CHAPTER 2

PROJECT DESCRIPTION

2.1 PROJECT OBJECTIVES

The objectives of the Secondary Treatment and Plant Improvement Project are as follows:

- To construct treatment facilities needed to upgrade the District's secondary treatment capacity to meet secondary treatment standards.
- To operate treatment facilities in a cost effective and environmentally sound manner.

2.2 PROPOSED SECONDARY TREATMENT AND PLANT IMPROVEMENT PROJECT

2.2.1 OVERVIEW

The Secondary Treatment and Plant Improvement Project (proposed Project) would increase secondary treatment capacity at both of the District's treatment plants such that all flows to be discharged to the ocean would meet secondary treatment standards. The proposed Project consists of a group of thirteen individual projects listed in **Table 2-1**. Two of these projects, P1-102 at Plant No. 1 and P2-90 at Plant No. 2, would involve the construction of large new secondary treatment facilities to meet the project objectives. Two other substantial construction projects, P1-101 and P2-92, are planned to upgrade and expand solids handling facilities at both plants. The solids handling improvements are needed to handle the additional solids produced by the additional secondary treatment systems. The remaining projects involve rehabilitation and upgrade of existing treatment systems. These projects are needed to continue effective operation of the existing treatment plants. Six projects are proposed at Plant No. 1 and seven projects are proposed at Plant No. 2. **Figures 2-1** and **2-2** show the proposed construction area footprints of each project. In addition to these projects, the overall Project includes routine repairs and minor modifications typically conducted at both plants on an ongoing basis.

As noted in Table 2-1, the PEIR evaluated an Alternative (Scenario 4) that included many of the secondary treatment improvements now proposed and evaluated in this SEIR. The nature of the proposed

Table 2-1
Proposed Improvements Required for Secondary Treatment at Plant Nos. 1 and 2

Project	Title	Addressed in PEIR for Scenario 4? (yes/no)	Rehabilitation of Existing Structure or Construction of New Structure	Construction Schedule
Plant No. 1				
P1-82	Activated Sludge Rehabilitation	No	Rehab/New	2005-2006
P1-97	Plant No. 1 66KV Substation	No	New	2005-2007
P1-100	Sludge Digester Rehabilitation at Plant No. 1	Yes – partially[1]	Rehab	2007-2011
P1-101	Sludge Dewatering, Odor Control and primary sludge thickening at Plant No. 1	Yes – partially[2]	New	2008-2010
P1-102	Secondary Activated Sludge Facility 2 at Plant No. 1	Yes	New	2007-2012
P1-106	Truck Wash and Relocation of Dewatering Beds at Plant No. 1	No	New	2006-2007
Plant No. 2				
P2-74	Rehabilitation of the Activated Sludge Plant	Yes	Rehab	2006-2008
P2-80	Primary Treatment Rehab/Refurbish	No	Rehab	2006-2009
P2-89	Rehabilitation of Solids Storage Silos C & D	Yes	Rehab	2007-2010
P2-90	Trickling Filters	Yes - partially[3]	New	2007-2011
P2-91	Digester Rehabilitation at Plant No. 2	Yes – partially[1]	Rehab	2007-2012
P2-92	Sludge Dewatering and Odor Control at Plant No. 2	Yes – partially[2]	Rehab	2008-2011
P2-93	Truck Wash and Relocation of Dewatering Beds at Plant No. 1	No	New	2006-2007

Source: Orange County Sanitation District, 2003.
[1] Capacity requirements and additional digesters were identified in the PEIR.
[2] The PEIR identified additional solids handling and dewatering facilities but did not describe replacement of dewatering equipment with alternate technology as currently proposed.
[3] The PEIR identified aeration basins at Plant No. 2 rather than trickling filters for secondary treatment.

Project is similar to the Scenario 4 analyzed in the PEIR.[2] However, in addition to the projects identified in the PEIR, the District has identified additional rehabilitation and new facilities that are necessary to meet secondary treatment standards effectively. As reflected in Figures 2-1 and 2-2, each of the proposed projects would be located within the existing boundaries of the District's two treatment plants. Although the proposed facility footprints shown in the figures are subject to change as the preliminary designs are refined and finalized, none of the projects would be constructed outside of the plant boundaries.

Key differences between the proposed Project and Scenario 4 of the PEIR are:

- the type of process for expanded secondary treatment at Plant No. 2,

[2] Scenario 4 is described in Chapter 3 of the PEIR, specifically on pages 3-8 through 3-40; See projects listed in Tables 3-2, 3-3; construction schedules in Tables 3-7 and 3-8; and proposed site layouts in Figures 3-8 and 3-11 of PEIR.

