Garfield Avenue to the south, Ward Street to the west and the SAR to the east. The City's General Plan Noise Element identifies traffic on each of these roadways as a source of noise. Noise contour maps from the Noise Element show that existing and future noise levels at the treatment facility range from between 60 to 70 CNEL. Residences adjacent to the plant experience noise levels of about 60 to 65 CNEL.[3] Land uses surrounding Plant No. 1 include residential areas to the west and east, and intermixed public utility and commercial uses on the south. Single-family residences abutting Ward Street are within 85 feet from the western boundary of the treatment facility. A chain link fence surrounds Plant No. 1 to the south, east and west. An 8-foot decorative block/masonry wall and a line of trees border the site to the north along Ellis Avenue.

TREATMENT PLANT NO. 2

The primary source of noise in the City of Huntington Beach is vehicle traffic on local roadways. Other major noise sources include aircraft overflights, railroad operations, and petroleum extraction activities. Plant No. 2, being triangular in shape, is bordered by the Santa Ana River to the east, the Talbert Channel to the south, and Brookhurst Street to the west. State Route 1 (SR 1) is located roughly 550 feet south of the treatment facility. Traffic on SR 1 and Brookhurst Street are the primary sources of noise in the plant vicinity. Noise contour maps from the City's General Plan Noise Element show that existing and future noise levels on the plant site are roughly 60 Ldn. Residences adjacent to the plant experience noise levels of about 60 to 65 Ldn.[4] Land uses surrounding Plant No. 2 include residential areas to the west and wetlands to the south and east. Single-family residences west of the plant (across Brookhurst Street) within 100 feet from the western boundary of the site. In efforts to reduce exposure of nearby residents to treatment plant noise, an 8-foot tall brick wall separates residences along Brookhurst Street, west of the treatment facility, from noise generated at Plant No. 2. A chain link fence surrounds the remainder of the site.

REGULATORY ENVIRONMENT

In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains fairly constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas.

Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies. Local regulation of noise involves implementation of General Plan policies and Noise Ordinance standards. Local General Plans identify general principles intended to guide and influence development plans, and Noise Ordinances establish specific standards and procedures for addressing particular noise sources and activities.

General Plans recognize that different types of land uses have different sensitivities toward their noise environment. Residential areas are generally considered to be the most sensitive type of land use to noise, and industrial/commercial areas are generally considered to be the least sensitive. Local noise ordinances typically establish standards related to construction activities, nuisance-type noise sources, and industrial property-line noise levels. The City of Fountain Valley noise regulations and standards apply to Plant

[3] City of Fountain Valley, 1995.
[4] City of Huntington Beach, 1995.

No.1, while the City of Huntington Beach noise regulations and standards apply to Plant No. 2. Applicable regulations, standards and policies are summarized below.

City of Fountain Valley

The City of Fountain Valley's noise compatibility guidelines for various land uses are contained in the Noise Element of the General Plan.[5] For residential land uses, the normally acceptable interior and exterior noise standards are 45 and 60 CNEL, respectively. Based on the extent of noise/land use incompatibilities that already exist throughout the Huntington Beach, the Noise Element identifies the need to incorporate noise concerns in future land use planning. Some of the City policies designed to reduce noise impacts from traffic noise sources relate to the design of street circulation, coordination of routing, installation of noise barriers along major roadways, and the advocating of noise control requirements for all new motor vehicles. Non-transportation noise sources, including noise from construction activities, are controlled through the application and enforcement of the City's Noise Ordinance.

The Noise Ordinance establishes noise limits that cannot be exceeded at the property line of residences. (Note that these noise standards are more restrictive than those described above from the General Plan Noise Element.) For residential properties, the exterior noise standards are 55 dBA between 7:00 a.m. and 10:00 p.m., and 50 dBA between 10:00 p.m. and 7:00 a.m., with interior noise standards of 55 dBA between 7:00 a.m. and 10:00 p.m. and 45 dBA between 10:00 p.m. and 7:00 a.m. Noise associated with construction is excluded from these noise standards, provided the construction activities occur between the hours of 7:00 a.m. and 8:00 p.m. on weekdays and 8:00 am and 9:00 pm on Saturdays. Construction activities are not allowed on Sundays or legal holidays.

City of Huntington Beach

The Noise Element of the General Plan acknowledges that a number of residential, commercial, and industrial land uses in the City of Huntington Beach, particularly along arterial roadways, are impacted by vehicular noise levels that exceed city noise/land use compatibility standards (City of Huntington Beach, 1995). For residential land uses, the normally acceptable interior and exterior noise standards are 45 and 60 Ldn, respectively.

Relevant noise policies from the Noise Element include:

> Policy N 1.2.2 – Require new industrial and commercial land uses or the major expansion of existing land uses to demonstrate that the new or expanded use would not be directly responsible for causing exterior noise levels to exceed 65 Ldn in areas containing noise sensitive land uses.
>
> Policy N 1.2.5 – Require development that generates increased traffic and subsequent increases in ambient noise levels adjacent to noise sensitive land uses to provide for appropriate mitigation measures in accordance with acceptable limits of the City's Noise Ordinance.
>
> Policy N 1.6.1 – Ensure that construction activities be regulated to establish hours of operation, to prevent and/or mitigate the generation of excessive or adverse noise impacts through implementation of the City's Noise Ordinance.

