The Delta Plan

Ensuring a reliable water supply for California, a healthy Delta ecosystem, and a place of enduring value

2013

Delta Stewardship Council

grounds in upstream rivers and streams. Between 1900 and 1950, the fall run numbered more than a million fish returning annually to the Sacramento and San Joaquin river systems. Drought and changing Delta and ocean conditions, however, reduced those numbers to only 66,000 in 2008, resulting in a closure of the salmon fisheries off California and restrictions that lingered into 2010, devastating fishing economies (DFG 2009).

Dredging opened many of the Delta channels for sport fishing, recreational boating, and commercial enterprise. Today there are more than 100 marinas and waterside resorts, RV parks, grocery stores, and dockside restaurants; and house boating remains popular. The Delta is dotted with numerous public parks and fishing sites as well.

The Delta now is a major producer of corn, alfalfa, pasture, and tomatoes; and wine grapes are growing in prominence. Residents and visitors alike celebrate the Delta's agricultural heritage with the Asparagus Festival in Stockton and the Courtland Pear Fair.

Today, although still largely rural, the Delta is crisscrossed by interstate electric transmission lines, natural gas pipelines, and interstate roads and railroads; and it faces increasing pressure—at least on its periphery—for additional housing development. Those elements, combined with the increasing certainty of sea level rise and changing climate patterns, mean continual change for the Delta.

The Delta Problem

In California, sustainable management of the Delta is an exceedingly complex topic fraught with longstanding conflicts and challenges. The Delta and Suisun Marsh ecosystem is the largest estuary on the West Coast and a critical stopping point on the Pacific flyway. The estuary extends westward to the Golden Gate and southward to San Jose. Delta water also flushes southern San Francisco Bay. It is also the hub of the state's major water supply systems. But the Delta today is failing to balance the tradeoffs inherent in these functions, as well as to provide a place to live, work, and play for residents and visitors alike.

Today the Delta is relied upon for many services and, as a result, is not meeting the demands of farmers and urban water users who want assurances of supply and, in some cases, more water. Nor does the Delta adequately serve the needs of fish and wildlife—some threatened or endangered species' numbers remain perilously low. And the Delta itself remains inherently floodprone.

Fish Declines. In late 2004, scientists noted that several fish species in the upper San Francisco estuary (delta smelt, young striped bass, longfin smelt, and threadfin shad) had remained unusually low since 2001. Although the numbers had historically fluctuated, this steep and lasting dropoff signaled an ecological crisis. Scientists acknowledged many causes such as invasive and predatory species, upstream agricultural and urban runoff, and diminished Delta habitat. The export pumps of the SWP and CVP were culpable as well, and restrictions ensued.

Water Exports Cut. These regulatory and court-ordered restrictions on State and federal pumping, in combination with the 2007–2009 drought, significantly reduced exported water deliveries to SWP and CVP contractors. As a result, some San Joaquin Valley farmers pumped groundwater from already overtapped aquifers, fallowed fields, and, in some cases, plowed under permanent crops. The national economic recession, combined with reduced water deliveries, hit the San Joaquin Valley hard. Although the plight of farmers captured much media attention, the salmon fishery was shut down in 2008 and was restricted in 2009–2010, causing economic hardship for the commercial and recreational fishing industries. Urban water managers in the Bay Area and Southern California drew down storage and increased conservation efforts until the rains and snows of 2011 saved the day.

DELTA BY THE NUMBERS

- The 45,600-square-mile Delta watershed provides all or a portion of surface water or groundwater supplies to more than 27 million California residents.
- Approximately 8 percent of the state's water supply is exported from the Delta (DWR 2009).
- The Delta and Suisun Marsh support more than 55 fish species and more than 750 plant and wildlife species. Of these, approximately 100 wildlife species, 140 plant species, and 13 taxonomic units of fish are considered special-status species and are afforded some form of legal or regulatory protection (CNDDB 2010, USFWS 2010, CNPS 2010).
- The Delta and Suisun Marsh are home to more than one-half million residents living in dozens of communities, including portions of 12 incorporated cities such as Stockton and Sacramento, and support more than 146,000 jobs (DPC 2010).
- Approximately 57 percent of the Delta and Suisun Marsh—more than 480,000 acres of agricultural land—currently supports a highly productive agricultural industry that is valued at hundreds of millions of dollars annually (DWR 2007a, DWR 2007b, DOC 2008, DPC 2010).
- The Delta and Suisun Marsh levees and lands support interstate and state highways and railroad tracks that support intrastate and interstate traffic, more than 500 miles of major electrical transmission lines, 60 substations, and more than 400 miles of major natural gas pipelines that provide energy throughout Northern California, as well as critical pipelines that carry transportation fuels to airports and other fuel depots throughout the San Francisco Bay Area and Sacramento (DPC 2010, DWR 2009).
- The Delta and Suisun Marsh have more than 1,335 miles of levees that protect more than 800,000 acres of land and play a role in the water supplies conveyed through the Delta.
- The Delta experiences more than 12 million visitor days annually from recreational boaters (DPC 2012).* Fishing, hunting, birdwatching, and camping draw even more visitors to the area.

* The *Sacramento–San Joaquin Delta Boating Needs Assessment* (2000-2020) estimated 6.4 million annual boating-related visitor days and 2.13 million boating trips to the Delta in 2000 (DBW 2002).

DP-318

Lawsuits. Over the years, improved understanding about water quality needs and environmental protection in the Delta launched an era of complex regulation that today governs SWP and CVP water supply operations. Litigation over a host of issues related to the CVP and SWP has created a recent spate of water management actions guided by courtroom decisions. Incomplete understanding about how water project operations, pollution, invasive species, and other factors affect native Delta fish species has resulted in a regulatory scheme affecting water supplies that is characterized by uncertainty. Changing rules to curtail pumping and increase Delta outflow have compounded water supply uncertainty for agencies that use water conveyed through the Delta, particularly in drier years when ecosystem conflicts are most pronounced. Some of those agencies have contributed to the uncertainty by becoming increasingly reliant on Delta exports that were intended to be supplemental supplies, but in some cases are now relied upon as core water supplies.

Flood Threats. Adding to the complexity of these problems is the increasing volatility of Delta water supplies as a consequence of climate change, including more rain and less snow, earlier snowmelt, and higher winter and lower spring-summer runoff patterns. The potential for catastrophic levee failure in the Delta and the risk to residents and infrastructure alike posed by floods, sea level rise, earthquakes, and land subsidence is real, growing, and has outpaced the State's ability to manage and fund risk-reduction measures.

Pursuit of Balance. Finding the right balance of these competing needs and demands on the Delta has bedeviled California policy makers for decades. The media and the political system tend to focus on water supply shortages, droughts, flood risk, and the decline of fisheries. Although notable and consequential, these events are all symptoms of a greater resource problem. Not unlike other policy areas, when it comes to natural resource issues, California has long attempted to manage symptoms rather than treat core problems.

20x2020 Water Conservation Plan




February 2010

20x2020
Water Conservation Plan

February 2010

This plan was prepared by:
- California Department of Water Resources
- State Water Resources Control Board
- California Bay-Delta Authority
- California Energy Commission
- California Department of Public Health
- California Public Utilities Commission
- California Air Resources Board

With assistance from:
- California Urban Water Conservation Council
- U. S. Bureau of Reclamation

Executive Summary

In February 2008, Governor Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. As part of this effort, the Governor directed state agencies to develop a plan to reduce statewide per capita urban water use by 20 percent by the year 2020. This marked the initiation of the *20x2020 Water Conservation Plan (20x2020 Plan)* process.

California's water resources are finite and now require managing for sustainability. Multiple benefits can be realized as a result of more aggressive water conservation including:

- reduced stress on the environment of the beleaguered Sacramento-San Joaquin Delta
- delayed capital cost of new infrastructure to treat and deliver water
- reduced demand for wastewater treatment, including capital costs and ongoing treatment costs
- reduced water-related energy demands and associated greenhouse gas emissions
- improved ability to meet environmental needs
- improvements in the quality of receiving waters related to reduced discharge
- reduced use of fertilizers, pesticides, and herbicides and reduced escape of these chemicals into surface waters through use of native plants and low water using varieties, reduced production of green waste, and improved habitat value of urban landscapes
- enhanced flexibility in water management and delivery systems, especially during dry periods
- better capacity to meet the challenge of California's growing population.

California can reduce its per capita use 20 percent, from the current 192 gallons per capita daily (GPCD) to 154 GPCD. This amounts to an annual savings of about 1.59 million acre-feet based on the savings achieved by California's 2005 population.

20x2020 Plan Scope and Process

The *20x2020 Plan* sets forth a statewide road map to maximize the state's urban water efficiency and conservation opportunities between 2009 and 2020, and beyond. It aims to set in motion a range of activities designed to achieve the 20 percent per capita reduction in urban water demand by 2020. These activities include improving an understanding of the variation in water use across California, promoting legislative initiatives that incentivize water agencies to promote water conservation, and creating evaluation and enforcement mechanisms to assure regional and statewide goals are met. The *20x2020 Plan* discusses these many activities in detail.

This *20x2020 Plan* was developed through the collaborative effort of an Agency Team, which consisted of state and federal agencies including the Department of Water Resources (DWR), State Water Resources Control Board (SWRCB), California Energy Commission (CEC), Department of Public Health (DPH), California Public Utilities Commission (CPUC), Air Resources Board (ARB), California Bay-Delta Authority (CBDA), and the US Bureau of Reclamation (USBR). The Agency Team also developed research papers (Technical Memoranda) and solicited input from water suppliers and organizations through public workshops and conference calls during the planning phase of the *20x2020 Plan*. In addition, the California Urban Water Conservation Council contributed toward the analysis and development of this *20x2020 Plan*.

Comments received through the public review process were used to modify and shape the recommendations of this *20x2020 Plan*.

Chapter 1. Introduction

In February 2008, Governor Schwarzenegger introduced a seven-part comprehensive plan for improving the Sacramento-San Joaquin Delta. The first element of the Governor's Delta plan is water conservation. In the Governor's words, California must have:

> **"A plan to achieve a 20 percent reduction in per capita water use statewide by 2020.** Conservation is one of the key ways to provide water for Californians and protect and improve the Delta ecosystem. A number of efforts are already underway to expand conservation programs, but I plan to direct state agencies to develop this more aggressive plan and implement it to the extent permitted by current law. I would welcome legislation to incorporate this goal into statute."

The Governor's call for greater conservation is reflected in the work of the Delta Vision Blue Ribbon Task Force. The Vision and Strategic Plan of the Task Force call for significantly greater implementation of water use efficiency measures to reduce water export demands on the Delta and its struggling ecosystem and to improve environmental conditions upstream and downstream of the Delta.

Delta protection and restoration are not the only reasons to increase conservation efforts. Global climate change will affect water management in California, and water conservation will help the state not only mitigate climate change by reducing greenhouse gas emissions but also adapt to climate change by reducing water use. Approximately one-fifth of the electricity and one-third of the non-power plant natural gas consumed in the state are associated with water delivery, treatment and use, so efficient use also can reduce water-related energy demands and associated greenhouse gas emissions. Without this program, water-related greenhouse gas emissions in 2020 would be higher than is currently forecast. The Water Energy Subgroup of the Climate Action Team estimates that this plan will reduce emissions by 1.4 million metric tons per year.

Water conservation is also an attractive water management strategy because it can yield multiple benefits. Reduced demand can reduce or delay the capital cost of new infrastructure to treat and deliver water. Reduced use also reduces the demand for wastewater treatment, including capital costs and ongoing treatment costs. There may also be improvements in the quality of receiving waters related to reduced discharge. Landscape water conservation can yield multiple benefits including reduced use of fertilizers, pesticides, and herbicides and reduced escape of these chemicals into surface waters through use of native plants and low water using varieties, reduced production of green waste, and improved habitat value of urban landscapes. These other benefits are particularly important upstream of the Delta, where effluent discharge and over-application of irrigation water often re-enter the natural system and the net water savings from landscape conservation is lower than it is in areas that discharge to the ocean.

The California Water Plan acknowledges the importance of water conservation as an element of statewide water management. The *California Water Plan Update 2005,* as well as the draft *California Water Plan Update 2009,* identifies urban water conservation as the water management strategy that will be most effective at matching supply and demand. California needs a comprehensive plan to increase water use efficiency and achieve the multiple benefits that accompany more efficient use, along with a comprehensive finance plan that supports continuing investment in efficiency.

improved Delta conveyance, more water storage, and restoration of ecosystem health in the Sacramento-San Joaquin River Delta.

This *20x2020 Plan* addresses only urban water use and conservation. To achieve a reduction in overall water use while protecting the Delta's ecosystem, it is recognized that both urban and agricultural water use must be more efficient. The Governor's charge was to achieve a 20 percent reduction in *per capita* use, which implies an urban focus. There are many differences between California's urban and agricultural supplies and demands. These differences in water qualities and quantities, delivery systems, and other use characteristics, coupled with different institutional and conservation mechanisms require that separate mechanisms be developed to address the urban and agricultural sectors.

The focus on urban use here does not diminish the relevance of agricultural use to the state's total water use or the potential for significant reductions in overall state water use from the agricultural sector. Urban water suppliers are required by statute to prepare and periodically update urban water management plans. Efficiency programs are built on this planning foundation. No comparable requirement exists for irrigation districts. Legislative bills introduced to place the Governor's 20x2020 goal into statute recognize the importance of this planning foundation. Bills have also proposed new agricultural water management planning requirements for irrigation districts that are parallel to the standards that have been in place for urban suppliers since 1983. This balanced and comprehensive approach is a sound water management strategy.