NEW CONSTRUCTION

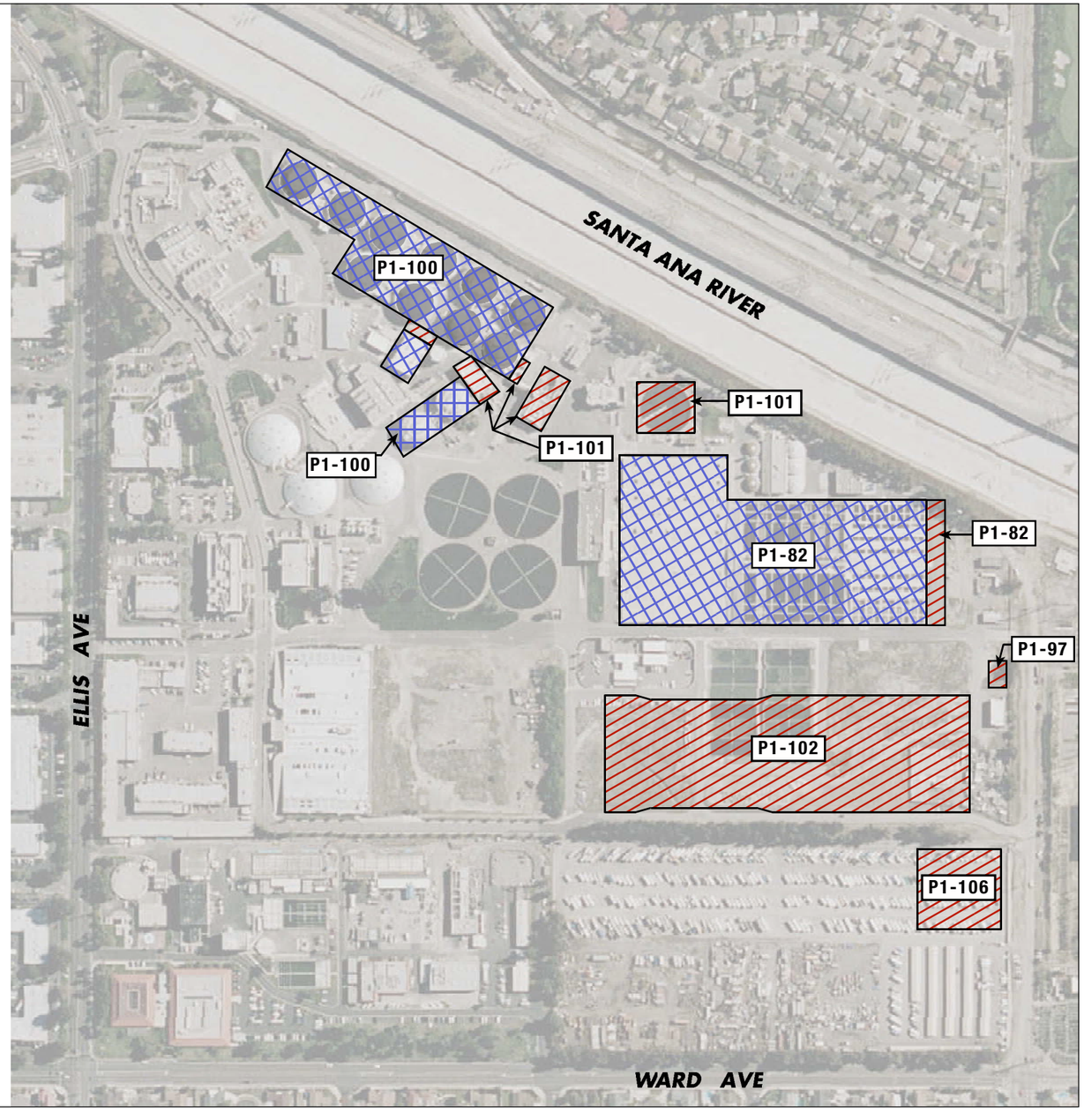
REHABILITATION OF EXISTING FACILITIES

P1-82 Activated Sludge Plant Rehabilitation
P1-97 Plant No. 1 66KV Substation
P1-100 Sludge Digester Rehabilitation at Plant No. 1
P1-101 Sludge Dewatering and Odor Control at Plant No. 1
P1-102 Secondary Activated Sludge Facility 2 at Plant No. 1
P1-106 Truck Wash & Relocation of Dewatering Beds at Plant No. 1