[5] City of Fountain Valley, 1995.

Policy N 1.12.1 – Require detailed and independent acoustical studies be completed for any new or renovated land uses or structures determined to be potential major stationary noise sources.

Policy N 1.12.2 – Encourage major stationary noise generating sources to install additional noise buffering or reduction mechanisms within their facilities to reduce noise generation levels to the lowest extent feasible prior to the renewal of Conditional Use Permits of business licenses or prior to the approval and/or issuance of new Conditional Use Permits.

The City's Noise Ordinance establishes noise limits that cannot be exceeded at the property line of residences. These noise standards are more restrictive than those described above in the Noise Element. For residential properties, the exterior noise standards are 55 dBA between 7:00 a.m. and 10:00 p.m., and 50 dBA between 10:00 p.m. and 7:00 a.m., with interior noise standards at 55 dBA between 7:00 a.m. and 10:00 p.m. and 45 dBA between 10:00 p.m. and 7:00 a.m. Noise associated with construction is excluded from these noise standards, provided the construction activities occur between the hours of 7:00 a.m. and 8:00 p.m. on weekdays (including Saturday). Construction activities are not allowed on Sundays or legal holidays.

3.7.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Appendix G of the revised *CEQA Guidelines* (Governor's Office of Planning and Research, 1998) indicates that a project could be significant if it would:

- expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- 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, expose people residing or working in the project area to excessive noise levels; or
- for a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise.

A change in noise levels of less than 3 dBA is not discernible to the general population, while an increase in average noise levels of 3 to 5 dBA is clearly discernible to most people (California DOT, 1991). An increase in the noise environment of 5 dBA or greater is considered to be the minimum required increase for a change in community reaction (U.S. DOT, 1990) and, for the purposes of this analysis, constitutes a significant noise impact. With temporary construction noise impacts, identification of "substantial increases" depends upon the duration of the impact, the temporal daily nature of the impact, as well as the absolute change in dBA levels.

For operational impacts, operational noise that would exceed the "normally acceptable" land use compatibility noise range of the General Plan in the jurisdiction where a project element is proposed would be considered a significant noise impact. If a land use already exists in a "conditionally acceptable" or "normally unacceptable" noise compatibility environment, as designated in the General Plan, then an increase in operational noise that would result in a change of land use compatibility category would be considered a significant noise impact. For land uses designated as within a "clearly unacceptable" noise compatibility environment, operational noise that would result in a 3 dBA or greater increase to the existing noise environment would be considered significant, if sensitive receptors that would be affected are present. If sensitive receptors would not be present but the land use is considered sensitive to noise, then a 5 dBA increase would be considered significant. Otherwise, an increase would only be considered significant if it violated a local noise ordinance or substantially contributed to an existing violation of a noise ordinance.

Impact 3.7-1: Operation of the proposed Project treatment facilities would generate noise but with mitigation noise levels would not exceed established standards or result in a substantial permanent increase above ambient conditions.

Operational activities associated with the proposed Project that could generate noise include pump noise and truck traffic associated with chemical delivery and grit and sludge removal. The proposed Project would rehabilitate and/or replace the existing treatment plant structures. As such, the proposed Project would not add any new sources of noise. The PEIR identified potential operational noise impacts and established a fence-line noise standard for operational noise of 55 dBA between 7:00 AM and 10:00 PM and 50 dBA between 10:00 PM and 7:00 AM. Mitigation Measure 6.4-2a of the PEIR states that measures to meet this fence-line standard include:

> "locating noise sources away from sensitive receptors, installation of acoustical enclosures around noise sources, installation of critical application silencers and sequential mufflers for exhaust noise, installation of louvered vents, directing vent systems away from nearby residences, and constructing soundwalls at the property lines."

This standard would apply to the newly proposed Project. The proposed mitigation measure listed below would ensure that Project operations would not constitute a significant noise impact.

Mitigation Measures

From the PEIR MMRP:

Measure 6.4-2a: Noise Performance Standard. OCSD shall establish a performance noise standard for operational noise at Reclamation Plant No. 1 and Treatment Plant No. 2. The performance standard shall apply to the property line of each plant and shall prohibit hourly average noise levels in excess of 55 dBA between the hours of 7:00 a.m. to 10:00 p.m. and 50 dBA between the hours of 10:00 p.m. and 7:00 a.m., as required by the Fountain Valley and Huntington Beach Noise Ordinances. Available mitigation to achieve the performance standard consists of locating noise sources away from sensitive receptors, installation of acoustical enclosures around noise sources, installation of critical application silencers and sequential mufflers for exhaust noise, installation of louvered vents, directing vent systems away from nearby residences, and constructing soundwalls at the property lines.

New Mitigation:

Measure 3.7-1: All buildings will be designed to insulate noise of the machinery such that fence-line noise standards would not be exceeded.

Significance after Mitigation

Less than significant.

Impact 3.7-2: The proposed Project would generate noise during construction that could result in substantial temporary increases in ambient noise levels in the project vicinity.