This *20x2020 Plan* will be implemented consistent with water rights protections in Water Code Section 1011. An appropriative water right holder does not lose the right to water that is conserved. Water Code section 1011 allows an appropriator to retain the right to water to the extent water is not used due to water conservation efforts. Under this provision, "water conservation" is broadly defined to mean the use of less water for the same purpose of use allowed under the appropriative water right. A permittee or licensee who seeks the benefit of section 1011 must file periodic reports with the State Water Resources Control Board describing the extent and amount of the reduction in water use due to water conservation efforts.

This *20x2020 Plan* addresses only potable water use. "Water use efficiency" in some state programs includes both water conservation and water recycling, but this meaning is not used for this plan. Urban potable water use includes all residential, commercial, institutional and industrial users as well as non-revenue water. Non-potable recycled water was excluded while estimating baseline per capita urban water use to give credit to agencies that have promoted recycled water in the past. Additional use of recycled water will be a significant method by which regions can continue to offset baseline potable urban water demand to meet 2020 goals.

This *20x2020 Plan* does not consider processes that convert a non-potable source into a potable source as methods to reduce per capita use, since they are new supply options. Desalination and use of recycled water to recharge aquifers or augment surface supplies are included among these new supply options. Municipal stormwater capture is also a new supply option and is therefore not considered in this plan.

This *20x2020 Plan* does not address water supplied by customers for their own use or consider processes that create new supply on the customer side of the meter. The plan focuses on potable water supplied in municipal distribution systems and does not include quantities of self-supplied water in per capita use calculations. Some water users have access to groundwater or surface water to provide a part or all of their water needs. In addition, alternative sources of water, such as graywater (untreated household waste water

POLICY ANALYSIS
FOR THE
PUBLIC AND PRIVATE
SECTORS
M.CUBED

Evaluation of East Bay Municipal Utility District's Pilot of WaterSmart Home Water Reports

Prepared by

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Thomas W. Chesnutt, Ph.D., CAP™
A&N Technical Services, Inc.

Prepared for

California Water Foundation
&
East Bay Municipal Utility District

December 2013

C_{it} is the cost incurred by the utility in year t from implementing program i, W_{it} is the water savings expected from program i in year t, T_i is the number of years savings from program i are expected to last, and d is the discount rate. When program costs and savings last just one year, the general equation for unit cost simplifies to the ratio of annual cost to annual savings, as shown in equation (9).

$$(9) \qquad UC_i = {}^{C_i}/_{W_i} \; when \; T_i = 1$$

Equation (9) is applicable for HWRs if we make the conservative assumption that savings occur in the year in which the HWRs are received and do not persist beyond this time.[42]

1. Average Water Savings Per Household

Results from the Pilot indicate a mean treatment effect for the Random Group Experiment in the range of 4.5 to 6.5% for households receiving paper reports by mail and in the range of 3.5 to 5.5% for households receiving electronic reports by email. Because the Random Group Experiment is representative of the distribution of households for the entire EBMUD service area, these ranges provide appropriate estimates of expected water savings if the program were extended to the entire service area.

Pre-treatment mean water use for households in the Random Group Experiment was about 261 gallons per day, or about 95,265 gallons per year. Average annual household water savings would therefore be expected to range between 4,287 and 6,192 gallons for households receiving paper reports and between 3,334 and 5,240 gallons for households receiving electronic reports. Converting to acre-feet, the expected savings would be 0.0132 to 0.0190 acre-feet for paper reports and 0.0102 to 0.0161 acre-feet for email reports.

[42] While this is a common assumption made for SNB efficiency programs (Allcott, 2011), there are of course plausible scenarios where savings might persist after a household stopped receiving HWRs, such as if the household had made significant changes to its landscape or had replaced toilets or other water using appliances as a result of getting HWRs. Thus the assumption is conservative in the sense that it is likely to impart an upward bias to the unit cost estimate.

OKLAHOMA CLEAN LAKES AND WATERSHEDS
23rd ANNUAL CONFERENCE AGENDA

SUCCESS STORY:

20 YEARS

of HYPOLIMNETIC OXYGENATION of

a RESERVOIR

Agenda

- EBMUD & Camanche Reservoir
- Water Quality Challenges
- Speece Cone Technology
- Effects of Hypolimnetic Oxygenation on Water Quality

East Bay MUD

East Bay Municipal Utility District in Oakland, CA

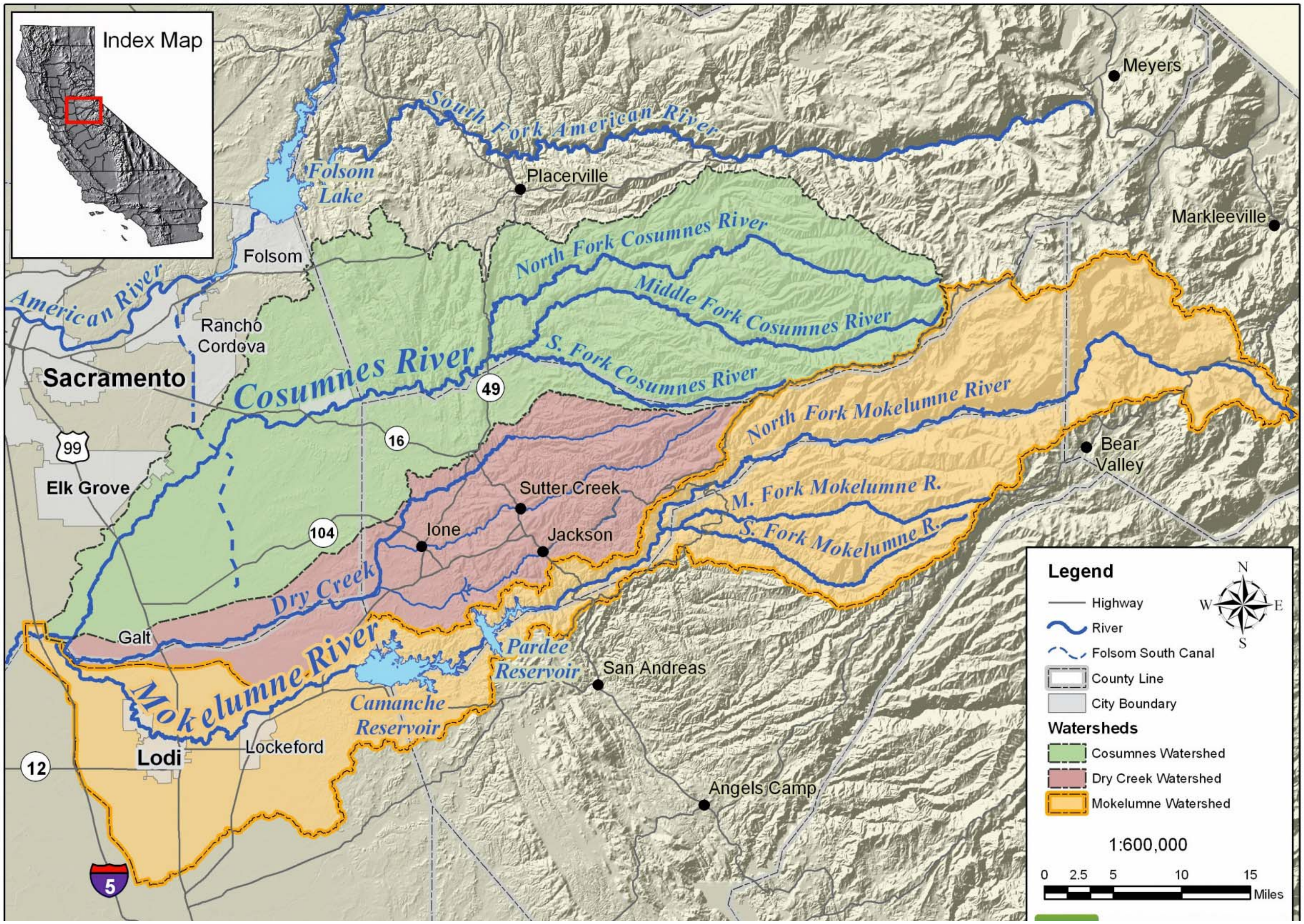
Supplies about
1.5 Million Residents
in the East Bay of San Francisco
with Drinking Water

East Bay MUD

In 1929 the Pardee Reservoir was built on the Mokelumne River

In 1964 the Camanche Reservoir was built 10 miles downstream of Pardee Reservoir

Lower Mokelumne River



Fishing in Lower Mokelumne River

The river supports several introduced and native fish:

- Chinook Salmon
- Steelhead Trout
- Largemouth Bass
- Stripers

ECO2

Lower Mokelumne River Fish Hatchery

Built in 1964 at the base of the Camanche Dam to mitigate the loss of spawning habitat caused by the reservoir.

Camanche Reservoir

Used for:
- Flood Control
- Flow Regulation for downstream Irrigation Purposes
- Protection of In-stream Resources,
- Recreation
- Hydroelectric Power Generation

417,000 acre-feet max. volume
135ft max. depth

Camanche Lake Characteristics

Eutrophic

Summer Stagnation → Stratification

Droughts in 1987 and 1990 caused fish kills downstream

Cause: Seasonal Hypolimnetic Anoxia
& H_2S Generation in Sediment

Project Goals

- Prevent Fish Kills
- Eliminate H_2S, Prevent Anaerobic Conditions
- Maintain Cold Water Fish Habitat
- No impact on EBMUD's water supply needs

Balance Fishery Needs with Water Supply Needs

Alternatives Evaluated

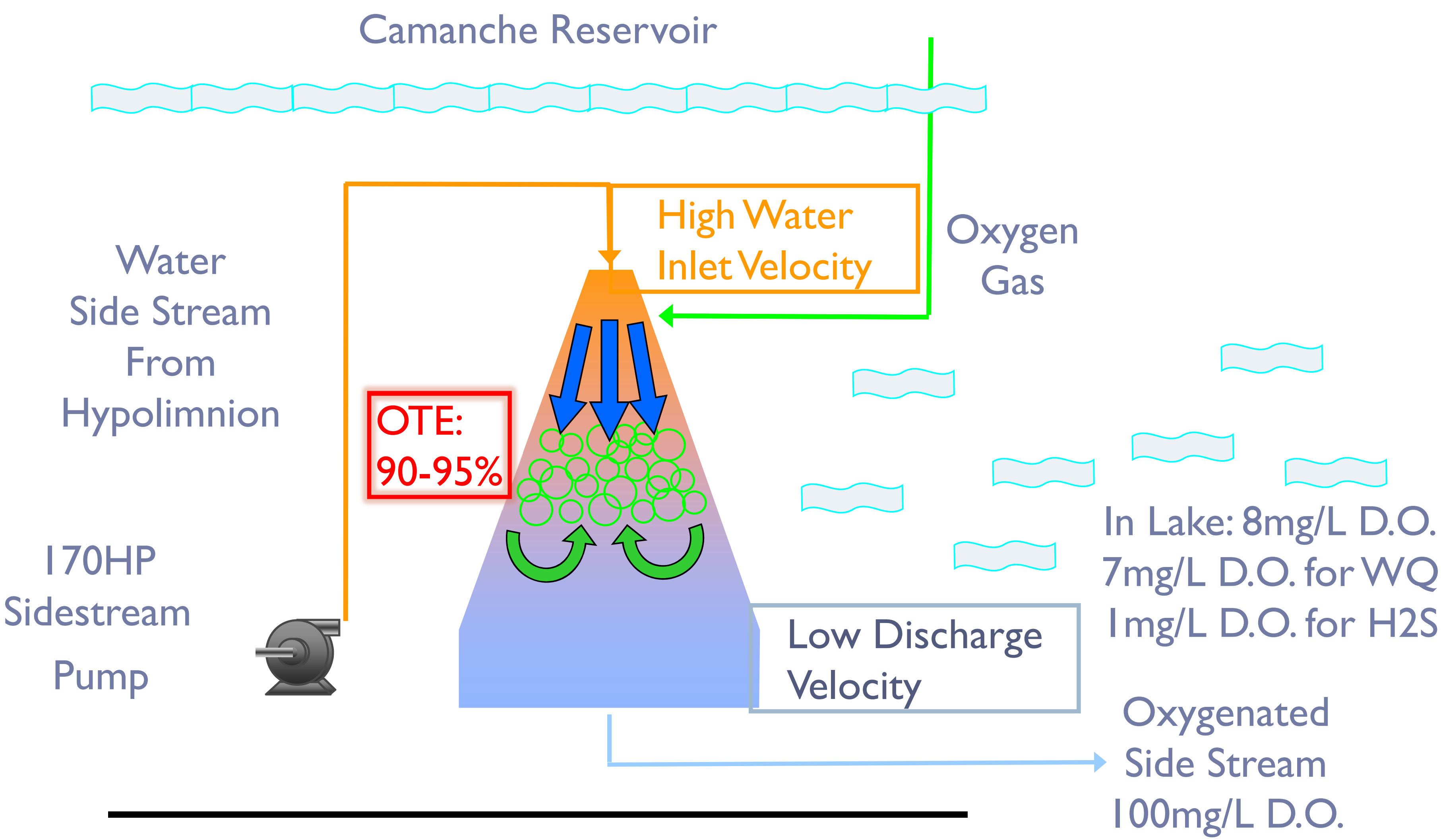
- Hypolimnetic Oxygenation

most cost-effective & feasible

- Multi-level intake structures
- Applying potassium permanganate plus aeration
- Diversion from Pardee Reservoir