N

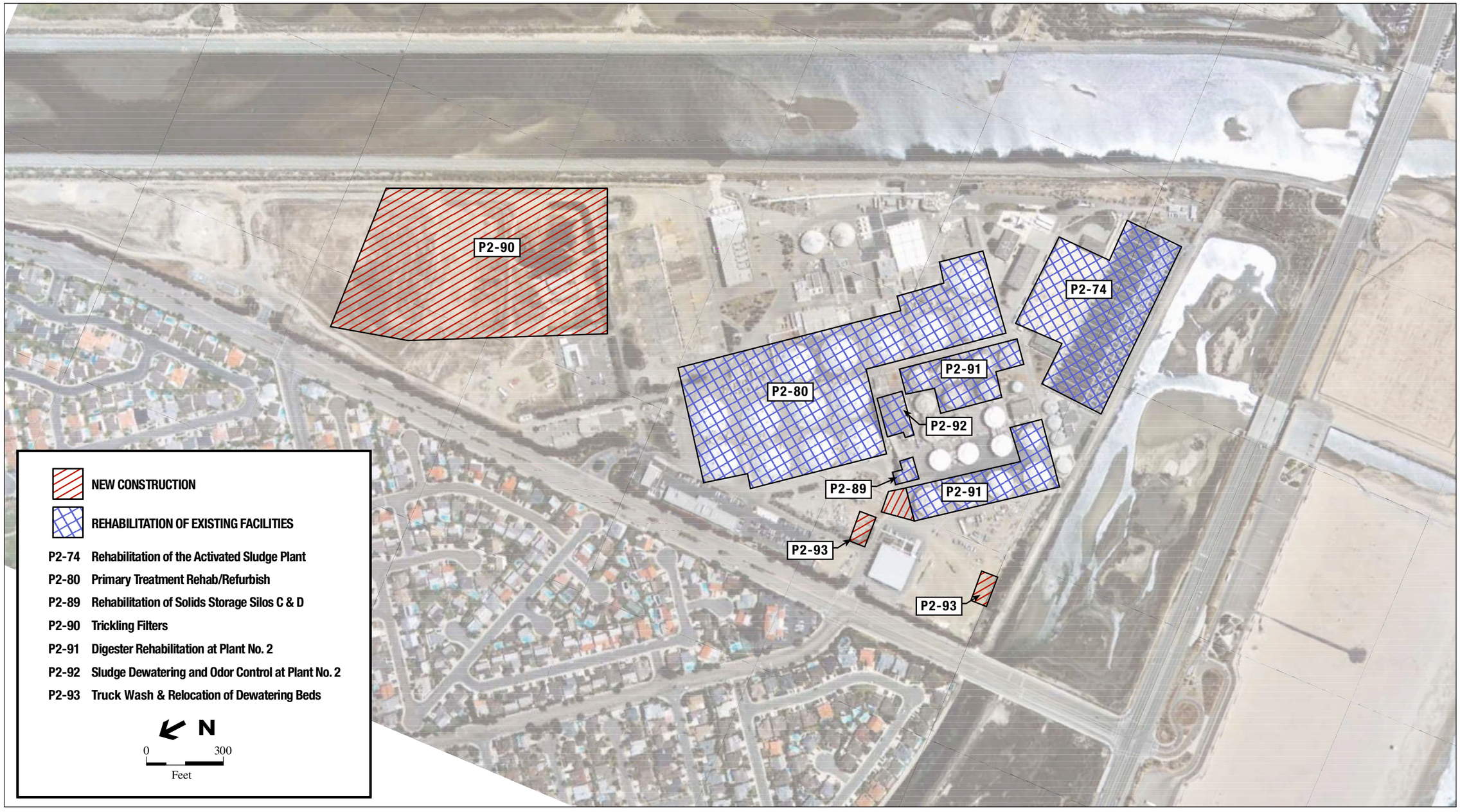
0 300

Feet



SOURCE: IPMC 2003

Figure 2-1
Site Plan of Proposed Projects For Treatment Plant No. 1



SOURCE: IPMC 2003

Figure 2-2
Site Plan of Proposed Projects For Treatment Plant No. 2

- the proposed number of additional digesters, and
- the proposed installation of centrifuges for dewatering.

For Scenario 4 Full Secondary Treatment, the PEIR identified secondary aeration basins at Plant No. 2, twelve new digesters at Plant No. 1 and four new digesters at Plant No. 2. The proposed Project would include new trickling filters for secondary treatment at Plant No. 2, and either two new digesters or improved sludge-thickening at Plant No. 1 to treat the increased solids from new secondary treatment facilities. No new digesters are proposed at Plant No. 2. The proposed Project also includes a new element, installation of centrifuges at Plant Nos. 1 and 2, to reduce the water content of biosolids to minimize transportation costs and reduce environmental impacts related to hauling (energy and air emissions along with traffic congestion and roadway impacts).

2.2.2 EFFLUENT QUALITY

As described in Chapter 1 – Introduction, in July 2002, the District Board of Directors, responding to public input received during the development of its NPDES ocean discharge permit renewal application, voluntarily decided to have District effluent meet secondary treatment standards. Subsequently, the SARWQCB renewed the District's NPDES permit reflecting the requirements for secondary treatment. A Consent Decree between the EPA, SARWQCB and OCSD, filed in November 2004, establishes the timetable for OCSD to complete the necessary facility projects to provide secondary treatment and sets interim effluent limits to be met until additional secondary treatment facilities can be completed in 2012. **Table 2-2** summarizes proposed limits for BOD and TSS for the interim period established by the Consent Decree and after 2012 when new and rehabilitated facilities will be completed.

Table 2-2
NPDES Permit Limits

	BOD	TSS
Interim Ocean Discharge Limits (until 2011) 30-day average (mg/l)	105	70
Interim Ocean Discharge Limits (2011-2012) 30-day average (mg/l)	95	55
Secondary Treatment Discharge Limits (after 2012) 30-day average (mg/l)	30	30

Source: Orange County Sanitation District.
BOD = biochemical oxygen demand
TSS = total suspended solids
mg/l = milligrams per liter

OCSD's compliance is currently and will continue to be based on 24-hour composite sampling. A sample of OCSD's final effluent is collected every 3 million gallons, or approximately every 15 to 20 minutes. The 24-hour period is mixed together into a composite sample and tested for the compliance parameters like BOD and TSS. The thirty (30) consecutive days of composite sample results are then used to determine compliance with the NPDES permit.

Under the proposed Project to increase secondary treatment capacity at both OCSD treatment plants, the projected effluent quality would change in some ways compared to the "full secondary" treatment

scenario (Scenario 4) evaluated in the PEIR[3]. **Table 2-3** summarizes projected effluent quality and contaminant mass loading in 2020 for both the PEIR Scenario 4 and the proposed Project. Most of the estimated final effluent changes are minimal and represent reductions or improvements in the final effluent quality. The biggest improvements to effluent quality include significant reductions in the concentration of micro-organisms, cadmium, chromium, lead, nickel, and zinc and most organic compounds, and total nitrogen. There would be small concentration increases for ammonium-nitrogen, COD, copper and silver. Mass loadings would increase for BOD, TSS, COD, copper, and silver but decrease for ammonium-nitrogen, oil and grease, cadmium, chromium, lead, zinc, organic compounds, and total nitrogen.

Annual flow rate is estimated to decrease by 3.3% and the amount of brine returning from the GWR System Project would decrease from the 16 mgd estimated in the PEIR to 12 mgd. A slight decrease in the pH (<1%) is expected as well as major reductions for the effluent concentrations of most metals. Cadmium concentrations would be reduced to 0.2 ug/l, a 71% reduction; chromium would decrease to 3.2 ug/l a 20% reduction; zinc would decrease to 30 ug/l a 47% reduction along with smaller decreases for lead and nickel of about 3%. 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%. 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.

The concentration of some effluent parameters would increase from the 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% change; COD would increase from 50 to 51 mg/l, a 2.0% change; copper would increase from 23.1 to 29 ug/l, a 25.5% change; and silver would increase from 1.9 to 2.6 ug/l, a 36.5% 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) 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.

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%), oil and grease (1.9%), cadmium (70.5%), chromium (27.6%), lead (8.5%), nickel (6.1%), total organic compounds (>54%) and total nitrogen (3%). These changes would improve the effluent water quality and reduce potential wastewater discharge impacts. Mass loading would increase for BOD (15.1%), TSS (3.3%), and COD (0.8%), copper (23%), and silver (40%). 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.