The proposed Project may result in an increase in noise levels during construction that could affect sensitive noise receptors. The PEIR identified this potential impact. Construction activities associated with the proposed Project could intermittently generate high noise levels on, and adjacent to, the treatment plant site. In general, the primary noise-generating sources at the treatment facilities during construction include pile driving, engine/motor noise, mechanical equipment, and truck traffic entering and leaving the plants. Construction activities associated with the proposed Project include demolition, grading and earthmoving activities, hauling materials, sheet piling for shoring excavations, and building structures. Construction noise levels at and near the plant sites would fluctuate depending on the particular type, number, and duration of uses of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes. Existing residences and other nearby noise-sensitive uses that could be exposed to construction noise are the single-family residences located to the northwest of the construction site in Huntington Beach. **Table 3.7-1** summarizes typical noise levels during different construction stages.

Table 3.7-1
Typical Construction Noise Levels for Public Works Site

Construction Phase	Noise Level (dBA, Leq[a])
Ground Clearing	84
Excavation (includes sheet piling for shoring)	91
Foundations	87
Erection	81
Finishing	89

Source: Bolt, Baranek, and Newman, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971.

a = Average noise levels correspond to a distance of 50 feet from the noisiest piece of equipment associated with a given phase of construction and 200 feet from the rest of the equipment associated with that phase.

For Plant No. 1, the closest residences west of the plant across Ward Street are within 500 feet of proposed construction activities. Residences adjacent to Plant No. 1 experience noise levels of 60 to 65 CNEL primarily associated with traffic along the city streets.[6]

Table 3.7-2 shows that construction equipment could generate noise at levels ranging from 68 to 101 dBA at 50 feet, assuming no noise mitigation features. Pile driving generates the loudest construction noise. Pile driving may be necessary to mitigate soil instability. Table 2-4 identifies that project P1-102

[6] *Ibid.*

Table 3.7-2
Typical Construction Equipment Noise Levels

Equipment	Noise Level at 50 feet (Leq)
Backhoes [a]	71-95
Dozers	74-93
Trucks	70-96
Pumps	69-80
Generators	69-82
Compressors	68-95
Pile Drivers	95-101

Source: Harns, 1979; Bolt, Baranek, and Newman, 1971.
a. Backhoes are a common type of excavator.

may require up to 5,000 piles; Project P2-90 may require up to 2,000 piles. Use of traditional pile driving methods would result in generating percussive noise over a prolonged construction period. To mitigate this noise generation, the District is pursuing alternate technologies such as stone columns that require drilling as opposed to percussive pile driving. Other pile placement technologies such as the use of quieter hydraulic hammers are also under consideration. The District will implement, as part of the project, the technology that minimizes noise generation without compromising design requirements.

Assuming an attenuation rate (lessening rate) of 6 dBA per doubling of distance, non-impact (no pile driving) construction equipment would generate noise levels of 53 to 78 Leq at 500 feet (the distance to the closest residence) from the source at each of the plants. Pile driving could generate noise levels in excess of 89 dBA at nearby residences. At Plant No. 2, the closest residences (500 feet from the proposed construction activities) could also be exposed to non-pile driving construction noise levels between 53 to 78 Leq and pile driving noise levels of 89 dBA. Other residences located at distances further away would be impacted to a lesser degree by construction noise.

Intervening structures (e.g., treatment facility buildings, trees, berms) would partially shield some of the adjacent residences from construction noise. In particular, it is likely that the 8-foot wall bordering Plant No. 2 on to the west would attenuate noise from construction activities for residences along Brookhurst Street.

The PEIR concluded that construction noise would constitute a significant unavoidable impact of the planned construction activities at each treatment plant. Although P1-101 and P2-74 were not specifically listed in the PEIR, general construction activities were identified and evaluated. Construction of the treatment plants might temporarily increase ambient noise levels by over 5 dBA. These projects would be subject to mitigation measures 6.4-1a, 6.4-1b, and 6.4-1e of the PEIR requiring muffling devices and notification of neighboring residential areas.

Construction activities are short term and would comply with the Orange County Municipal Code Section 4-6-7(e), the City of Fountain Valley Municipal Code Chapter 6.28.070 that currently limit construction activities to 7:00 a.m. to 8:00 p.m. on weekdays and 8:00 a.m. to 9:00 p.m. on Saturdays, and the City of Huntington Beach Municipal Code Chapter 8.40.090(d), which currently limits construction activities to 7:00 a.m. to 8:00 p.m. Monday through Saturday. Nonetheless, pile-driving activities may be

necessary which could increase ambient noise levels at neighboring sensitive receptors. This would constitute a significant unavoidable impact consistent with the conclusion in the PEIR.

Mitigation Measures

From the PEIR MMRP:

Measure 6.4-1a: Construction Hours. The District's standard specifications provide construction hours of work between 7:00 AM and 5:30 PM, except for emergency or special circumstances requiring that work be done during low-flow periods.

Measure 6.4-1b: Muffled Equipment. All equipment used during construction shall be muffled and maintained in good operating condition. All internal combustion engine driven equipment shall be fitted with intake and exhaust mufflers that are in good condition.

Measure 6.4-1c: Pile-Driving Noise Reduction. OCSD shall consult with an acoustical engineer to evaluate other alternatives for mitigating impacts from extensive pile driving activities when necessary.

Measure 6.4-1d: Alternatives for Foundations. OCSD will evaluate the use of alternative foundation designs to avoid a need for pilings where cost-effective and technically feasible.

Measure 6.4-1e: Construction Notification. Nearby sensitive receptors affected by construction shall be notified concerning the project timing and construction schedule, and shall be provided with a phone number to call with questions or complaints.