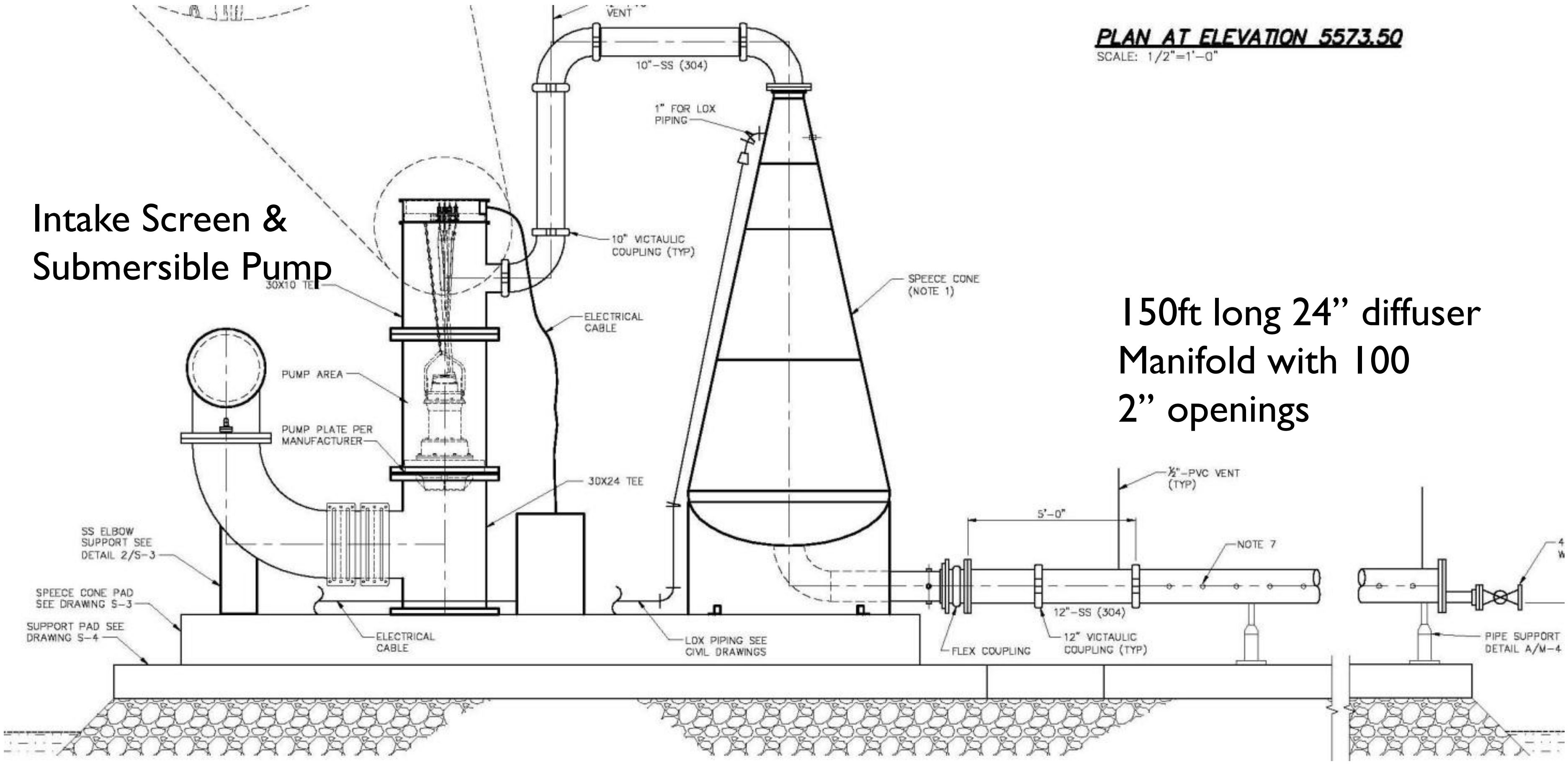
ECO2

"Speece Cone" Technology



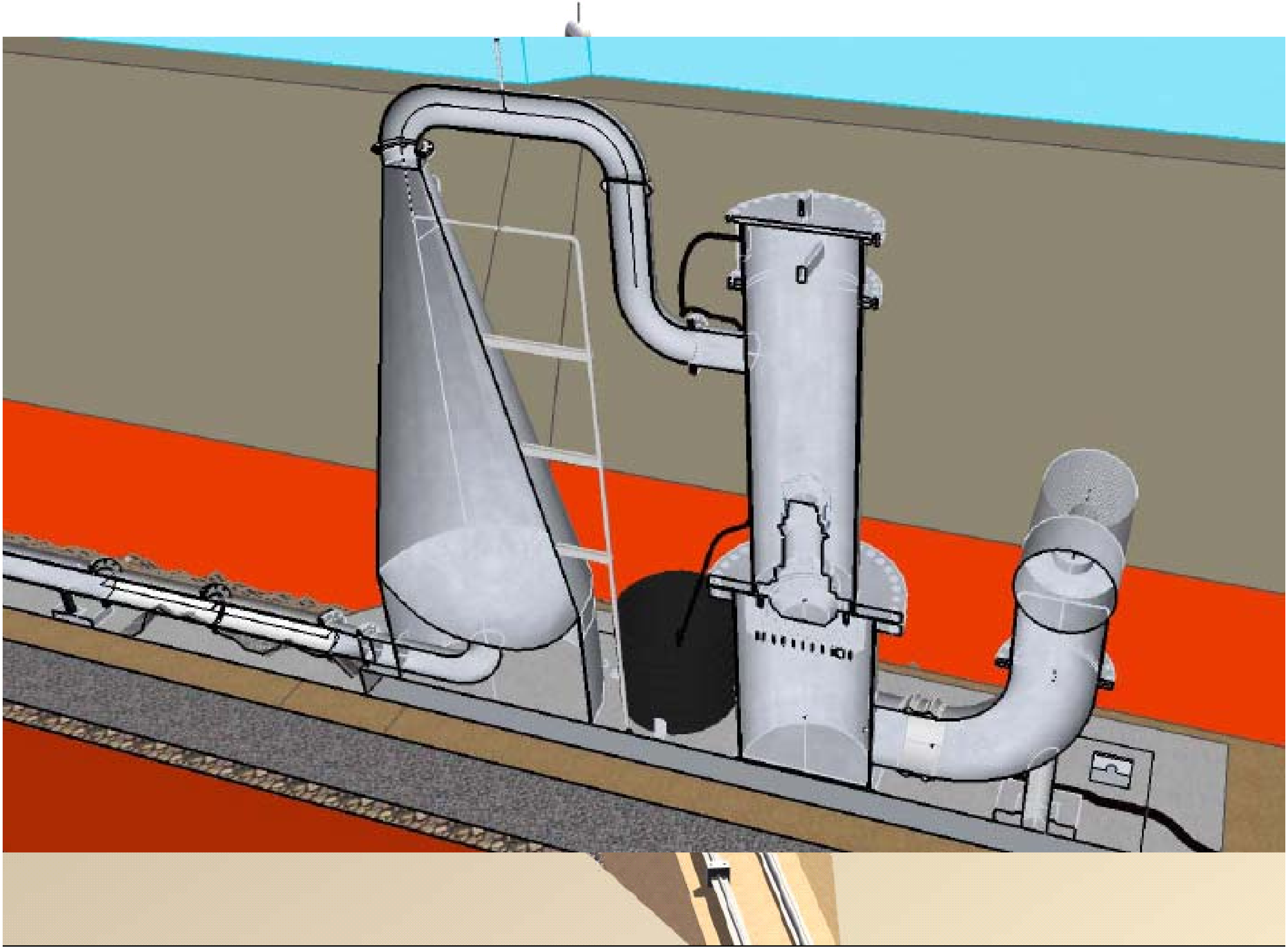
“Speece Cone” Detail

12ft diameter Speece Cone, 25ft high



Intake Screen & Submersible Pump

150ft long 24” diffuser Manifold with 100 2” openings



Speece Cone Installation, 1993

350ft from Dam @ approx. 100' depth

70-200scfm depending on depth 16,000 lb O_2 / day

Cone D.O. Discharge 100 mg/L

Effects on Water Quality

D.O. Increase 2m off the Bottom

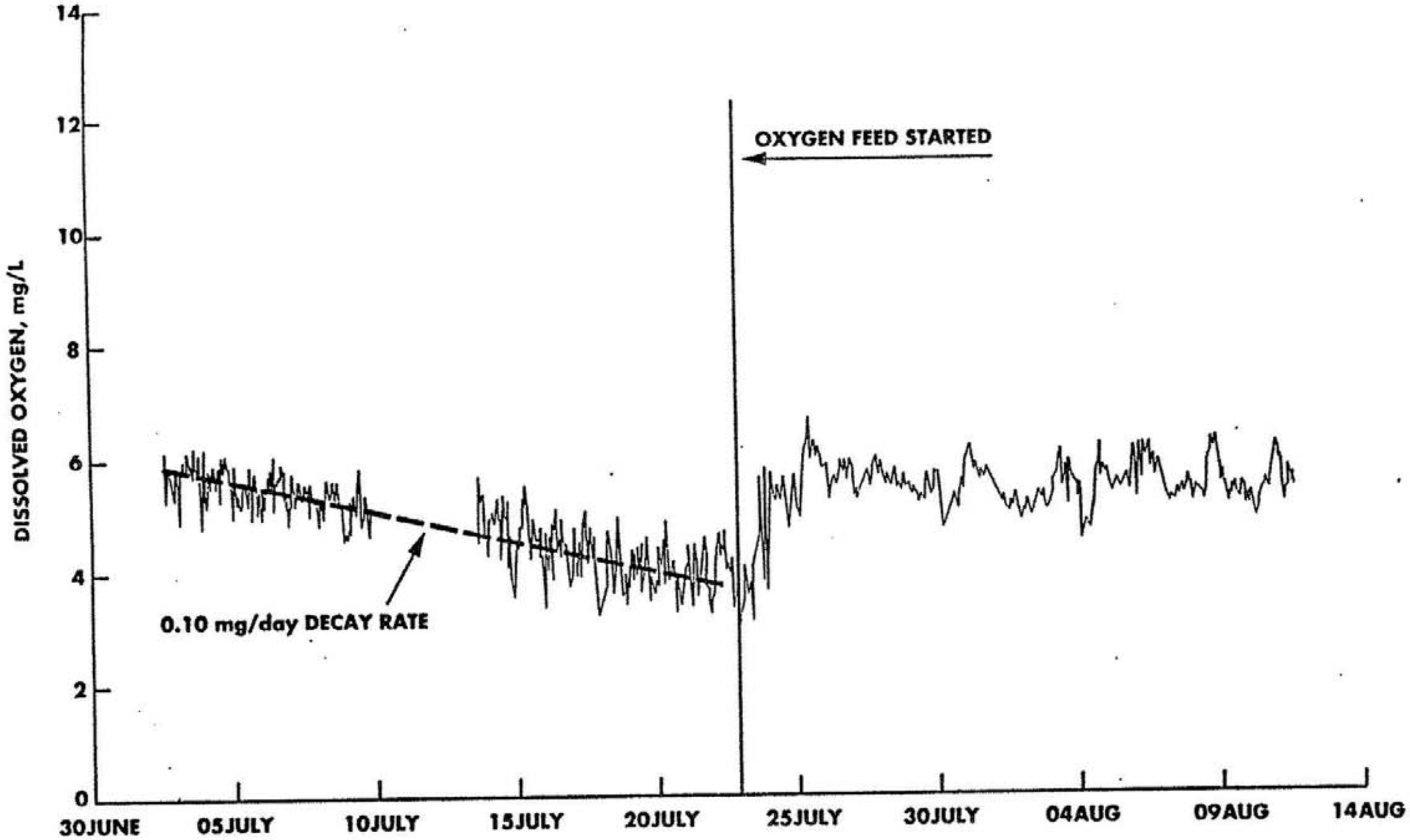
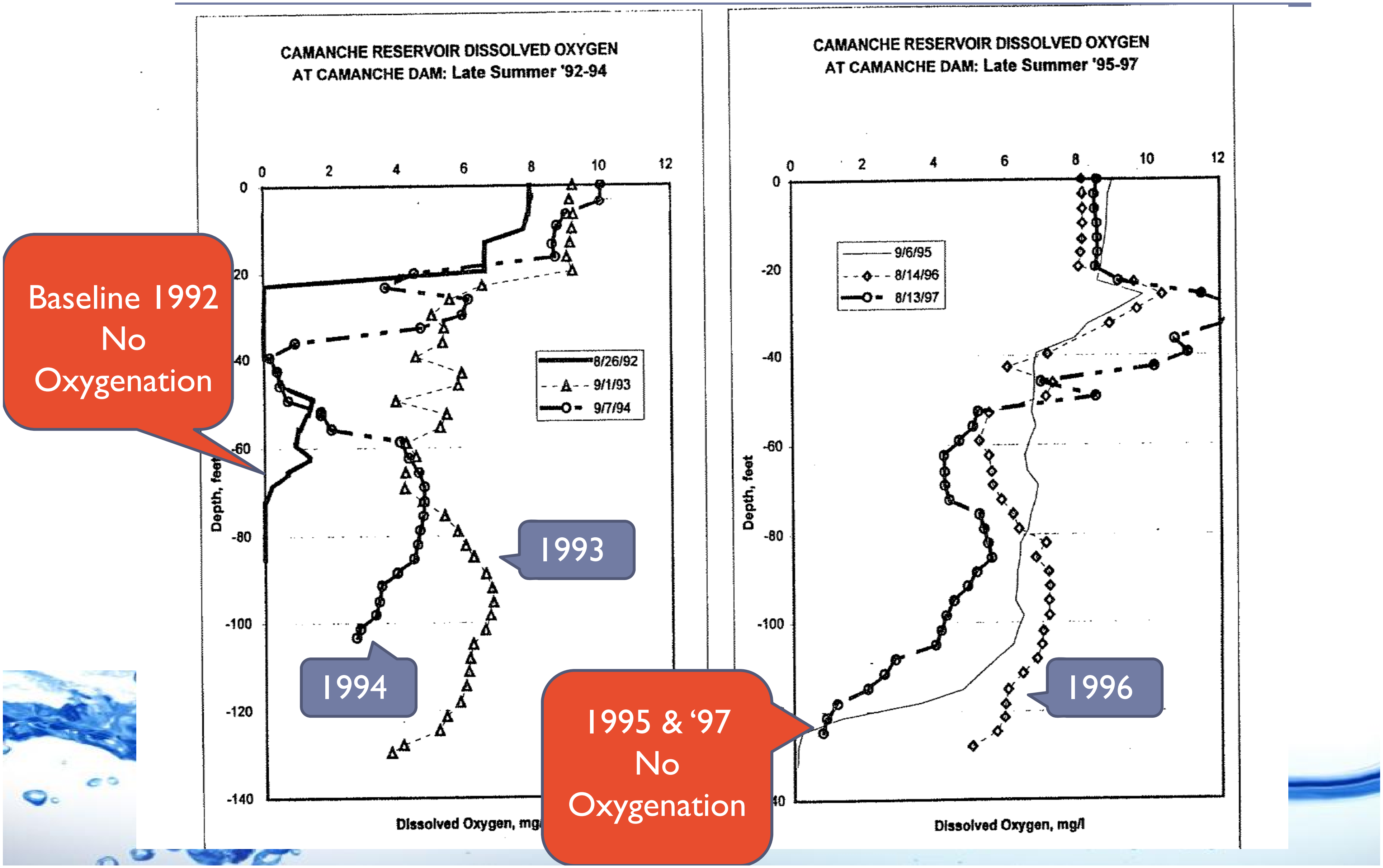


Figure 5 Initial effects of the oxygenation system on dissolved oxygen near the Speece Cone in 1993 (About 2m off the bottom).