[3] As discussed in Section 1 – Introduction, OCSD has already made improvements to its current effluent quality since the PEIR was certified by implementing additional disinfection to disinfect 100 percent of the flow and by maximizing the use of existing secondary treatment capacity. Approximately 64 percent of the ocean discharge received secondary treatment in fiscal year 2002/2003.

Table 2-3
Estimated Effluent Quality and Mass Loading for Scenario 4 for PEIR 1999 and Proposed Project

Effluent Parameter	Effluent Quality PEIR Scenario 4 (2020)	Effluent Quality Proposed Project (2020)	% Change in Parameter	Estimated Mass Load PEIR Scenario 4 (2020)	Estimated Mass Load Proposed Project (2020)	% Change in Parameter
Annual Flow MGD	259.6	251	-3.3	259.6	251	-3.3
Brine MGD	16	12	-25	16	12	-25
BOD	21 mg/l	21 mg/l	0	43,307 lbs/day	49,832 lbs/day	+15.1
TSS	24 mg/l	24 mg/l	0	48,228 lbs/day	49,832 lbs/day	+3.3
Ammonium-Nitrogen	23 mg/l	24 mg/l	+4.3	50,799 lbs/day	47,730 lbs/day	-6.0
COD	50 mg/l	51 mg/l	+2	101,581 lbs/day	102,415 lbs/day	+0.8
Oil and Grease	7 mg/l	7 mg/l	0	14,221 lbs/day	13,953 lbs/day	-1.9
pH	7.65	7.58	-0.9	NA	NA	
Cadmium	0.7 ug/l	0.2 ug/l	-71	1.56 lbs/day	0.46 lbs/day	-70.5
Chromium	4 ug/l	3.2 ug/l	-20	9.29 lbs/day	6.72 lbs/day	-27.6
Copper	23.1 ug/l	29 ug/l	+25.5	49.9 lbs/day	61.4 lbs/day	+23.0
Lead	2.7 ug/l	2.6 ug/l	-3.7	5.9 lbs/day	5.4 lbs/day	-8.5
Nickel	30 ug/l	29 ug/l	-3.2	65.7 lbs/day	61.7 lbs/day	-6.1
Silver	1.9 ug/l	2.6 ug/l	+36.8	4.0 lbs/day	5.6 lbs/day	+40.0
Zinc	57 ug/l	30 ug/l	-47.4	124 lbs/day	63.8 lbs/day	-48.5
Pesticides (total chlorinated HCs	0.01 ug/l	0.01 ug/l	0	negligible	negligible	
PCBs	<dl ug/l	<dl ug/l	?	negligible	negligible	
PAHs	<1 ug/l	<10 ug/l	?	<2.2 lbs/day	negligible	
Other organic compounds	100 ug/l	<50 ug/l	>-50	216 lbs/day	<100 lbs/day	<-53.7
Salinity ppt	1.7	1.3	-23.5	NA	NA	
Total Dissolved Solids	1728 mg/l	1300 mg/l	-24.8	NA	NA	
Total Coliform MPN/100ml	4.2E+6	1.8E+5	-96	NA	NA	
Fecal Coliform MPN/100ml	1.5E+6	5E+4	-97	NA	NA	
Virus PFU/10ml	0.03	0.0003	-99	NA	NA	
Total Nitrogen	34 mg/l	34 mg/l	0	74,012 lbs/day	71,807 lbs/day	-3.0

Source: Orange County Sanitation District, PEIR; OCSD 2003 Annual Report.
Note: Percent change and increasing (+) or decreasing (-) values compared to 1999 PEIR estimates.

Table 2-4 provides the same comparison for Scenario 2. As shown in the table, the proposed Project would significantly lower parameters for all contaminants of concern.

Table 2-4
Estimated Effluent Quality and Mass Loading for Scenario 2 for PEIR 1999 and Proposed Project

Effluent Parameter	Effluent Quality PEIR Scenario 2 (2020)	Effluent Quality Proposed Project (2020)	% Change in Parameter	Estimated Mass Load PEIR Scenario 2 (2020)	Estimated Mass Load Proposed Project (2020)	% Change in Parameter
Annual Flow MGD	259.6	251	-3.3	259.6	251	-3
Brine MGD	16	12	-25	16	12	-25
BOD	111 mg/l	21 mg/l	-81	225,347 lbs/day	49,832 lbs/day	-78
TSS	57 mg/l	24 mg/l	-58	116,481 lbs/day	49,832 lbs/day	-57
Ammonium-Nitrogen	26 mg/l	24 mg/l	-8	55,513 lbs/day	47,730 lbs/day	-14
COD	233 mg/l	51 mg/l	-78	472,394 lbs/day	102,415 lbs/day	-78
Oil and Grease	24 mg/l	7 mg/l	-71	49,617 lbs/day	13,953 lbs/day	-72
pH	7.56	7.58	0	7.56	7.65	1
Cadmium	2.1 ug/l	0.2 ug/l	-90	4.64 lbs/day	0.46 lbs/day	-90
Chromium	7 ug/l	3.2 ug/l	-54	14.88 lbs/day	6.72 lbs/day	-55
Copper	49 ug/l	29 ug/l	-41	106.06 lbs/day	61.4 lbs/day	-42
Lead	3.6 ug/l	2.6 ug/l	-28	7.8 lbs/day	5.4 lbs/day	-31
Nickel	32 ug/l	29 ug/l	-9	70 lbs/day	61.7 lbs/day	-12
Silver	3.3 ug/l	2.6 ug/l	-21	7.2 lbs/day	5.6 lbs/day	-22
Zinc	78 ug/l	30 ug/l	-62	112 lbs/day	63.8 lbs/day	-43
Pesticides (total chlorinated HCs	0.02 ug/l	0.01 ug/l	-50	negligible	negligible	
PCBs	<dl ug/l	<dl ug/l	?	negligible	negligible	
PAHs	<1 ug/l	<10 ug/l	?	<2.2 lbs/day	negligible	
Other organic compounds	100 ug/l	<50 ug/l	>-50	216 lbs/day	<100 lbs/day	<-53.7
Salinity ppt	1.7	1.3	-24	NA	NA	NA
Total Dissolved Solids	1,728 mg/l	1,300 mg/l	-25	NA	NA	NA
Total Coliform MPN/100ml	1.8E+7	1.8E+5	-99	NA	NA	NA
Fecal Coliform MPN/100ml	6.4E+6	5E+4	-99	NA	NA	NA
Virus PFU/10ml	0.23	0.0003	-100	NA	NA	NA
Total Nitrogen	35 mg/l	34 mg/l	-3	75,174 lbs/day	71,807 lbs/day	-4