Measure 6.4-1f: Pile Driving Noise Reduction. Noise-reduction measures will be implemented such as acoustic insulation or by other means during the construction period at Plant No. 1 to reduce a nuisance condition to the closest residences when pile driving is taking place.

Significance after Mitigation

Significant and unavoidable.

Impact 3.7-3: The proposed Project could generate groundborne vibration during construction that could temporarily expose persons to vibration above ambient conditions.

Construction activities such as excavation and grading have the potential to generate groundborne vibration near the construction site. Vibration would be caused by heavy trucks, excavators, dozers, and interlocking sheet piling for shoring during excavation. Installation of sheet piling by vibratory means would be the most substantial source of vibration during construction. The closest residential area is located approximately 500 feet northwest of the construction site. At this distance, vibrations would attenuate to below the threshold of human perception.[7] Due to the short-term nature of the groundborne vibration and distance to sensitive receptors, this would be considered a less than significant impact.

Mitigation Measures

No mitigation measures are required.

[7] Amick, Hal and Gendreau, Michael, "Construction Vibrations and Their Impact on Vibration-Sensitive Facilities", 2000.

Significance after Mitigation

Less than significant.

3.8 TRANSPORTATION/TRAFFIC

3.8.1 SETTING

This transportation/traffic setting section is summarized from the PEIR which is incorporated by reference herein. For a complete description of the setting, refer to the above PEIR. The PEIR includes information regarding the regional as well as local setting.

REGIONAL

The existing regional transportation facilities, travel modes, and traffic conditions in Orange County are discussed in detail in the PEIR. The setting described in the PEIR is generally still applicable to the current transportation conditions. Orange County is crossed by Interstates 5 and 405 and State Routes 22, 55, 57, 73, and 91, which are shown in Figure 1-1 of the Project Description**.** A network of major (six lane divided, 120-foot right of way), primary (4 – 6 lane divided, 100-foot right of way), and secondary (4-lane divided or undivided, 8-foot right of way) highways traverse the County. The freeway system generally carries high traffic volumes. As shown in **Figure 3.8-3**, Plant No. 1 is adjacent to Interstate 405 and Euclid / Ellis ramps and Plant No. 2 is adjacent to PCH at Brookhurst.