D.O. Profile


CAMANCHE RESERVOIR DISSOLVED OXYGEN
AT CAMANCHE DAM: Late Summer '92-94
Depth, feet
Dissolved Oxygen, mg/l
8/26/92
9/1/93
9/7/94
Baseline 1992
No
Oxygenation
1993
1994
CAMANCHE RESERVOIR DISSOLVED OXYGEN
AT CAMANCHE DAM: Late Summer '95-97
9/6/95
8/14/96
8/13/97
Depth, feet
Dissolved Oxygen, mg/l
1995 & '97
No
Oxygenation
1996

Oxygen Plume

Oxygen plume extended > 10,000ft
After 40 days of oxygen feed

H_2S Oxidation requires a minimum of 24hours
→ Plume was large enough to provide this

Final plume extends **3 miles** into the reservoir

Nutrient Levels

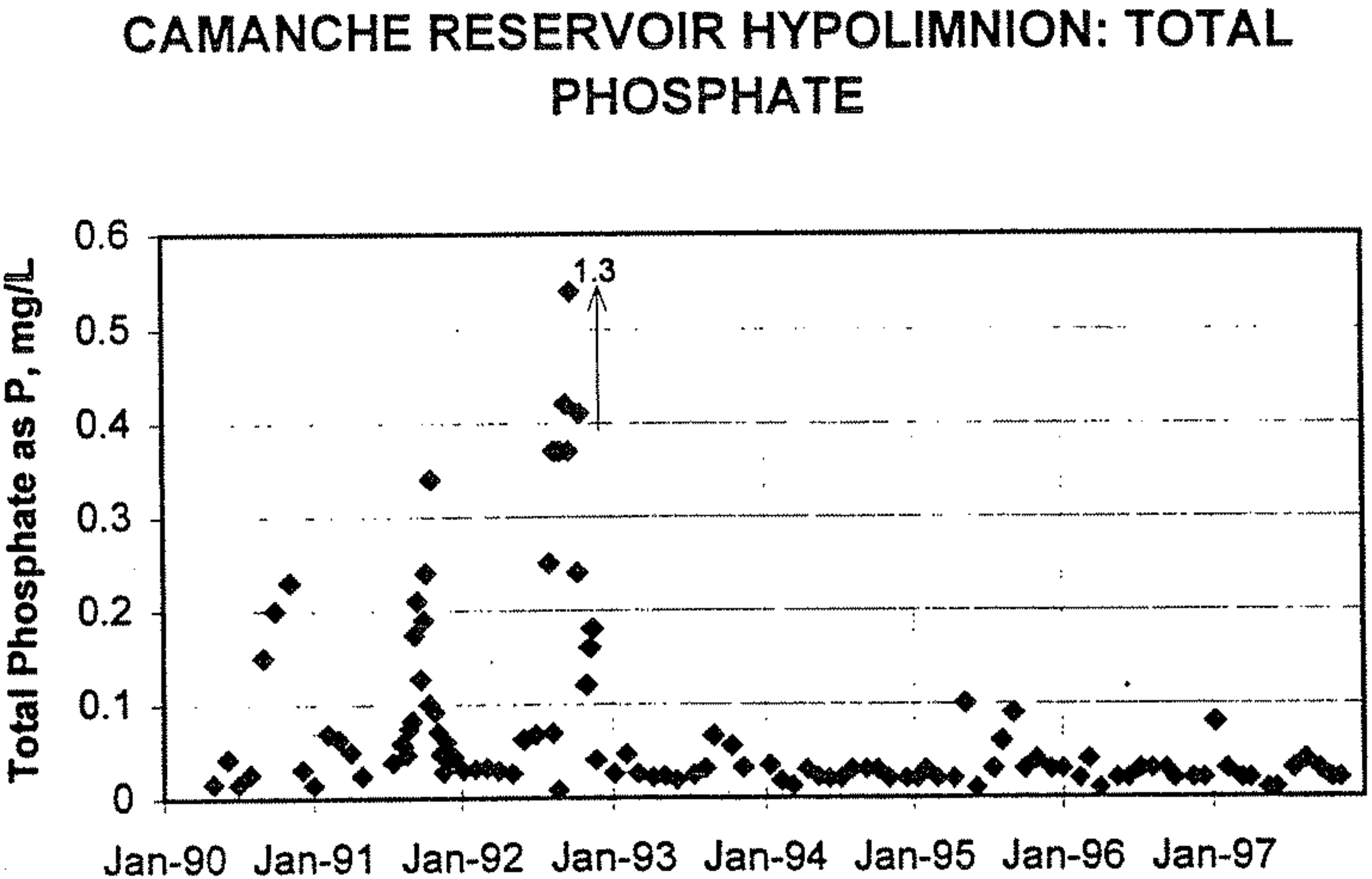
Oxygenation suppressed internal nutrient loading !

All nutrient levels decreased:

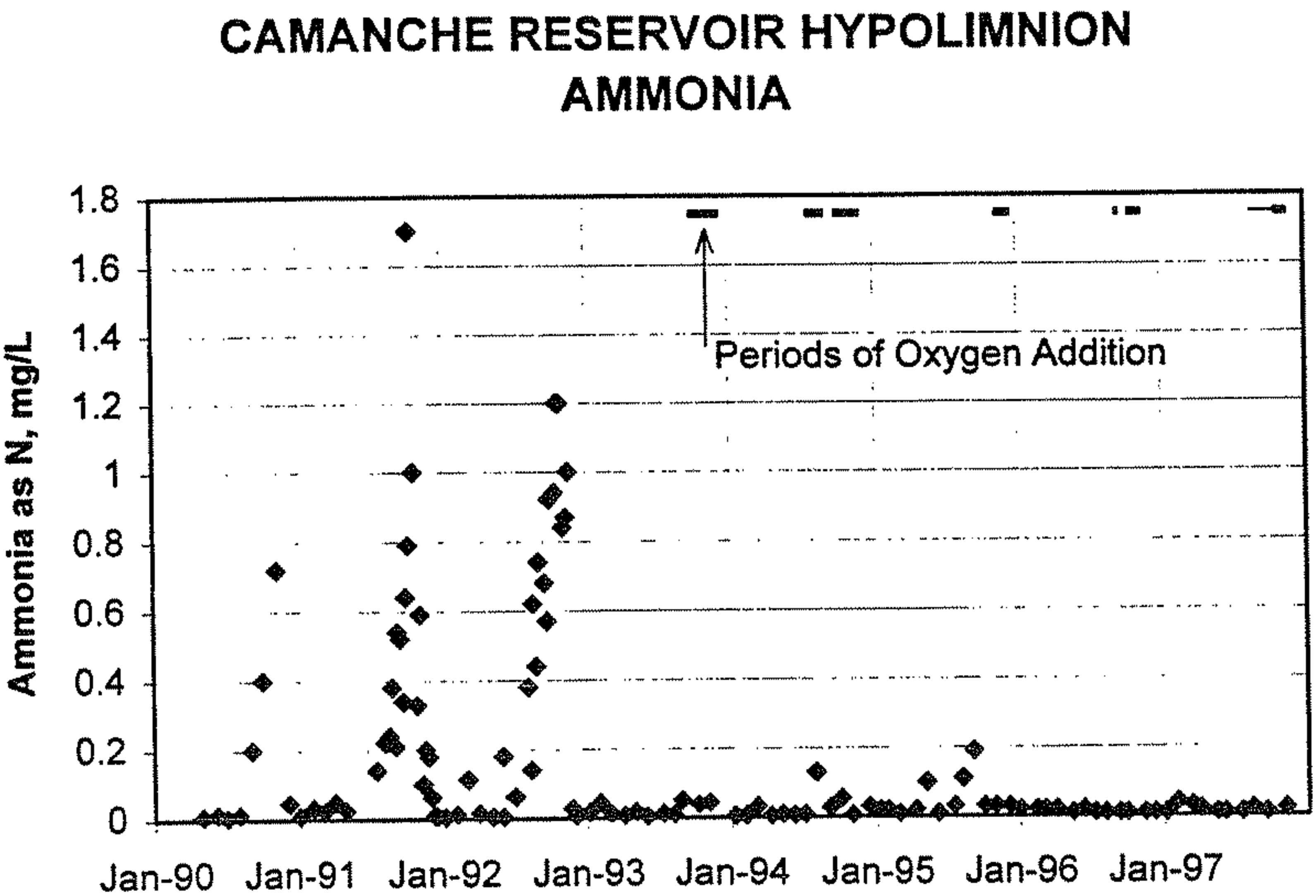
Soluble Phosphorous in the Hypolimnion declined three-fold from 123 to 38 µg P/L

Ammonia fell ~ 70 fold (706 to < 10 µg N/L)

Nutrient Levels - Phosphate



Nutrient Levels - Ammonia



Later Winter Surface Conditions

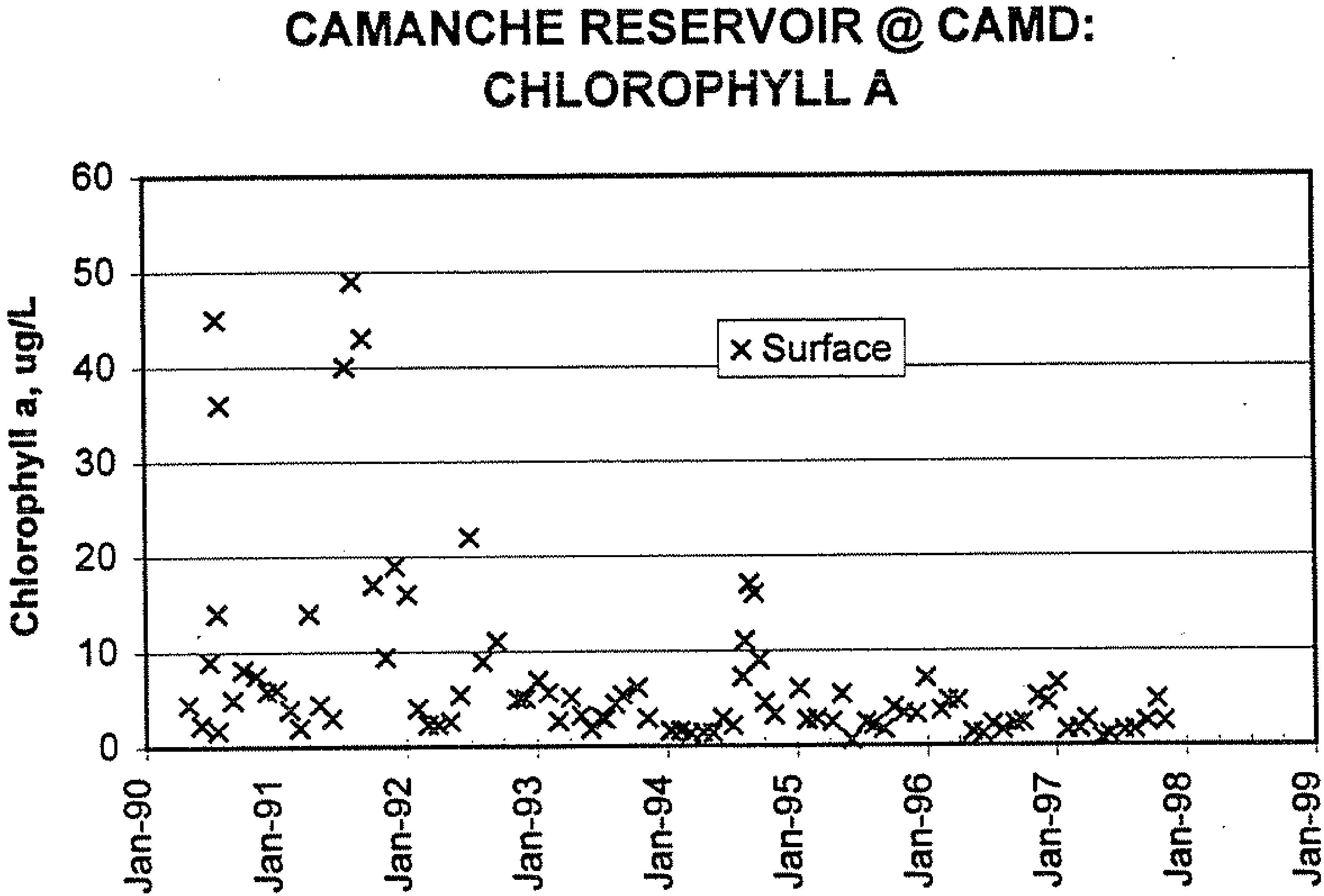
Nutrients available for Spring algae bloom:

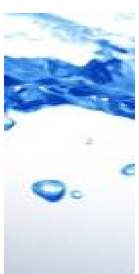
TP fell 58% (33 to 14 µg/L),

TIN was down 88% (190 to 23 µg/L)
(Relative to pre-HOS conditions)

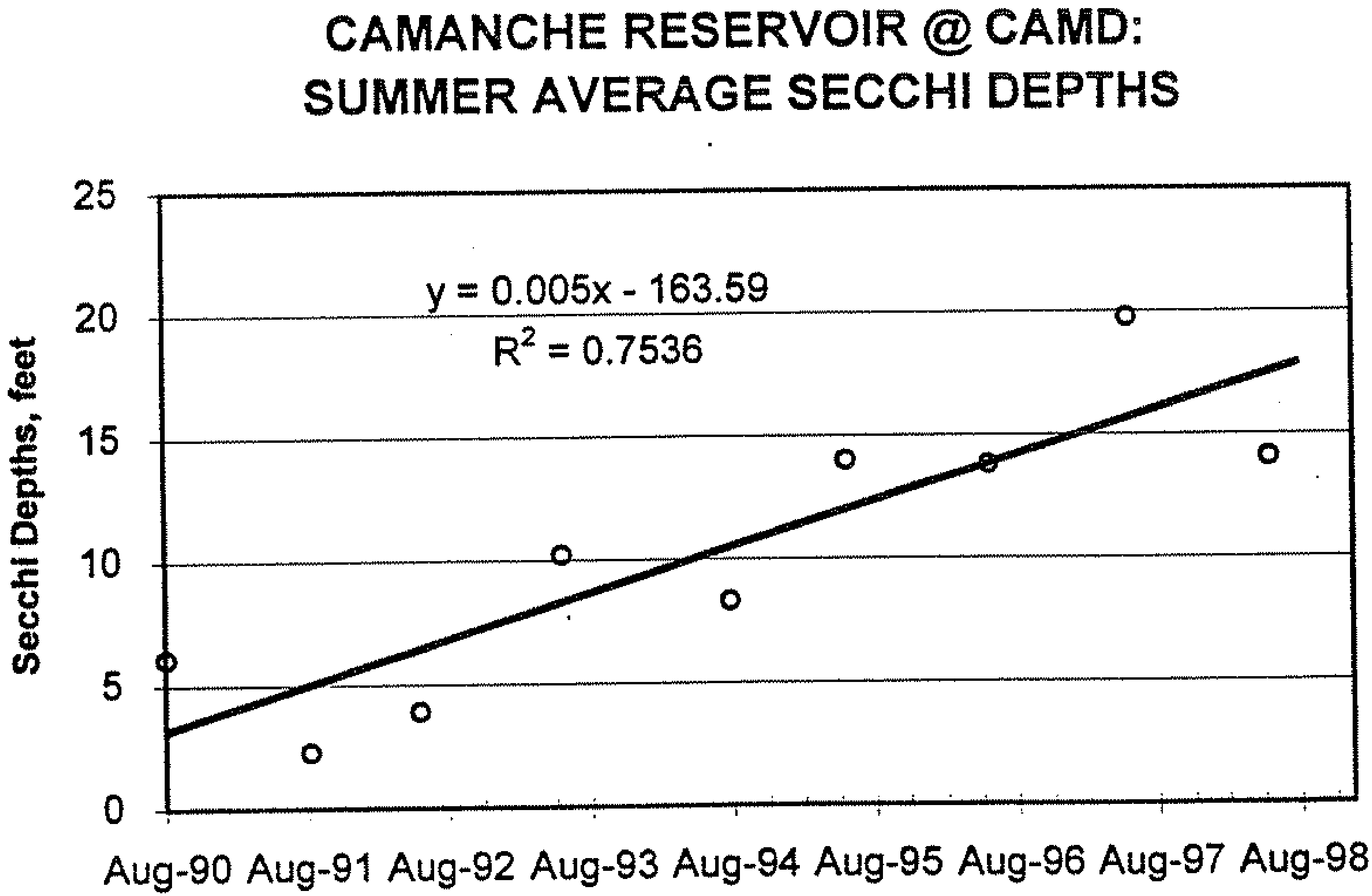
TIN : TP ratio fell from 6 to 1.6.

Chlorophyll A at the Surface





Secchi Depth



Algae Growth

After 12 years of Hypolimnetic Oxygenation:

Nitrate declined further (42 to 3 µg N/L)

Chlorophyll declined an additional 50% (88% overall).

Low inorganic nitrogen apparently forced algae to oligotrophic low levels despite the moderate TP values that indicate mesotrophy.

ECO$_2$

Algae Growth

Large blooms of the colonial blue-green algae, *Aphanizomenon* and *Anabaena*

declined by over 93% in the first five years and over 99% thereafter

The common colonial diatom *Fragilaria* dropped 71%.

Conclusion

20 Years of Hypolimnetic Oxygenation

Switched the trophic stage of Camanche Reservoir from

Eutrophic → Mesotrophic

No more H_2S / Fish Kills

Due to the cold, dense and horizontally flowing blanket of high D.O. concentrations above the bottom sediment.

Questions ?

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ECO Oxygen Technologies (ECO_2)

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imello@eco2tech.com

John A. Benson / EBMUD

San Diego's Water Sources: Assessing the Options

Sponsored and published by the **Equinox Center**
Researched and produced by the **Fermanian Business & Economic Institute**

July 2010

INTRODUCTION

Water is the world's most valuable commodity (*The Economist*, May 22nd-28th, 2010). As the pressures of a growing population clash with a limited resource and concerns about energy usage and the environment, it is vital that San Diego County plan strategically for its water future. Considering economic costs, energy intensity, legal, technical, social and other factors, what options should the region pursue to meet its future water demands? This report presents an analytical framework to address those questions and provides its conclusions on the optimal approach.

REPORT STRUCTURE AND METHODOLOGY

The first part of this report examines the current marginal costs of the different present or possible water sources for San Diego County. Projections for 2020 and 2030 are provided to shed light on how the relative costs of the various energy sources may change during the next ten and twenty years.

The second section analyzes the energy intensity of the different sources both to capture the impact on energy supplies and the magnitude of the "carbon footprint." The third section follows a less quantitative approach but analyzes the feasibility of the different water solutions based on legal, technical, safety, social, environmental, and other factors. The report ends with a section summarizing the rankings of the various water supply options according to these various criteria and concludes with recommendations for San Diego's water policy.

Estimates of marginal costs, energy intensity, and other factors were based on inputs from a number of different studies and water authorities from within San Diego County and elsewhere. (See Sources and References at the end of this report.) These estimates vary widely; the authors of this report used their best judgment based on the current state of knowledge in the field and projections of various economic and financial factors. Attention was paid to ensure that definitions of various concepts, such as marginal cost and energy intensity, were treated consistently across the different water source options. In most cases, estimates and forecasts are presented as ranges to portray the considerable uncertainty surrounding these issues and the different conditions that exist in the various local jurisdictions of San Diego County.

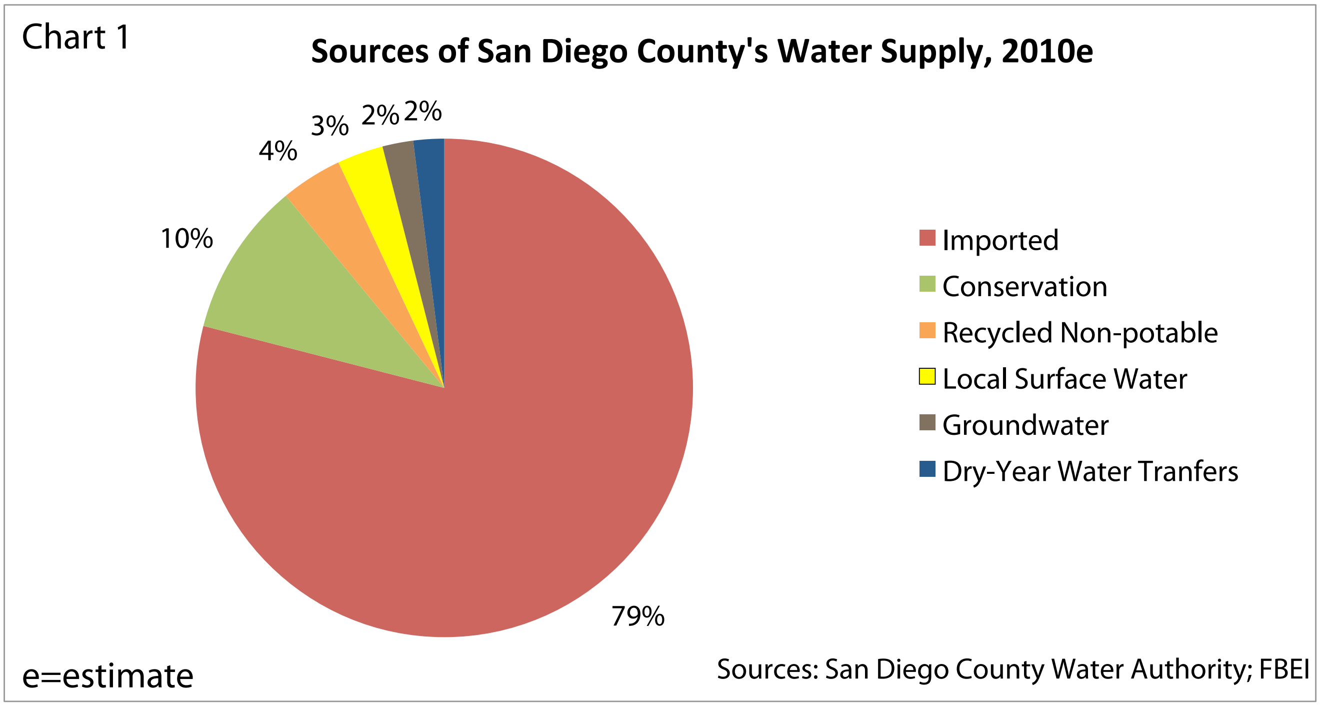
SAN DIEGO COUNTY'S WATER SUPPLY OPTIONS

Seven solutions to meet the water demands of San Diego County are examined.

Imported Water: Water from other areas can be imported into the region if available. Currently, San Diego County receives about 80% of its water supply from this source. (See Chart 1.) In 1991, 95% of the region's water was imported. About two-thirds of San Diego County's current imports come from the Sacramento-San Joaquin River Delta; the remainder comes from the Colorado River.

Surface Water: Surface water refers to water accumulated in local streams, rivers, and lakes from precipitation in various watersheds throughout San Diego County. It will represent about 3% of the region's total water supply in 2010. Drought conditions in recent years have reduced the contribution of surface water from a more typical 5% share. Two percent of this year's total water consumption will represent "dry-year transfers," refering to water brought in from substitute sources outside the region.

Groundwater: Groundwater is water located beneath the ground surface in soil pore spaces and in the fractures of rock formations. Some of it only requires that certain minerals be extracted to obtain potable water of desired standards, while other is brackish, requiring desalination. Groundwater currently accounts for about 2% of San Diego County's water supply.



Desalinated Sea Water: Potable water can be extracted from sea water as implemented in several facilities in North America. However, this is currently not a water source in this region. In San Diego County, a water desalination plant was approved in 2009 for Carlsbad, with completion set for 2012.

Recycled Water, Non-Potable: Wastewater can be recycled, partially treated, and used for landscaping, industrial, and other uses. Currently, San Diego County relies on this source for about 4% of its total water supply.

Recycled Water, Potable: Recycled water can be treated to potable levels, although this is currently not being done in San Diego County. With advanced treatment, recycled water can be added to existing water supplies in either underground basins ("goundwater recharge") or to open reservoirs. This is referred to as Indirect Potable Reuse, or IPR.

Conservation: Conservation, achieved by using less water or by using water more efficiently, is another option to meet San Diego County's water challenge. Currently, conservation has been able to replace about 10% of the region's potential demand.

WATER MARGINAL COSTS

This section analyzes the marginal costs of the seven alternative water solutions as of 2010. (See Table 1a and Chart 2.) Marginal cost is the cost of producing an additional acre foot of water (the volume of one acre of water that is one foot deep) and includes both operating costs and amortized fixed capital costs. Subsidies are not included. Operating costs encompass various expenses involved in the extraction, treatment, transportation, and distribution of water. The allocation of fixed capital costs represents both the investment in infrastructure and financing costs over time. The ranges indicated below allow for significant variation that may exist in different areas of San Diego County arising from, among other factors, variations in distance from water sources and treatment facilities.

Imported Water: Imported water currently carries a marginal cost with a range of $875 to $975 per acre foot. This reflects a marginal cost of about $535 per acre foot for untreated water from different sources, $215 for treatment, and $175 for other expenses, including transportation, storage, customer service, and the amortized costs of expanding conveyance capacity. The total represents primarily the wholesale cost the Metropolitan Water District charges the San Diego County Water Authority, which in turn is passed on to the 24 water districts in the San Diego region.