Source: Orange County Sanitation District 1999 PEIR; OCSD 2003 Annual Report.
Note: Percent change and increasing (+) or decreasing (-) values compared to 1999 PEIR estimates.

2.2.3 PROPOSED FACILITIES

The following section provides brief descriptions of each project that include the most current design information available at the time of the publication of the Draft SEIR. The purpose of the following sections is to describe the scale of the construction effort required to meet the Project objectives. Design modifications, such as installation of additional ancillary equipment or reconfiguration of equipment, are likely to occur as the planning process progresses. These changes are not anticipated to affect the overall scope of the Project evaluated in this SEIR nor modify the impact analysis.

PLANT NO. 1 – FOUNTAIN VALLEY

P1-82 Activated Sludge Rehabilitation. The proposed improvements were not described in the PEIR. Project P1-82 would rehabilitate the activated sludge facility and construct new clarifiers to improve the reliability and operational efficiency of the existing 80-mgd secondary treatment at Plant No. 1. The project would not increase treatment capacity. The project would rehabilitate or replace aging equipment including aeration basin splitter boxes, feed gates, pipes, valves, and electrical and control equipment. The project would also include construction of two new clarifiers (70,000 sf) that would serve as storage basins while the secondary clarifiers undergo service. Equipment to allow nitrification/denitrification would be added to the treatment process to increase ammonia removal. In addition, the project could include the construction of a return activated sludge (RAS) pump station. For expansion of the secondary clarifiers, demolition of a pipeline and one concrete connecting wall of the existing clarifiers would be required. Overall, construction would last approximately 15 months, beginning in September 2005 and ending in December 2006.

P1-97 Plant No. 1 66KV Substation. The proposed facility was not described in the PEIR. Project P1-97 would construct a new electrical substation just west of the existing Plant No. 1 Electric Service Center Building that would allow OCSD to take power from Southern California Edison (SCE) at 66,000 Volts rather than the present 12,000 Volts. The substation would provide approximately twice the amount of power that is presently available from the existing incoming service and serve the expanded secondary treatment facilities. The proposed site is currently vacant. The substation would be constructed on a concrete foundation with a footprint of approximately 150 feet by 100 feet. There would be some minor excavation (approximately four feet deep) for the underground electrical conduits. No dewatering would be required. Construction would last approximately two years, starting in 2005 and ending in 2007.

P1-100 Sludge Digester Rehabilitation at Plant No. 1. Although capacity requirements to support expanded secondary treatment were identified in the PEIR (Section 3, Table 3-2, P. 3-13), the proposed improvements were not described. Project P1-100 would rehabilitate Digesters 5 through 16, including rehabilitation of associated sludge pumping, heating and miscellaneous other structural, mechanical, electrical and control systems. Rehabilitation of existing digesters would be done to ensure continued operation of the existing facilities and sufficient capacity for expanded secondary treatment. The main elements of the project include the cleaning and rehabilitation of Digesters 5 – 16, and the relining of Digesters 5 – 10. Additionally, the project includes 1,500-sf expansion of the Power Building No. 5, installation of two 1,100 kW diesel generators for standby power, replacement of sludge pumps, heat exchangers, miscellaneous piping, and the upgrade of electrical and control systems. The schedule would require approximately three years to complete construction, beginning in 2007 and ending in 2011.

P1-101 Sludge Dewatering, Odor Control, and Primary Sludge Thickening at Plant No. 1. The PEIR identified rehabilitation of existing and installation of new solids handling and dewatering facilities (Section 3, Table 3-7, P. 3-26) and consideration for additional odor control mitigation (Section 6, P. 6.5-20, Measure 6.5-5a). The PEIR did not include replacement of dewatering equipment with alternate technology as currently proposed. Project No. P1-101 would replace or rehabilitate the existing sludge dewatering facility at Plant No. 1, including the solids area odor control systems, associated sludge pumping, cake conveyance, chemical feed, ventilation and miscellaneous other structural, mechanical, electrical and control systems. Main elements of the project include replacement belt press dewatering systems with centrifuge dewatering systems and upgrade or replacement of sludge pumps, cake

conveyance and pumping systems, chemical feed systems, odor scrubbers, ventilation systems, electrical systems and control systems. The project could include construction of a new digester. The project would include demolition of existing structures, construction of a new 17,500-sf dewatering building, and minor expansion of the existing solids storage building. Some excavation would be required. Construction would require approximately two years beginning in 2007 and ending in 2010.