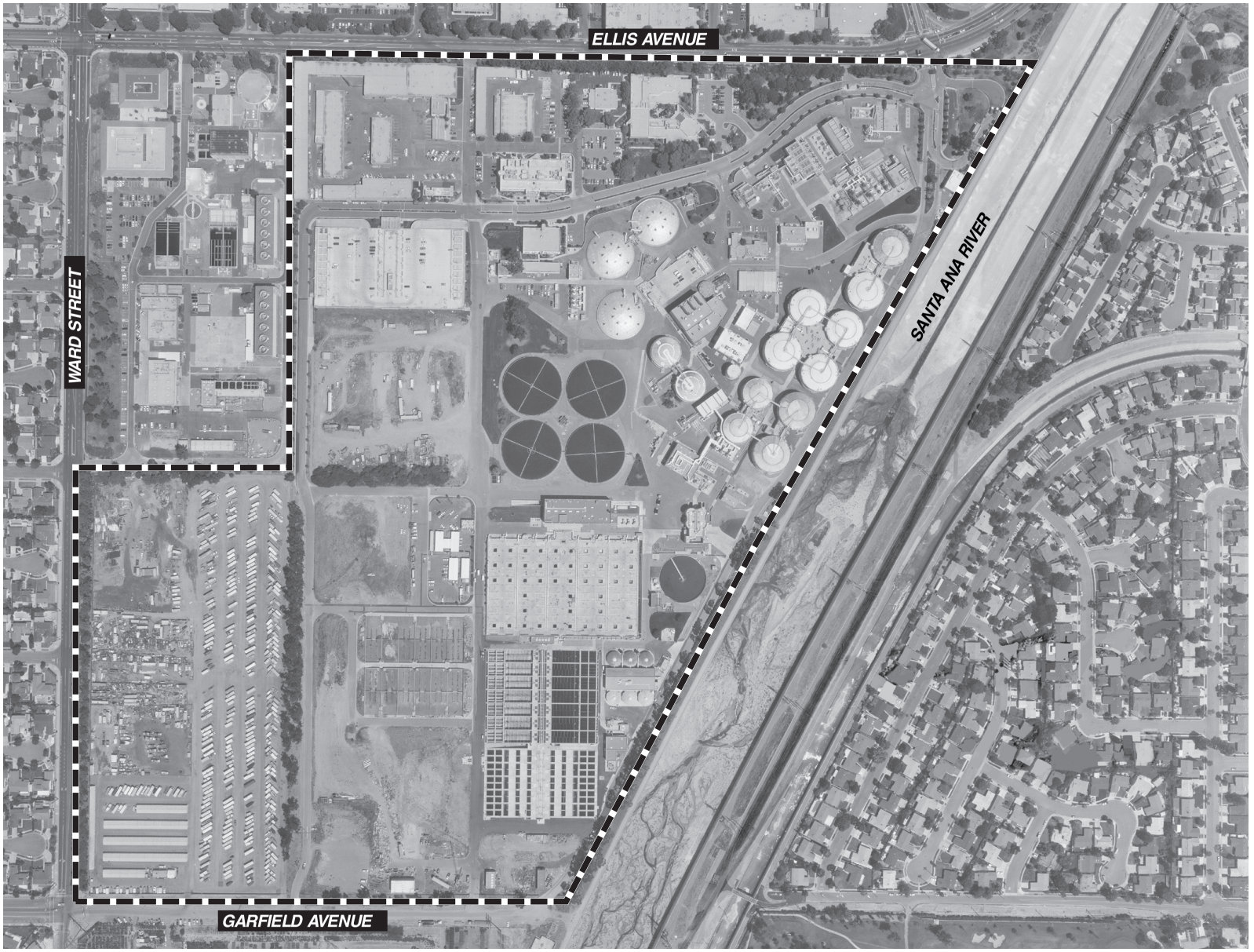
RECLAMATION PLANT NO. 1

Plant No. 1 is bordered by Ellis Avenue on the north, Garfield Avenue to the south, and Ward Street on the west (see **Figure 3.8-1** and **Figure 3.8-3**). Ellis Avenue is a four-lane east-west arterial that extends from Beach Boulevard in Huntington Beach to Euclid Street at I-405 in Fountain Valley. It is signalized at major intersections, including Ward Street and the I-405 southbound on- and off-ramps. Average daily traffic (ADT)[1] on Ellis Avenue is 23,000.[2] Truck traffic traveling through the area is not permitted on either Ellis Avenue or Ward Street, although haul trucks traveling to the treatment plant for chemical deliveries or construction activities are allowed. Existing traffic entering the plant consists of chemical delivery trucks; screenings, grit, and biosolids removal trucks; and the vehicles of employees, construction workers, and visitors.

Traffic flows are typically described in terms of their level of service (LOS). LOS is defined by a volume-to-capacity ratio (v/c) ranging from A (v/c ratio 0.0 – 0.6) to F (v/c ratio over 1.0). Levels A through C are generally considered good operating conditions with only minor delays. LOS D is fair operating conditions with drivers occasionally having to wait through more than one signal at the intersection. The City of Fountain Valley's current policy considers LOS D to be acceptable at traffic-controlled intersections and LOS C acceptable for roadway segments. The intersection of Ellis Avenue and Ward Street operates at LOS D in the A.M. and LOS B in the P.M. peak hours.[3]

Access to Plant No. 1 is via a main two-lane gate on Ellis Avenue, immediately west of the I-405 ramps. An additional service entrance is located along Ellis Avenue west of the main entrance. Garfield Avenue is also a four-lane, east-west street. It extends from Edwards Street in Huntington Beach to the Santa Ana River at Plant No. 1 in Fountain Valley. Garfield Avenue carries an ADT of 9,000 just west of Ward

1 ADT represents the total number of vehicles that pass a segment of roadway in one day.
2 2002 OCTA Traffic Flow Map.
3 Galvez, Cuauhtemoc. City of Fountain Valley, Department of Public Works. Personal communication, May 5, 2004.



SOURCE: OCSD

OCSD Secondary Treatment and Plant Improvement / 203472 ■

Figure 3.8-1

Treatment Plant No. 1 Boundary and Vicinity

Street.[4] Ward Street is a four-lane roadway that forms the western boundary of Plant No. 1. Ward Street carries an ADT of 8,000 just south of the plant site.[5]

Interstate 405 is a grade-separated 10-lane freeway in the vicinity of Plant No. 1. High-occupancy vehicle lanes are presently under construction. At the Euclid Street interchange, ADT's range from 250,000 to 257,000.[6]