Table 1a

Marginal Costs and Energy Intensity of San Diego County's Water Alternatives, 2010e

		Imported	Surface Water	Groundwater	Desalinated	Recycled Non-potable	Recycled Potable	Conservation
Marginal Cost	low	875	400	375	1,800	1,600	1,200	150
($/acre foot)	high	975	800	1,100	2,800	2,600	1,800	1,000
Energy Intensity	low	2,000	500	400	4,100	600	1,500	negligible
(kWh/acre foot)	high	3,300	1,000	1,200	5,100	1,000	2,000	

e=estimated range

Source: FBEI

Surface Water: Surface water has a marginal cost estimated to range between $400 and $800 per acre foot. This represents treatment, pumping, distribution, and reservoir costs. Reservoir expenses encompass payments to the state for river usage rights and dam safety, brush clearance, habitat restoration, dikes to prevent contamination from diesel fuel and other elements, and dam improvements over time. The low and high ends of the range represent primarily the differences between reservoir water levels in any given year, with pumping costs per unit considerably higher when reservoir levels are low.

Groundwater: Groundwater has a marginal cost that generally ranges from about $375 to $1,100 per acre foot. Much of the cost and variation reflect differences in required treatment methods to bring the water to potable standards. Fresh water may only need to be disinfected (usually with chloramines) and can have a lower cost than surface water which may require more treatment. This is the case for some of the less expensive water supply available, for example, from the Sweetwater Authority. Demineralization, however, may be required to remove iron and manganese. Where water is brackish, reverse osmosis is necessary along with disposal costs of the brine. Distribution and transportation expense of the water to and from the treatment facility also adds both to the total cost and its variability across the region.

Desalinated Sea Water: Desalinated sea water has a marginal cost ranging from about $1,800 to $2,800 per acre foot. Although advances in technology have helped reduce the cost of desalination over the past 15 years, the high energy requirements of this source make it the most expensive of the seven energy alternatives investigated in this report. A significant part of the cost and variability in costs of this option reflects the distances that sea water and potable water must be moved. For example, if a desalination plant is connected with a power plant, it can use the outflow from the once-through cooling system of the power plant to dilute the salty brine from the desalination plant before it is discharged back to the ocean. Where dilutants for the brine need to be brought to the plant, costs are substantially higher. It should be noted that California's State Water Resources Control Board voted in May 2010 to phase out once-through cooling systems, where ocean water is cycled through the plant and then returned to the sea, because of envirnomental concerns.

The choice of intake systems is also significant in terms of both the potential environmental impact and marginal cost. Large sea water desalination plants have typically used open sea, surface water intake systems, which can trap marine organisms in the intake screens. Subsurface intake systems, involving horizontal or vertical beach wells, infiltration galleries, or seabed filtration, can eliminate much of the impact on marine

SWEETWATER AUTHORITY BRACKISH GROUNDWATER DESALINATION PROJECT

Appendices

Prepared for
Sweetwater Authority

July 2009

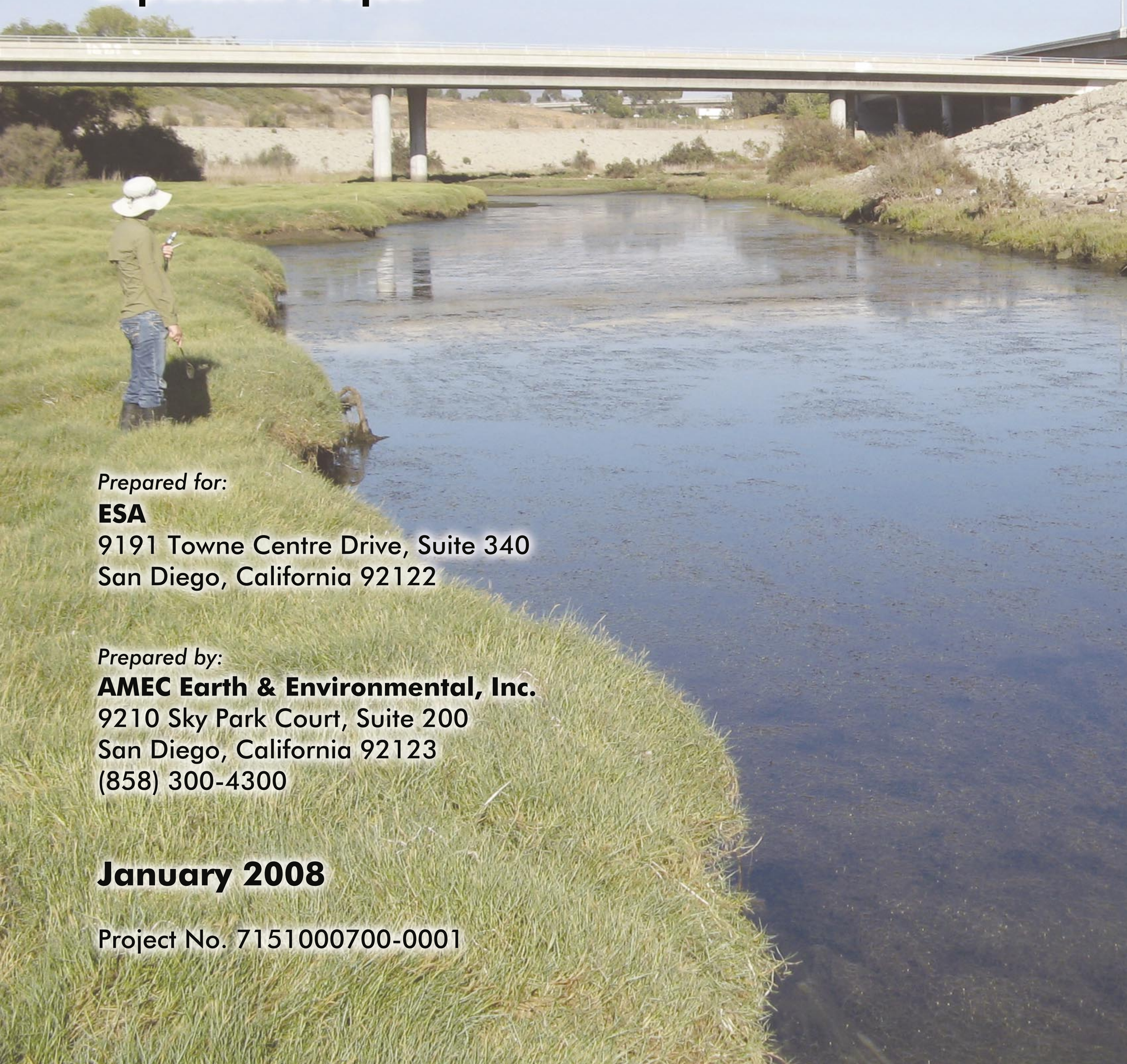
Appendix E
Biological Resource Report

ESA

amec

Draft Final

Biological Resources Background Report for the Phase II Richard A. Reynolds Desalination Facility Expansion Project



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January 2008

Project No. 7151000700-0001

DRAFT FINAL
BIOLOGICAL RESOURCES BACKGROUND REPORT
FOR THE
PHASE II RICHARD A. REYNOLDS DESALINATION FACILITY
EXPANSION PROJECT

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observed from October through May (Unitt 1984). Peregrines are primarily found near large bodies of water where they feed on waterbirds. During winter, peregrine falcons have been observed at the Tijuana River Valley, San Diego Bay, San Diego River Valley, Mission Bay Park, Batiquitos Lagoon, Lake Hodges, San Pasqual Valley, San Vicente Reservoir, Mount Israel area, and Sweetwater Reservoir (Ogden 1995). This species continues to be threatened by pesticide poisoning on wintering grounds, low breeding densities and reproductive isolation, lack of gene flow between populations, and reduced availability of foraging habitats and avian prey (Finch 1992).

Peregrine falcons have been documented flying over and foraging along the Lower Sweetwater River Channel within the vicinity of the project area (Figure 4). Peregrine falcons are scarce year round residents and they currently range over the entire coastal area of San Diego from the US/Mexico Border. Peregrine falcons typically build nests high on cliffs, tall trees; however, nests have been observed on tall buildings and bridges.

Caspian Tern (*Hydroprogne* [*Sterna*] *caspia*)

Federal Status: None
State Status: Species of Special Concern (nesting colony)

Caspian tern is a common resident of lakes, ponds, and bays of San Diego. It is the world's largest tern. Adult birds have black legs, and a long thick red-orange bill with a small black tip. They have a white head with a black cap and white neck, belly and tail. They feed mainly on fish, which they dive for, hovering high over the water and then plunging. They also occasionally eat large insects and the young and eggs of other birds. A breeding colony has been reported at the south end of San Diego Bay (Unitt 1984).

The Lower Sweetwater River Channel may provide suitable foraging habitat for the Caspian tern during high tide; however no breeding habitat is located within the project area.

Least Bittern (*Ixobrychus exilis*)

Federal Status: Endangered
State Status: Endangered

Least bittern inhabits fresh and brackish water marshes, usually near open water sources, and desert riparian habitats. Most of the California population winters in Mexico and migrates in the spring and the summer to scattered locations in the western U. S. including the Colorado River, Salton Sea and coastal lowlands of Southern California where some populations are resident. Nesting occurs in dense emergent vegetation such as cattails or tules over water and eggs are laid in mid-April to July (Zeiner et al 1990). The primary threats to the species are habitat reduction and urbanization. In San Diego County least bitterns have been reported from Mission Valley, San Diego River mouth, Tijuana River mouth, San Luis Rey River, San Pasqual Valley, Batiquitos and San Elijo Lagoon and Guajome Lake (Unitt 1984).

The least bittern has historically been observed within the Lower Sweetwater River Channel near the Bonita Golf Course (PSBS 1996). Suitable nesting and foraging habitat occurs upstream of the 2nd Avenue Bridge.

Loggerhead Shrike (*Lanius ludovicianus*)
Federal Status: None
State Status: Species of Special Concern

The loggerhead shrike is the only member of the shrike family endemic to North America. These birds have a large hooked bill; the head and back are grey with white underparts. They have black wings and tail, with white patches on the wings and white on the outer tail feather. Their breeding habitat is semi-open areas in southern Ontario, Quebec and Alberta, south to Mexico. Nesting habitat consists of dense trees or shrubs. They are permanent residents in the southern part of their range; northern birds migrate further south. Loggerhead shrike mainly eat large insects, also rodents and small birds.

The loggerhead shrike has historically been observed within the Lower Sweetwater River Channel near the Plaza Bonita Shopping Mall (Figure 4). Suitable nesting and foraging habitat occurs within the project area.

California Gull (*Larus californicus*)
Federal Status: None
State Status: Species of Special Concern

The California gull is a common winter gull of the West Coast, It can be found in parking lots and lakes from California to Manitoba. The California gull it breeds inland across large areas of the West. on islands in lakes or rivers. It forages along lakes, bogs, farm fields, lawns, pastures, sagebrush, garbage dumps, feedlots, parking lots, ocean beaches, and open water.

The California gull has potential to forage within the project area, however nesting habitat does not occur in the vicinity.

California Black Rail (*Laterallus jamaicensis*)
Federal Status: None
State Status: Threatened

Measuring only about the size of a sparrow, the diminutive California black rail is the smallest North American rail. It inhabits freshwater marshes, wet meadow and shallow margins of saltwater marshes bordering larger bays. Dense vegetation is needed for nesting habitat.

The California black rail is known to historically occur within the Sweetwater Marsh National Wildlife Refuge located west of the project area. Potential foraging and nesting habitat occurs within the Lower Sweetwater Channel portions of the project area.

Long-Billed Curlew (*Numenius americanus*)
Federal Status: Migratory Bird Treaty Act; Bird of Conservation Concern
State Status: Species of Special Concern

Long-billed curlews are the largest North American shorebird. They have a long, decurved bill and a buffy-cinnamon colored plumage. The birds feed by probing the mud with their long bills for invertebrates such as worms. Long-billed Curlews migrate along the Pacific Coast and throughout the central U.S. The California breeding population is relatively small and restricted to the northeastern region of the state. Long-billed curlew is a winter visitor and a spring and fall migrant to San Diego. Its preferred habitats are tidal mudflats and saltmarshes on the coast, and prairies and agricultural fields inland. It has been reported from the mouths of the San Diego and Tijuana Rivers, as well as San Diego and Mission bays (Unitt 1984).

Long-billed curlews are frequent wintering visitors to the mudflat and saltwater marsh habitats of the Lower Sweetwater River Channel. No breeding habitat is present within the project area.

Black-Crowned Night (*Nycticorax nycticorax*)

Federal Status: None
State Status: Species of Special Concern

Black-crowned night heron is widely distributed throughout the Western Hemisphere, Eurasia, and Africa. In California, it is an uncommon yearlong resident of foothills and lowlands (Zeiner et al. 1990). Black-crowned night heron is common to very common in the fall and winter visitor and uncommon to fairly common in spring and summer (Unitt 1984). It nests in significant numbers at a few locations (e.g., Buena Vista Lagoon, San Diego River, Point Loma, North Island Naval Air Station, and Coronado) although the breeding distribution is not well documented (Unitt 1984). It feeds along the edges of fresh and saline emergent wetlands, and nests and roosts in trees with dense foliage or in dense emergent wetlands (Zeiner et al. 1990).

Black crowned night heron has been observed foraging within the Lower Sweetwater Channel. Potential roosting habitat additionally occurs near the Lower Sweetwater Channel, within the large woodland trees that occur adjacent to the KOA campground.