P1-102 Secondary Activated Sludge Facility 2 at Plant No. 1. The proposed improvements were included in the PEIR (Section 3, Table 3-2, P. 3-13). Project P1-102 would be a large construction project adding a new, activated sludge system at Plant No. 1 to provide up to 80 mgd of additional secondary treatment capacity. The new facility would nearly double the secondary treatment capacity at Plant No. 1. The proposed system would have a design similar to the existing activated sludge system. The major project elements include a primary effluent pump station, eight aeration basins, eight secondary clarifiers, sludge pumping systems, a blower building, electrical buildings, utility tunnels and piping and a chlorination system. In addition, the project includes modifications to existing power buildings and potential construction of sludge thickening facilities. The new facilities would be constructed in a partially undeveloped area in the southern part of the plant and require the relocation of existing drying beds. The new facilities would cover approximately 3.5 acres. The project would involve demolition, substantial excavation, dewatering, and construction. Project construction would last approximately four and one-half years, from 2007 and ending in 2012. Startup, testing, and commissioning would take place in November 2012.

P1-106 Truck Wash and Relocation of Dewatering Beds at Plant No. 1. The proposed improvements were not described in the PEIR. Project P1-106 would relocate several sludge drying beds that are scheduled to be demolished for construction of the new activated sludge facility under project P1-102. The project would also install a truck washing station to Plant No. 1 for District and local sewer agency trucks to use after dumping into the drying beds. The drying beds would serve both the District and local agencies that remove sand, grit, and other debris from the collection system. At present, the site is vacant. Some excavation would be required. Project construction would last approximately one year, from 2006 and ending in 2007.

PLANT NO. 2 – HUNTINGTON BEACH

P2-74 Rehabilitation of the Activated Sludge Plant. The existing facility and proposed rehabilitation were identified in the PEIR (Section 3, Table 3-3, P. 3-14, and Table 3-8 P. 3-28). Project P2-74 would rehabilitate the secondary treatment system at Plant No. 2. Project elements include changing Pump No. 1 in the primary effluent pump station, replacing the aeration basin splitter box gates and covers and potentially adding odor control. Additional modifications and miscellaneous improvements would be made to the aeration basins, RAS lines and pump stations, the channel air blower system and the secondary clarifiers. Additional automation would be added to the secondary treatment system. No new structures would be built and no excavation is anticipated. Construction is expected to start in 2006 and be completed in 2008.

P2-80 Primary Treatment Rehabilitation/Refurbishment. The proposed improvements were not included in the PEIR. Project P2-80 would rehabilitate the primary treatment system at Plant No. 2. The major project elements include modification of odor control systems at the north and south scrubber complexes, rehabilitation of the 14 circular primary clarifiers and replacement of domed covers over the circular clarifiers with flat covers. Minor excavation work would be required for piping below the

clarifier slab. Demolition work would consist of removal of the aluminum domes over each of the clarifiers. No new structures would be built and treatment capacity would not increase. Construction would last approximately three years, beginning in March 2006 and ending in April 2009.

P2-89 Rehabilitation of Solids Storage Silos C & D. The existing solids storage facilities (cake hoppers) and proposed rehabilitation were identified in the PEIR (Section 3, Table 3-3, P. 3-14 and Table 3-8 P. 3-28). Project P2-89 would rehabilitate the solids storage and transfer facilities at Plant No. 2. Project elements include rehabilitation of two existing silos and replacement of the sludge conveyors, transfer equipment and truck delivery system. Additionally, the polymer system at the dissolved air flotation thickeners would require rehabilitation. Odor control would be added and the truck loading station would be demolished. No new structures would be added and no excavation would be necessary. Construction would last approximately four years, beginning in 2007 and ending in 2010.

P2-90 Trickling Filters. The PEIR identified the need for secondary aeration and clarifier facilities (Section 3, Table 3-3, P. 3-14, and Table 3-8 P. 3-28), but did not consider new trickling filters as an alternative secondary treatment process. Project P2-90 would be a large construction project that would construct a new 60-mgd capacity trickling filter system at Plant No. 2. Following a recent evaluation of different technologies for achieving secondary treatment[4], the District proposes to install trickling filters rather than construct new activated sludge facilities as proposed in Scenario 4 in the PEIR. The major components of the project could include installation of up to five 145-foot diameter, 53-foot high trickling filter, one 240-foot long by 60-foot wide by 20 foot deep solids contactor, six 135-foot diameter, 15-foot high trickling filter clarifiers, one trickling filter pump station with five 250 horse power (hp) variable speed recirculation pumps to feed primary effluent to the trickling filters and an electrical building. The new facility would be constructed in the undeveloped portion of the plant northeast of the current control building and cover approximately 10 acres. The project would require extensive excavation and minimal demolition work. Construction would last approximately four years, beginning in 2007 and ending in 2011.

P2-91 Digester Rehabilitation at Plant No. 2. Although capacity requirements to support expanded secondary treatment were identified in the PEIR (Section 3, Table 3-3, P. 3-14), the proposed improvements were not described. Project P2-91 consists of rehabilitation of the existing digesters and ancillary equipment at Plant No. 2. Rehabilitation of existing digesters would be done to ensure continued operation of the existing facilities and sufficient capacity for expanded secondary treatment. Eleven digesters (P, R, S, T, C, D, E, F, G, H and Q) would be rehabilitated. The digester rehabilitation would include cleaning, relining, replacing axial mixing pumps with chopper pumps, rehabilitating hot water systems, heat exchangers, and sludge feed piping, installing in-line grinders for sludge, rehabilitating acid piping and automating the digester sludge feed system. There would be no change in the existing footprint or capacity of the digesters. Construction would also include two sludge holding tanks, an above ground pump station, grinders and associated piping in between the existing digesters. A new small electrical building would be required. The new facilities would be located adjacent to the existing structures. Demolition would include existing pipes and pumps. Minor excavation for the new facilities would be necessary. No dewatering is anticipated. Construction would begin in 2007 and be completed in 2010.

[4] IPMC, 2004.