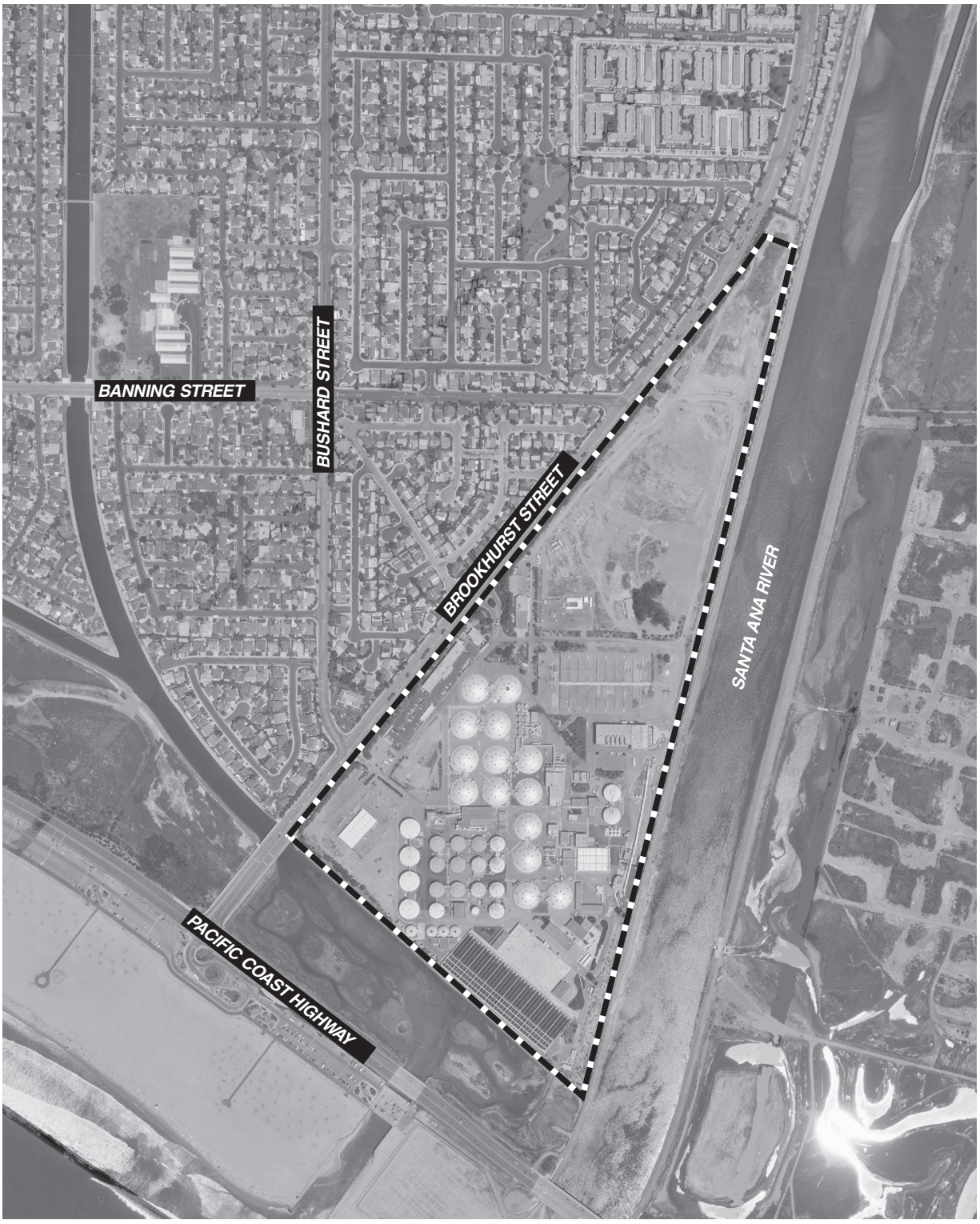
TREATMENT PLANT NO. 2

Plant No. 2 is bordered by Brookhurst Street on the northwest, PCH (also known as State Route 1) on the southwest, and the SAR on the east (see **Figures 3.8-2** and **3.8-3**). Access to Plant No. 2 is provided by a main entrance on Brookhurst Street, between Banning Avenue and Bushard Street. Two service entrances are located north and south of the main entrance off Brookhurst Street. Existing traffic entering the plant consists of chemical delivery trucks; screenings, grit, and biosolids removal trucks; and the vehicles of employees, construction workers, and visitors.

Brookhurst Street is a major six-lane, north-south arterial with a median that extends from SR-1 in Huntington Beach to Fullerton in northern Orange County. Brookhurst Street carries an ADT of between 12,000 and 25,000 from PCH to Garfield Avenue in the City of Huntington Beach.[7] The City of Huntington Beach's current policy considers LOS D to be acceptable at traffic-controlled intersections and LOS C acceptable for roadway segments. Along this segment, available traffic data indicates that the intersection with Hamilton Avenue operates at LOS C in the A.M. and P.M. peak hours and the intersection with Adams Avenue operates at LOS D during both the A.M. and P.M. peak hours.[8] From Garfield Avenue to I-405 in the City of Fountain Valley, Brookhurst Street carries an ADT of 44,000 to 52,000.[9] The intersections of Brookhurst Street and Ellis Avenue and Brookhurst Street and Talbert Avenue both operate at LOS C in the A.M. peak and LOS B and D respectively in the P.M. peak. [10].

SR-1 is a four-lane regional highway that runs along the western coast of the state. From the SAR to Brookhurst SR-1 has an ADT of 45,000. From Brookhurst Street to Beach Boulevard, it carries an ADT of 40,000.[11] The intersection of PCH and Brookhurst Street operates at LOS B during the A.M. peak hours, and LOS A during the P.M. peak hours.[12] The intersection of PCH and Beach Boulevard operates at LOS A during the A.M. peak hours and LOS B during the P.M. peak.[13]

4 2002 OCTA Traffic Flow Map.
5 *Ibid.*
6 Caltrans 2002 Traffic Volumes.
7 2002 OCTA Traffic Flow map.
8 Escutia, Jim. City of Huntington Beach, Department of Public Works. Telephone communication, May 5, 2004.
9 2002 OCTA Traffic Flow map.
10 Eskander, Mike. City of Fountain Valley, Public Works Department. Personal communication, June 9, 2003.
11 2002 OCTA Traffic Flow map.
12 Brohard, Tom. City of Huntington Beach Department of Public Works. Personal communication, July 9, 2002.
13 Escutia, Jim. City of Huntington Beach, Department of Public Works. Telephone communication, May 5, 2004.



SOURCE: OCSD

OCSD Secondary Treatment and Plant Improvement / 203472 ■

Figure 3.8-2

Treatment Plant No. 2 Boundary and Vicinity

SOURCE: Environmental Science Associates

OCSD Secondary Treatment and Plant Improvement / 203472 ■

Figure 3.8-3

Probable Construction Truck Traffic Routes

APPLICABLE REGULATIONS

County

The Orange County General Plan includes a Transportation Element, last updated in February 2000, that identifies goals, policies, and implementation programs for planning, developing, and maintaining a surface transportation system in the unincorporated areas of Orange County. The Element contains three closely related components: Circulation Plan, Bikeways Plan, and Scenic Highways Plan.