Osprey (*Pandion haliaetus*)
Federal Status: None
State Status: Species of Special Concern (nesting)

Ospreys are medium-large fish-eating bird of prey. They are common fall and winter visitors to San Diego County. Osprey are often found near large bodies of water such as Agua Hedionda Lagoon, Lake Hodges, Santee Lakes and San Diego Bay (Unitt 1986). Breeding occurs near freshwater lakes, and sometimes on coastal brackish waters. The nest is a large heap of sticks, driftwood and seaweed built in forks of trees, rocky outcrops, telephone poles, artificial platforms or offshore islets.

An osprey was observed foraging and flying over the Lower Sweetwater River Channel during AMEC's (2007) monitoring studies. However, no breeding habitat has been identified within the project area.

Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*)
Federal Status: Candidate
State Status: Endangered

Belding's savannah sparrows are a resident subspecies restricted to coastal marshes dominated by pickleweed (*Salicornia virginica*) in Southern California and northwestern Baja California Norte, Mexico. This species shows a particular affinity for the upper littoral region of the marsh, and nests preferentially in pickleweed. Nesting season extends from January to August. Nests must be above the highest tide line in spring as the eggs are not resistant to inundation.

This species is locally abundant within the Sweetwater Marsh National Wildlife Preserve and the Paradise Creek Marsh located west of the I-5 in the City of Chula Vista (Figure 4). The saltwater marsh habitat located along the Sweetwater River Channel within the project study area has potential to support this species.

Large-Billed Savannah Sparrow (*Passerculus sandwichensis rostratus*)
Federal Status: None
State Status: Species of Special Concern

This is one of eight subspecies of savannah sparrow that has been recorded in California (Grinnell and Miller 1944). Historically, this subspecies was patchily distributed as a winter visitor around Morro Bay in San Luis Obispo County, southward to northwestern Baja California Norte, Mexico, and inland to the Salton Sea, Riverside and Imperial counties, from breeding grounds around the mouth of the Colorado River (Grinnell and Miller 1944). It occurs in strand line habitat along beaches and in saltmarshes with pickleweed and beach grasses. Large-billed savannah sparrows were historically more common winter visitor to coastal saltmarshes, and beaches throughout Southern California (Garrett and Dunn 1981). It is now a rare winter visitor to beaches and saltmarshes in the project region.

No historic occurrences of this species have been recorded from the area. However, the saltmarsh habitat located within the project area has potential to support this species.

California Brown Pelican (*Pelecanus occidentalis californicus*)
Federal Status: None
State Status: Species of Special Concern

The California brown pelican is a large, grayish-brown bird with a long, pouched bill. The adult has a white head and dark body, immature birds are dark with a white belly. Brown pelicans nest from the Channel Islands of southern California southward along the Baja California coast and in the Gulf of California to coastal southern Mexico. They build nests of sticks on the ground, typically on islands or offshore rocks. The only breeding population in United States waters is the Southern California Bight (SCB) population, which consists of breeding birds on the Channel Islands and several islands off Baja California: West Anacapa Island, Santa Barbara Island, Isla Coronado Medio, and Isla Coronado Norte. Between breeding seasons, pelicans from other populations join SCB birds in wandering along the west coast of North America as far north as British Columbia. Disease outbreaks affecting local populations of pelicans have been known as an endangerment factor to the species (CDFG 2007).

The California brown pelican is a frequently found foraging along the Lower Sweetwater River Channel within the project study area (PSBS 1996). However, the project area does not support breeding habitat for this species.

Double-Crested Cormorant (*Phalacrocorax auritus*)
Federal Status: None
State Status: Species of Special Concern

The double-crested cormorant formerly bred on coastal cliffs and offshore islands along the coast from Marin County south to La Jolla, San Diego County, and in the interior in northeastern California, the Sacramento Valley, the San Joaquin Valley, and the Salton Sea (Grinnell and

Miller 1944). Now it has disappeared as a breeding bird from the Sacramento and San Joaquin valleys and the Salton Sea. Coastal breeding populations have also declined in southern and central California. This species no longer nests in San Diego County. Habitat destruction and human disturbance, particularly from boating (CDFG 2007), appear to be the main causes for the decline of the inland populations. The Channel Islands' populations have declined due to eggshell thinning from DDE contamination and to some extent human disturbance at nest sites (Gress et al. 1973).

The double-crested cormorant has been documented within the Lower Sweetwater River Channel (Figure 4); however, the project area does not support breeding habitat for this species

White-Faced Ibis (*Plegadis chihi*)
Federal Status: None
State Status: Species of Special Concern

The white-faced ibis is a medium-sized wading bird and is iridescent bronze-brown overall with a thin band of white feathers around its bare red face; it has a long, down curved bill. This species breeds colonially in marshes, usually nesting in bushes or low trees. Its breeding range extends from the western US south through Mexico, as well as from southeastern Brazil and southeastern Bolivia south to central Argentina, and along the coast of central Chile. Its winter range extends from southern California and Louisiana south to include the rest of its breeding range. Diet consists of crayfish and other invertebrates, as well as frogs and fish. Coastal birds forage in salt marshes and include crabs in diet; it feeds by probing mud with its long bill.

The white-faced ibis has historically been observed foraging within the Lower Sweetwater River (PSBS 1996) and is likely to occur within the project area.

Light-Footed Clapper Rail (*Rallus longirostris levipes*)
Federal Status: Endangered
State Status: Endangered, fully protected

Light-footed clapper rail (clapper rail) is a hen-sized marsh bird that is long-legged and long-toed. It is about 36 cm long and has long, slightly down-curved beak and a short, upturned tail. Coloring is same for both sexes. Their cinnamon breast contrast with the streaked plumage of its grayish brown back and gray and white barred flanks.

Clapper rails are uncommon and very localized residents in San Diego County (Unitt 1989). They are found in saltwater marshes dominated by cordgrass and pickleweed which they use for nesting and escape cover. Clapper rails require a healthy tidal saltmarsh environment; abundant food in the form of crabs, clams, and related invertebrates; and tidal flats interspersed with saltmarsh vegetation as a feeding area. These conditions occur in marshes with an adequate tidal flow to preserve normal salinity ranges and prevent stagnation (USFWS 1980). The clapper rail's nest is a loose arrangement of plant stems on high ground, well concealed in dense vegetation, usually cordgrass. Nesting occurs from mid-March to 1 July. Most egg-laying occurs from early April to early May, with 3 to 11 eggs per clutch, usually 5 to 9.

This rail is endangered because its range is restricted to the relatively small remnants of healthy marsh habitat that remain in disjunct patches along the coast. About 55 percent of the state population is found in Upper Newport Bay Ecological Reserve in Orange County. The second largest population is found in the Tijuana National Wildlife Refuge. Other smaller subpopulations have been identified within marshes in the Kendall-Frost Mission Bay Marsh Reserve, San Diego River Flood Control Channel, San Elijo Lagoon, South Bay Marine Reserve, and Sweetwater Marsh, all in San Diego County. The rails also reside in Seal Beach National Wildlife Refuge in Orange County and in Mugu Lagoon in Ventura County.

Clapper rails are known to occur from several sites located along to the Sweetwater River Channel (CNDDB 2007). Monitoring efforts that have been conducted by the Authority since 1994 include an approximately 1-mile stretch of the Lower Sweetwater River from Plaza Bonita Road downstream to just past the 2nd Avenue Bridge. One pair of "*duetting*" light-footed clapper rails and one single "*advertising*" female were detected during three surveys conducted in 2007 (KBS 2006). In 2006, three pairs of "duetting" light-footed clapper rails and one single advertising male were detected (KBS 2006).

California Least Tern (*Sternula antillarum browni*)
Federal Status: Endangered
State Status: Endangered (nesting colony)

California least tern breeds from San Francisco Bay south to Baja California. In San Diego County, it is a fairly common summer resident from early April to the end of September (Unitt 1984). This small migratory tern nests colonially on undisturbed, sparsely vegetated, flat areas with loose, sandy substrate. Human disturbance has displaced the least tern from much of its traditional nesting habitat. Few beach nesting areas remain and least terns are now found in varied habitats ranging from mudflats to airports. They typically forage in areas with water less than 60 feet in depth (Atwood 1983). Prey items include northern anchovy, topsmelt, killifish, mosquitofish, shiner, surfperch and mudflat gobies.

The Lower Sweetwater River Channel may provide suitable foraging habitat for the California least tern during high tide; however no breeding habitat is located within the project area.

Forster's Tern (*Sterna forsteri*)
Federal Status: None
State Status: Species of Special Concern (nesting colony)

Forster's tern is a common resident, frequenting local coastal mudflats, lagoons and bays as well as coastal lakes and ponds. A single breeding colony is known from the south end of San Diego Bay (Unitt 1984).

The Lower Sweetwater River Channel may provide suitable foraging habitat for the Forester's tern during high tide; however no breeding habitat is located within the project area.

Elegant Tern (*Thalasseus elegans [Sterna] elegans*)
Federal Status: Bird of Conservation Concern
State Status: Species of Special Concern (nesting colony)

This is a medium-large tern, with a long, slender orange bill, pale grey upperparts and white underparts. Its legs are black. Elegant tern is a common spring and winter visitor to local coastal mudflats, lagoons and bays. A single nesting colony is known from the south end of San Diego Bay (Unitt 1984).

The Lower Sweetwater River Channel may provide suitable foraging habitat for the elegant tern during high tide; however no breeding habitat is located within the project area.

Least Bell's Vireo (*Vireo bellii pusillus*)

Federal Status: Endangered
State Status: Endangered

Historically this subspecies was a common summer visitor to riparian habitat throughout much of California. Currently, least Bell's vireo is found only in riparian woodlands in southern California, with the majority of breeding pairs in San Diego, Santa Barbara, and Riverside Counties. Substantial vireo populations are currently found on five rivers in San Diego County: Tijuana, Sweetwater, San Diego, San Luis Rey, and Santa Margarita, with smaller populations on other drainages. Least Bell's vireo is restricted to riparian woodland and is most frequent in areas that combine an understory of dense young willows or mulefat with a canopy of tall willows. The least Bell's vireo arrives in San Diego County in late March and early April and leaves for its wintering ground in September. Since the vireos build their nests in dense shrubbery 3 to 4 feet above the ground (Salata 1984), they require young successional riparian habitat or older habitat with a dense understory. Therefore, riparian plant succession is an important factor maintaining vireo habitat. Nests are also often placed along internal or external edges of riparian thickets (USFWS 1986).

Historic occurrences of the least Bell's vireo are known to occur within the project area (Figure 4). This species has the potential to occur within the southern willow scrub habitat located upstream of the 2nd Avenue Bridge.

4.11.2 Mammals

Pallid Bat (*Antrozous pallidus*)
Federal Status: None
State Status: CNDDB (roosting colony)

The pallid bat is most common in lowlands, including grasslands, shrublands, woodlands, and forests. This species roosts colonially in caves, mines, crevices, and abandoned buildings. It forages in the air and on the ground. In San Diego County, localities are reported from Jamacha, Ramona, San Diego, Santa Ysabel, Ballena, Campo, Descanso, Fallbrook, Las Flores, Julian, Jacumba, Vallecito, San Vicente Reservoir, and MCAS Miramar (Bond 1977, Cox et al. 1994).

Potential foraging habitat exists within the Lower Sweetwater River portions of the project area.

Western Yellow Bat (Lasiurus xanthinus)
Federal Status: None
State Status: Species of Special Concern (roosting colony)

The western yellow bat is found in wooded areas and desert scrub. It roosts in foliage, particularly in palm trees. This bat species comes out to forage about dusk and feeds on various insect species. It is usually solitary, but females form small nursery colonies and they usually give birth to twins or triplets, in the late spring.

Potential roosting habitat exists within the developed portions of the project area; particularly areas that support palm trees. Potential foraging habitat occurs within the Lower Sweetwater River Channel.

Pocketed Free-Tailed Bat (*Nyctinomops [Tadarida] femorosaccus*)
Federal Status: None
State Status: Species of Special Concern (roosting colony)

Pocketed free-tailed bats are found in southern California, southern Arizona, New Mexico, and further south into Mexico. They inhabit deserts and sage scrub and roost by day in small colonies of less than about 100 bats in rocky crevices.

One male pocketed free-tailed bat was documented within the project area in 1987 (CNDDB 2007). Foraging habitat potentially occurs within the Lower Sweetwater River Channel. No roosting habit occurs within the project area. The nearest roosting habitat known to occur in the vicinity is located approximately 5 miles east of the project area within a rock quarry near the Sweetwater Reservoir (CNDDB 2007).

4.11.3 Plants

Salt Marsh Bird's-Beak (*Cordylanthus maritimus* ssp. *maritimus*)
Federal Status: Endangered
State Status: Endangered
CNPS Rating: List 1B.2

Salt marsh bird's beak is a summer-blooming (March-October), branched annual that occurs in salt marshes from Santa Barbara County south to Baja California. Loss of habitat related to foot traffic, vehicles, and coastal development are the primary threats to this species (CNPS 2007). In San Diego County, this species is now found in salt marshes in San Diego, Chula Vista, Imperial Beach, and the Tijuana River estuary.

Salt marsh birds-beak is known to occur within the Sweetwater Marsh National Wildlife Refuge located on the south side of the Lower Sweetwater River Channel and west of the I-5. The saltwater marsh habitat located upstream of this occurrence within the project area has potential to support this species

Palmer's Frankenia (*Frankenia palmeri)*
Federal Status: None
State Status: None
CNPS Rating: List 2.3

This white-flowered shrub occurs at the upper elevations of coastal salt marsh (below 10 m elevation) in San Diego County, Baja California, and Sonora, Mexico. The U.S. localities for this species are seriously threatened by development. Palmer’s frankenia blooms from May to July (CNPS 2007).

Palmer's frankenia occurs only at the mouth of the Sweetwater River and in the 'E' Street Marsh on Gunpowder Point in San Diego Bay (Beauchamp 1986). The saltwater marsh habitat within the project area, upstream of this known locality, has potential to support this species.