P2-92 Sludge Dewatering and Odor Control at Plant No. 2. The PEIR included rehabilitation of the dewatering equipment, additional solids storage (Section 3, Table 3-8 P. 3-28), and consideration for additional odor control mitigation (Section 6, P. 6.5-20, Measure 6.5-5a). The PEIR did not include the replacement of the dewatering equipment with new technology. Project P2-92 would provide solids dewatering, storage and odor control facilities. As originally proposed, the project would install 10 new belt filter presses and odor control for thickening and dewatering systems. The current proposal is to install six new centrifuges, replace the existing odor control system with an upgraded system, retrofit the existing dewatering building, replace the existing polymer system with an upgraded system, and replace and/or upgrade other ancillary equipment. Some demolition and excavation would be required. Under either construction scenario, the construction phase is expected to last three years from mid 2008 to mid 2011.

P2-93 Relocation of Dewatering Beds. The proposed improvements were not described in the PEIR. Project P2-93 would relocate sludge drying beds at Plant No. 2 that are scheduled to be demolished as the District expands its secondary treatment capacity. The drying beds would serve both the District and local agencies that remove sand, grit, and other debris from the collection system to minimize sewer spills. The drying beds would be relocated prior to construction of the new headworks at Plant No. 2. Alternative locations are shown in Figure 2-2. The project would also include installation of a truck washing station to allow District and local agency sewer cleaning crews to clean their trucks. Some excavation would be required. The construction phase is expected to last one year from 2006 through 2007.

SUMMARY OF NEW STRUCTURES

As described above, several projects involve constructing new buildings within the plant sites. **Table 2-5** summarizes the new structures and facilities for each of the projects including the approximate square footage and height required for the new facilities. In general, the new and expanded facilities will match the character and dimensions of existing facilities. Many of the new facilities will not be visible from the perimeters of the two plants. The overall Project would increase the developed portion of Plant No. 1 by approximately 3 acres and Plant No. 2 by approximately 10 acres. The visual impacts of the Project are evaluated in Section 3.1.

SOLIDS HANDLING

Biosolids production would increase at both plants as a result of increased flows and increased secondary treatment. However, projected volumes for 2020 under the proposed Project are less than projected for the PEIR Scenario 4 secondary treatment alternative due to the increased efficiency of the proposed new dewatering equipment. Grit and screenings collections are projected to increase with increased flow. **Table 2-6** summarizes the increases in solids production as estimated in the PEIR and for the proposed Project. As shown in Table 2-6, current production of grit and screenings is substantially greater than the PEIR projections for the year 2020. This is due to improved removal efficiency at the headworks facilities of both plants. Future grit and screenings production are projected to increase over the existing volume by approximately 300 percent.

Table 2-5
Proposed Area and Height of New and Expanded 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.

This SEIR addresses the effects of additional biosolids production and handling and processing facilities at the District plants as part of the proposed Project. This SEIR does not address any new proposals for disposal or reuse of biosolids. The District adopted a Long range Biosolids Management Plan in 2003. As outlined in the plan, the District continues to look at product alternatives for biosolids reuse. As appropriate the District will conduct CEQA review of any proposal for either new or modified approaches to biosolids disposal or reuse it considers for implementation beyond its current approved program.

ROUTINE MAINTENANCE ACTIVITIES

In addition to the thirteen individual construction projects described above, the Project includes smaller maintenance and improvement projects needed to effectively implement the proposed secondary treatment at both plants. These types of activities include general maintenance of facilities, replacement of equipment, upgrading systems, grounds keeping, street paving, and landscaping. These small support

Table 2-6
Estimated Biosolids Production and Grit /Screenings Collection
(1,000 wet tons per year)

	Biosolids			Grit and Screenings		
	Plant No. 1	**Plant No. 2**	**Total**	**Plant No. 1**	**Plant No. 2**	**Total**
2002/03[1]	93	122	215	1.98	2.26	4.24
PEIR 2020[2] (Scenario 2)	160	182	342	1.09	1.49	2.58
PEIR 2020[2] (Scenario 4)	205	216	421	1.09	1.49	2.58
Proposed Project 2020	136[3]	106[4]	242[5]	4.26	9.20[6]	13.46

Sources: [1]Orange County Sanitation District 2003 Annual Report: Operations & Maintenance, [2]OCSD 1999 PEIR, p. 3-65
[3]OCSD Biosolids Management Plan 2003, TM 6, Appendix D
[4]OCSD Biosolids Management Plan 2003, TM 6, Appendix E
[5]OCSD Bisolids Management Plan 2003, TM 6, p. 5
[6]OCSD, P2-66 Headworks Replacement Draft SEIR 2004, p. 2-5

projects could involve construction of small maintenance structures, grading of undeveloped areas, paving, roofing, painting, and laying concrete etc. The activities, typically exempt from CEQA, would be conducted in support of the overall project objectives.

2.3 CONSTRUCTION METHODS

Construction methods for rehabilitation projects would include some demolition, excavation, trenching, concrete pouring, pile driving and/or other foundation work, remodeling of existing structures and removal and installation of equipment. Construction activities for the larger projects (P1-101, P1-102, P2-90) would include demolition and removal of some existing facilities, site clearance and grading, excavation and soil removal, dewatering, pile driving and/or other foundation work, concrete pouring and construction of facilities. **Table 2-7** presents construction information such as duration of the construction of period, the approximate cubic yards of soil to be excavated, numbers of piles or columns, and the volume of concrete. The table also includes the approximate number of construction workers needed for each project. Construction crews may range from 5 to 100 workers depending on the construction activities.

The amount and types of construction machinery expected would vary for each phase of each construction project. Equipment would include scrapers, bulldozers, loaders, trenchers, haul trucks, concrete trucks, water trucks, delivery trucks, cranes, and generators. Excavated soils would be stockpiled on site or removed. Dewatering would likely be required for the larger excavations. Extracted groundwater would be discharged through the treatment system. New equipment, building materials, construction equipment, and concrete would be delivered daily to each construction site. Staging areas and worker parking areas would all be located entirely on the plant sites.