City of Fountain Valley

The City of Fountain Valley Circulation Element of the General Plan includes specific goals and policies the City designed and adopted to improve overall circulation in the Fountain Valley and to address existing circulation issues. Ellis Avenue and Ward Street are defined as secondary arterials; Euclid Street is defined as primary arterial; and Garfield Avenue is defined as a major arterial.

City of Huntington Beach

The Circulation Element of the City of Huntington Beach General Plan evaluates the existing roadway system and identifies measures to accommodate existing and future growth. The Circulation Element contains goals and policies to accommodate local and regional future growth. Within the City, Brookhurst Street and Adams Avenue are defined as major arterial highways; Garfield Avenue, Hamilton Avenue, and Talbert Avenue are defined as primary arterial highways; and Ellis Avenue is defined as a secondary arterial highway.

3.8.2 IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The CEQA Guidelines find impacts to traffic to be significant if the project were to cause any of the following conditions:

- Cause an increase in traffic which is substantial in relation to existing traffic load and capacity of the street system;
- Exceed a level of service standard established by the county congestion management agency for designated roads or highways;
- Substantially increase hazards due to design features (e.g., sharp curves) or incompatible use (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity;
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks or lanes).

Impact 3.8-1: Periods of peak construction of the proposed Project would add to traffic along local access streets (including freeway access) causing temporary but substantial increases in traffic over existing conditions.

Upgrading the treatment facilities at Plant No. 1 and Plant No. 2 will occur until 2012 and 2011, respectively, with excavation and concrete hauling trucks expected for the first third of the construction period. Construction activities will involve the following general types of activities: demolition and removal of some existing facilities, grading currently unimproved property, excavation and soil removal, and construction. In general, the construction will occur in periodic activity peaks, requiring brief periods of significant effort followed by reduced activities.

No detours, lane closures, or road closures are anticipated as a result of the onsite construction activities. Substantial amounts of truck traffic, however, would be generated during peak construction periods. Figure 3.8-3 identifies the most likely truck haul routes from each treatment plant to I-405.

Table 3.8-1 shows the estimated soil excavation volumes assumed for the proposed Project and for the two Scenarios in the PEIR. As shown in the Table, the proposed Project would require substantially more soil excavation and potential off-site hauling than identified in the PEIR. **Table 3.8-2** demonstrates the

Table 3.8-1
Estimated Total Soil Excavation Volumes for Secondary Treatment Facilities (cubic yards)

	Scenario 2	Scenario 4	Proposed Project
Plant No. 1	0	19,800	452,520
Plant No. 2	0	9,350	76,025

Source: OCSD, PEIR, Table 3-11.

Table 3.8-2
Estimated Annual Volume of Excavated Soil, Imported Concrete, and No. of Vehicles and Haul Trucks During Peak Construction Years

	2005	2006	2007	2008	2009	TOTAL
VOLUME						
Plant No. 1						
Excavation (cy)	3,770	3,750	217,500	227,500	0	452,520
Concrete (cy)	1,444	1,424	42,000	46,000	0	90,868
Plant No. 2						
Excavation (cy)	0	13	37,000	39,025	0	76,025
Concrete (cy)	0	0	10,000	11,050	50	21,100
ONE WAY VEHICLE TRIPS PER YEAR						
Plant No. 1						
Soil Haul Trucks	377	375	21,750	22,750	0	45,252
Concrete Delivery Trucks	290	285	8,200	9,200	0	17,975
Worker Vehicles	128,180	128,180	128,180	128,180	128,180	640,900
Plant No. 2						
Soil Haul Trucks	0	1	3,700	2,275	0	5,975
Concrete Delivery Trucks	0	0	0	10	10	20
Worker Vehicles	99,840	99,840	99,840	99,840	99,840	499,200

Source: Orange County Sanitation District.

Note: Distributions of concrete and soil excavation volumes are estimates assuming excavation activities would occur within the first third of the planned construction schedule for each project.

estimated volume of excavated soil and imported concrete that the haul trucks would be transporting to and from Plant Nos. 1 and 2 under the proposed Project during peak construction years. It is assumed that soil excavation and importation of concrete would occur in the first third of the construction schedule. The number of haul trucks and worker vehicles per year are also shown. It is assumed that each truck would transport 20 cubic yards of excavated materials or 10 cubic yards of concrete.

Table 3.8-3 compares one-way trips per day of Scenario 2 and 4 of the PEIR to the proposed Project 2020 during 2008 since that year is when the most construction would occur. A constant rate of construction and a 1.3 worker vehicle occupancy rate is assumed. The construction traffic during peak construction periods would be greater than estimates in the PEIR for Scenario 4. This is due primarily to the worker commute and concrete and soils haul truck trips.

Table 3.8-3
Estimated Construction One-way Trips per Day for Peak Construction Periods (2008)

	Excavated Soil/Concrete Haul Trucks*	Worker Trips	Deliveries	Total
Plant No. 1				
PEIR 2020 (Scenario 2)	0	375	24	399
PEIR 2020 (Scenario 4)	2	375	30	407
Proposed Project 2020	123	493	30	646
Plant No. 2				
PEIR 2020 (Scenario 2)	0	375	24	399
PEIR 2020 (Scenario 4)	1	375	30	406
Proposed Project 2020	10	384	30	424

Source: PEIR; OCSD 2004.
*The PEIR scenarios do not include concrete hauling trucks.