Table 2-7
Construction Details

Projects	Duration (months)	Volume of Excavation (cubic yards)	Estimated No. of Piles or Columns*	Volume of Concrete (cubic yards)	No. of Workers / day
Plant No. 1					
P1-82: Activated Sludge Rehabilitation	15	7,500	194	3,000	50-60
P1-97: Plant No. 1 66KV Substation	24	20	NA	20	5-20
P1-100: Sludge Digester Rehabilitation at Plant No. 1	32	400	20	200	5-40
P1-101: Sludge Dewatering and Odor Control at Plant No. 1	24	10,000	250	6,000	20-30
P1-102: Secondary Activated Sludge Facility 2 at Plant No. 1	54	435,000	5,000	82,000	30-150+
P1-106: Truck Wash and Dewatering Beds at Plant No. 1	12	1,000	NA	100	5-20
Plant No. 2					
P2-74: Rehabilitation of the Activated Sludge Plant	28	NA	NA	NA	5-30
P2-80: Primary Treatment Rehab/Refurbish	37	25	NA	NA	15-30
P2-89: Rehabilitation of Solids Storage Silos C & D	47	NA	NA	NA	5-20
P2-90: Trickling Filters	49	70,000	2,000	21,000	15-100
P2-91: Digester Rehabilitation at Plant No. 2	50	NA	NA	NA	5-20
P2-92: Sludge Dewatering and Odor Control at Plant No. 2	35	6,000	180	4,000	15-30
P2-93 Relocation of Dewatering Beds at Plant No. 2	12	1,000	NA	100	5-20

Source: Orange County Sanitation District.
*Foundation alternatives include piles, columns or geo-piers.
NA= Not Applicable

2.4 SCHEDULE

Upgrading the treatment facilities at both plants would occur in phases through 2012. The preliminary construction schedules for the proposed projects are shown in **Figure 2-3**. These schedules are subject to change as designs are finalized. As Figure 2-3 shows, many of the proposed projects would be under construction at the same time. In any given year, it is possible that six to eight or more projects would be under construction simultaneously.

2.5 INTENDED USES OF THE SEIR/PROJECT APPROVALS

The District has prepared this SEIR to provide the District's Board of Directors, the public, and Responsible and Trustee agencies information about the potential effects, both beneficial and adverse, on the local and regional environment. The Board and the various agencies with regulatory authority over the projects will use this SEIR for the decision-making process in their approval of the projects needed to meet secondary treatment standards. Agencies that are anticipated to use the SEIR in their decision-making or from which permits may be required for the Project are identified below:

- California Coastal Commission: Coastal Development Permit (for projects at Treatment Plant No. 2);

- South Coast Air Quality Management District (SCAQMD): Permit to Construct/Operate air scrubbers.

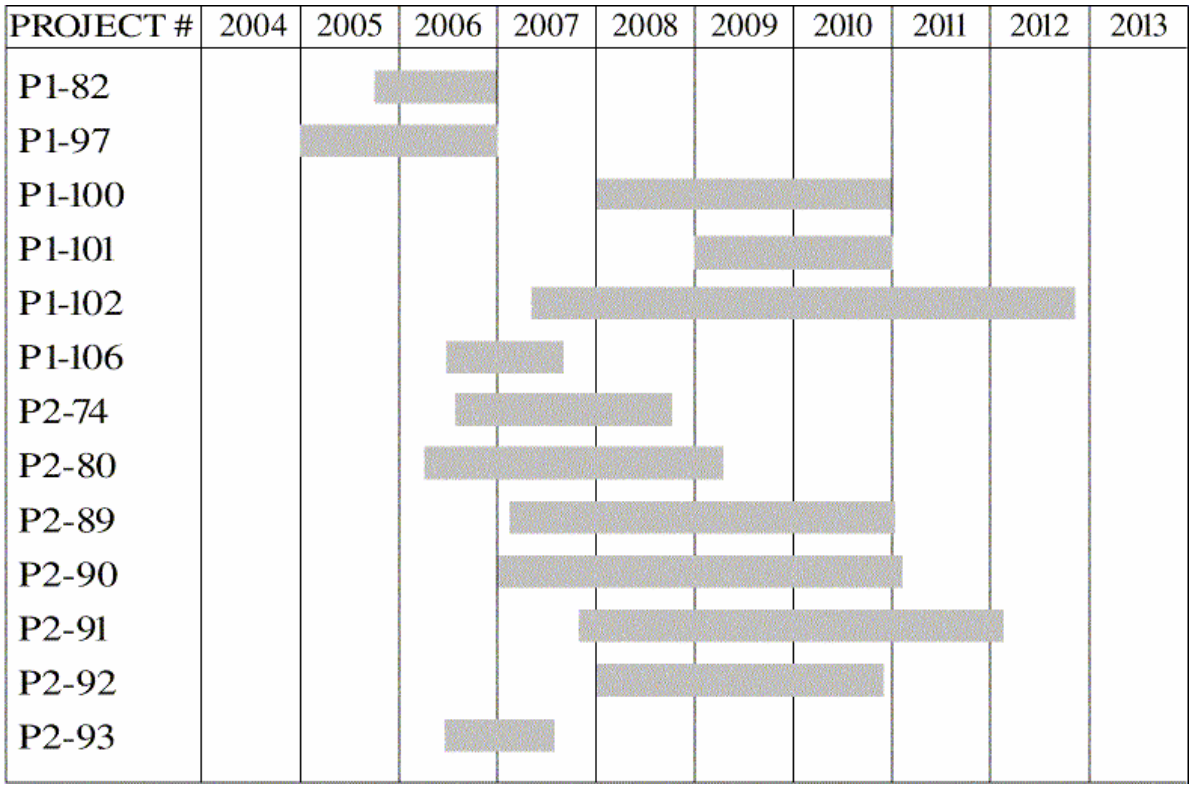


Figure 2-3: Preliminary Construction Schedule