For Plant No. 1 the ADT on Ellis Avenue at the I-405 is 32,000.[14] The intersection of Ellis Avenue and Ward Street currently operates at LOS D in the A.M. and LOS B in the P.M. peak hours. Brookhurst Street near Plant No. 2 has an ADT of between 12,000 and 25,000 from PCH to Hamilton Avenue in Huntington Beach. Traffic increases with proximity to the I-405. The intersection of Brookhurst Street and Ellis Avenue has an ADT of 47,000 and operates at an LOS C in the A.M. and P.M. peak hours. I-405 accommodates over 260,000 trips per day and PCH approximately 45,000 trips.

The estimated 424 daily trips added by the construction work from Plant No. 2 on Brookhurst constitutes approximately 1.7 percent of the street's daily traffic on a busy day. This amount is similar to the estimates for either Scenarios 2 or 4 in the PEIR. The estimated peak of 646 daily trips from Plant No. 1 on Ellis Avenue constitutes approximately 2.0 percent of the average daily traffic load.

The numbers of haul truck trips per day estimated in Table 3.8-2 are daily averages spread over a year. Actual peak-day trips could be higher. During these peak off-site hauling operations, traffic generated by the construction could exceed five percent of the total daily traffic on Brookhurst Street and Ellis Avenue.

[14] 2002 OCTA Traffic Flow map.

If substantial numbers of trucks entered Ellis Avenue or Brookhurst Street during AM peak hours, intersections currently operating at LOS D levels could be reduced to unacceptable LOS. As part of the project, the District would avoid soil haul operations during peak traffic periods whenever feasible. However, during certain periods of excavation particularly for projects P1-101 and P2-90, avoiding peak hours may not be possible. Reducing peak-hour LOS at key intersections including Ellis Avenue/I-405 and Brookhurst Street/Ellis Avenue would be considered a significant impact of the proposed Project.

The PEIR identified mitigation measure 6.2-1 that requires notification to local jurisdictions of peak construction periods. With implementation of this PEIR-identified mitigation measure, impacts to local roadways, including freeway access, from construction traffic would remain potentially significant and unavoidable.

Mitigation Measures

From the PEIR MMRP:

Measure 6.2-1: Contractor Coordination. For each major project or construction period, the District shall complete a detailed construction schedule and notify the Cities of Fountain Valley and Huntington Beach of construction. Construction vehicles shall be run on a schedule to minimize truck traffic on arterial highways during peak periods.

Significance After Mitigation

Significant, unavoidable.

Impact 3.8-2: Operation of the proposed Project would increase vehicle trips on local access roads only slightly and would not substantially increase traffic levels over existing conditions or road capacity.

Table 3.8-4 summarizes estimated vehicle trips for existing conditions, and as estimated for the PEIR and the proposed Project. The proposed Project would increase vehicle trips only slightly over levels assessed in the PEIR. Most of the vehicle trips associated with the operations of the two plants are worker commute trips. Completion of the proposed Project would only slightly increase truck trips to and from the treatment plants. Chemical delivery truck trips to and from Plant No. 1 would increase from an estimated 12 trips for Scenario 4 (six deliveries) to 28 trips per day (14 deliveries). Grit and screenings removal trips at Plant No. 1 would increase by approximately 1.5 haul truck trips per day (344 per year). Biosolids haul trips would increase slightly. At Plant No. 2, chemical deliveries would be similar to existing conditions. Grit and screenings removal trips would occur less than once per day.

Operation of the treatment plants would require about the same number of personnel as the existing treatment plants. Therefore, projected numbers of District personnel listed on page 3-32 of the PEIR would not change substantially and would not result in increased daily employee vehicle trips. The worker commute trips summarized in Table 3.8-4 assume there are currently 515 full time employees at the District. This number would increase to 540 under Scenario 4 and the proposed Project. Worker commute trips assume that employees are evenly split between both plants and that commute vehicle occupancy rates are 1.3 persons per vehicle.

Table 3.8-4
Estimated Vehicle Trips (One Way Trips) per Day

	Chemical Deliveries	Employee Trips	Biosolids Hauling	Grit and Screenings	Total
Plant No. 1					
2002/03	12	198	29	0.6	240
PEIR 2020 (Scenario 2)	5	220	33	0.16	259
PEIR 2020 (Scenario 4)	6	220	41	0.16	268
Proposed Project 2020	20	208	42	1.31	272
Plant No. 2					
2002/03	27	198	38	0.7	264
PEIR 2020 (Scenario 2)	5	220	19	0.22	245
PEIR 2020 (Scenario 4)	6	220	24	0.22	251
Proposed Project 2020	26	208	33	2.8	270

Source: OCSD Annual Report 2003; PEIR.

Note: Scenario 2 and 4 estimates from Table 6.2-2 of Final PEIR Response to Comments. Proposed Project estimates assume chemical delivery trucks are 4,000 gallons, biosolids haul trucks hold 25 tons, grit and screenings haul trucks hold 25 tons.

Operations of the treatment plant would result in fewer daily trips to it than required during the years of its construction. Once construction is complete, the treatment plant would not substantially increase traffic entering and leaving it. No significant increase in traffic would be associated with the operation of the proposed Project.

Mitigation Measures

No mitigation measures are required.

Significance After Mitigation

Less than significant.