San Diego-Marsh Elder (*Iva hayesiana)*

Federal Status: None
State Status: None
CNPS Rating: List 2.3

This perennial subshrub occurs in southwestern San Diego County and northern Baja California (Munz 1974). It is frequent in low-lying, moist or alkaline places along the coast and has been recorded along intermittent streams. Reported localities include Rancho Santa Fe, Miramar Reservoir, Peñasquitos Canyon, Alvarado Canyon, Proctor Valley, La Presa, Otay, Tijuana River Valley, and Otay Mesa (Beauchamp 1986). San Diego marsh elder is threatened primarily by waterway channelization and development

No known occurrence of this species have been documented within the project area, however the riparian habitats located upstream of the I-805 Bridge have potential to support this species.

Coulter's goldfields (*Lasthenia glabrata* ssp*. coulteri*)

Federal Status: None
State Status: None
CNPS Rating: List 1.B

This perennial herb occurs in vernal pools, playas, and coastal saltwater marshes and swamps at elevations ranging from 1 to 1,220 m (3.2 to 3,904 feet). Coulter's goldfields produce orange-yellow ray flowers which may be seen blooming from February to June (CNPS 2007, Hickman 1993). This species and its habitat are threatened by habitat destruction and fragmentation from urban and agricultural development (CNPS 2007).

No known occurrence of this species have been documented within the project area, however the saltwater marsh and brackish marsh habitats located within the project area have potential to support this species.

Estuary Seablite (*Suaeda esteroa)*

Federal Status: None
State Status: None
CNPS Rating: List 1B.2

Estuary seablite is a perennial herb that occurs in coastal salt marshes. It is found around the vestigial salt marshes of San Diego Bay. It also occurs within the Federal Wildlife Refuge at Imperial Beach east of Seacoast Drive; as well as along the slough north of 10th Street on San Diego Bay. Soils at such locales are usually mapped as Tidal Flats. Oftentimes, only a narrow band of terrain on the very periphery of the salt marsh is utilized by this species. This species blooms from May through October (CNPSE 2007).

Estuary seablite is found through the saltwater marsh habitat located within the Project area. It is also known to occur in the vicinity of the South Levee Road at the E Street Marsh in Chula Vista (CNDDB 2007).

- Permanent habitat loss including loss of foraging, nesting, or refuge

Trimming or removal of vegetation could destroy or disturb active nests. Equipment noise, vibration, lighting and other human-related disturbance could disrupt nesting, feeding or other life cycle activities, and could cause nest abandonment or nesting failure. Construction disturbance during the breeding season (February 15 through August 30) that results in the incidental loss of fertile eggs or nestlings, or otherwise leads to nest abandonment is considered take by the CDFG and USFWS.

Most noise impacts on special-status wildlife species will be temporary and of short duration. Raised noise levels during construction have the potential to disrupt the breeding success of special-status wildlife species during their breeding cycles. Loud and continuous noises, such as those produced by heavy construction equipment, may frighten individuals of special-status species and interfere with their normal activities, such as foraging, detecting predators, and attracting mates.

The USFWS typically considers a 60 dBA Leq (1-hour) at the edge of suitable habitat to be a significance threshold in assessing noise impacts on noise-sensitive breeding birds. This threshold is based on a study by the San Diego Association of Governments (SANDAG) that determined a traffic noise level of 60 dBA Leq (1-hour) would effectively mask the breeding call of the least Bell's vireo (SANDAG 1988).

Lighting within the construction areas may alter habitual movement paths of some nocturnal wildlife. For example, increases in lighting have been shown to alter migration patterns in several bird species, as well as reduce foraging in mice. Some insectivorous species, such as bats, nightjars, and toads, often benefit from insects that are attracted in high numbers to lights located within open spaces.

5.3 Operation Impacts

The proposed expansion of the facility would increase the desalinated brine effluent volume from 0.8 mgd to 2.5 mgd. This effluent is proposed to be discharged to the existing storm drain, which ultimately flows to the Lower Sweetwater River Channel, similar to the existing plant discharge operations.

Potential adverse effects on biological resources from the desalination facility operations may include decreased salinity levels and an increase in bulk nutrient mass discharged into the Lower Sweetwater Channel.

5.3.1 Decreased Salinity

Given the proposed increase in volume of brine effluent, operations associated with the proposed project may affect estuary seablite and the sensitive vegetation communities that special-status wildlife species are known to depend on within the project area.

Estuary seablite and associated plant species such as jaumea, alkali heath, cordgrass and pickleweed that occur within the saltwater marsh habitat are halophytes (salt tolerant plant species) which are regularly exposed to saline waters due to tidal influence. Within the saltwater marsh community, water salinities range from sporadic winter lows of below 20 ppt (20,000 mg/l), to normal salinities between 30 and 35 ppt (30,000 to 35,000 mg/l) (M&A and MWH). Upstream of the saltwater marsh habitat, east of the 2nd Avenue Bridge, a transition between saltwater and freshwater habitats occurs. Dominant species within this brackish marsh habitat include spearscale, pickleweed, wild celery, Olney's bulrush, California bulrush and southern cattail. A decrease in salinity may potentially alter the community composition within this area by making the conditions less favorable for salt tolerant species and, ultimately, increasing the abundance of bulrush species and cattail.

Natural salinity changes in the saltmarsh habitat are determined by the amount of freshwater run-off and the degree of water body mixing which occurs in the upper and middle estuary. Because the overwhelming volume of freshwater which passes through the system in the wet season, the effects of increasing the desalination brine discharge volume would be less than significant during the wet season.

During the dry season the desalination brine discharge may dominate ambient fresh- and brackish-water inputs to the estuary and could create potentially adverse biological effects on the ecosystem. Salinity is highest during high tide, when bay waters flow into the estuary. Salinities in the estuary are lowest at low tides, when bay water recedes and the source of channel flows are limited to the plant discharge, ambient surface freshwater flows from upstream, and potential groundwater seepage. The biological effects of the concentrate discharge within the brackish marsh habitat are anticipated to be minimal for several reasons. First, most organisms which naturally exist in this brackish environment are adapted to extreme fluctuations in salinity on a regular basis (euryhaline species). For example, bulrushes and cattails survive in this ecological zone by growing in the shallow surface sediment layer and by tolerating brackish conditions (Beare and Zedler 1987). Second, effective dilution will occur as a result of daily tidal flushing, and the existing natural community is well adapted to fluctuating salinity concentrations. The habitat would, ultimately, retain its character as a transition from brackish to saltwater marsh. Therefore, there are no significant adverse impacts anticipated as a result of salinity modifications to the natural system.

5.3.2 Increase in Nutrient Loading

The concentrations of nutrients within estuary waters can vary substantially both seasonally and as a function of tidal stage. Within the Lower Sweetwater River, nutrient concentrations of the surface freshwater flows typically exceed those of the receiving bay waters. Seasonal "first flush" run-off events carry high nitrate and silicate loads with elevated nitrate and phosphate concentrations (M&A 1996). Brackish and saltwater marshes are typically considered to be nitrate limited; marshes within the Sweetwater River Estuary have responded favorably to supplemented nitrogen during previous restoration projects. Therefore, it is anticipated that the proposed project may result in beneficial effects to marsh vegetation.

Concentrations of nutrients, as well as a variety of trace metals, are essential for algal and/or diatom growth and reproduction, and the abundance of these nutrients in the water column have been identified as factors for limiting factors for phytoplankton growth. Although current macro-algae monitoring does not indicate effects of enrichment due to current nutrient inputs, an additional increase in the mass of nutrient inputs has the potential to result in increased phyto-

Fallbrook Public Utility District
2010 Urban Water Management Plan

Prepared by:

Fallbrook Public Utility District staff

Section 2 – Appropriate level of planning for size of agency

2.1 APPROPRIATE LEVEL OF PLANNING FOR SIZE OF AGENCY

The level of detail provided in this plan reflects the size and complexity of this water provider.

2.2 SERVICE AREA INFORMATION WITH 5-YEAR PROJECTIONS FOR THE NEXT 25 YEARS

The population projections listed in the table below were provided by San Diego Association of Governments (SANDAG), San Diego's regional planning agency. The comparison of data indicates an average annual increase of 3% through 2035. There is a drop in population from 2010 to 2015 due, in part, to the economy and foreclosures in the housing market.

POPULATION – CURRENT AND PROJECTED (TABLE 2)

	2010	2015	2020	2025	2030	2035
Service area population	34,894	33,822	35,917	38,999	41,839	43,726

CLIMATE CONDITIONS

The climatic conditions within FPUD's service area are characteristically mild Mediterranean with an average year-round temperature of 64 degrees. The average high temperature in Fallbrook is 76 degrees with the warmest summer temperature rarely higher than 90 degrees. Average winter nighttime temperature is 42 degrees and mostly frost-free.

CLIMATE (TABLE 3)

	Jan	Feb	Mar	Apr	May	June
Standard Monthly Average ETo	2.74	2.71	3.79	4.79	5.48	6.19
Average Rainfall (inches)	3.36	3.78	2.94	1.2	0.27	0.14
Average Temperature (Fahrenheit)	55.91	56.84	58.74	62.49	65.71	70.16

CLIMATE (continued)

	July	Aug	Sept	Oct	Nov	Dec	Annual
Standard Monthly Average ETo	6.79	6.75	5.29	4.18	3.41	2.87	54.99
Average Rainfall (inches)	0.07	0.03	0.22	0.67	1.31	1.75	15.75
Average Temperature (Fahrenheit)	74.65	76.03	73.95	67.68	60.01	55.31	64.75

OTHER DEMOGRAPHIC FACTORS AFFECTING WATER MANAGEMENT

Historically, water usage has remained the same in FPUD's service area. Over the years, the larger agricultural areas have been converted to smaller residential properties. Those smaller, but more numerous, properties have used the same amount of water as the larger agricultural properties they replaced.

Currently, however, water use has declined overall for residential customers, due to the water shortage and mandatory conservation that was imposed. Agricultural

CURRENT AND PLANNED WATER SUPPLIES – ACRE-FEET/YEAR (TABLE 4)

Water supply sources	2010	2015	2020	2025	2030	2035
San Diego County Water Authority	11,737	14,140	15,043	16,334	17,523	18,313
Groundwater: Santa Margarita River		3,100	3,100	3,100	3,100	3,100
Groundwater supplier: local wells in Fallbrook		100	100	100	100	100
Surface diversions: Santa Margarita River @ Lake Skinner	20	300	300	300	300	300
Recycled water	485	611	639	689	739	739
Total	12,242	20,226	21,202	22,548	23,792	24,587

WATER SOURCES – GROUNDWATER

WATERSHED MANAGEMENT PLAN

A potential source of water is the lower Santa Margarita River. Fallbrook used to produce some of its water from the Santa Margarita River under a 2 ½ cfs direct diversion license from the state of California. Those facilities were destroyed by floods in 1969 and have not been rebuilt. Subsequently the state cancelled the license for lack of use.

For more than 50 years the District has been attempting to develop a permanent local water supply on the Santa Margarita River by constructing a dam and reservoir to capture flood flows and provide a storage facility for these flows. In 1948, water permits were obtained from the state for diversion and storage of 30,000 acre-feet. The federal government filed suit against the District in 1951 over water rights on the river to quiet its title to the adjudicated rights accruing to Camp Pendleton. Those water rights had been adjudicated in the Ranch Santa Margarita vs. Vail Co. litigation, which was settled in 1940.

The U.S. Congress authorized construction of the Santa Margarita Project in 1954 which was to be a single dam and 175,000 AF reservoir located on Camp Pendleton for the benefit of the Marine Corps Base (60%) and FPUD (40%). The U.S. Justice Department did not concur with this legislative solution and pursued the lawsuit. The following excerpt from the Bureau of Reclamation's Feasibility Report on the Santa Margarita Project identifies the end of the litigation and the solution to development of Santa Margarita River water.

"After many years of litigation concerning water rights on the Santa Margarita River, extending over a period of time from 1923 to 1966, the U.S. District Court for the Southern District of California entered its Modified Final Judgment and Decree on April 6, 1966. However, the many years of litigation had not produced a division of water between the Fallbrook Public Utility District and Camp Pendleton that would enable either to build and operate a separate project. The court

The 5-year base period ending December 31, 2007 was used to calculate the 5-year base daily per capita water use of 486 gallons.

BASE DAILY PER CAPITA WATER USE – 5-YEAR RANGE AF/Y (TABLE 13)

Base period year		Distribution System Population	Daily system gross water use in acre-feet	Annual daily per capita in gallons/day
Sequence Year	Calendar Year			
Year 1	2003	32,910	15	454
Year 2	2004	33,375	16	490
Year 3	2005	33,583	15	458
Year 4	2006	33,732	16	489
Year 5	2007	34,022	18	540
Base Daily per capita water use *				486

*Add the values in the column and divide by the number of rows.

The 2020 Urban Water Use target is determined to be the lesser of either 80% of the 10-year base daily per capita water use, or 95% of the 5-year base daily per capita water use. Eighty percent (80%) of the 10-year base is 374 gallons, and 95% of the 5-year base is 462 gallons, so the 2020 Urban Water Use target is set at 374.

The Fallbrook Public Utility District is a member agency of the San Diego County Authority (SDCWA) and has provided this baselines and targets data to SDCWA. SDCWA is working with its member agencies to develop regional per capita water use baselines and targets.

2.9 EVALUATION OF DEMAND MANAGEMENT MEASURES NOT IMPLEMENTED

Water conservation is a critical part of the District's 2010 UWMP and its long-term strategy for meeting the water needs of the District. The goals of the District's water conservation program are to:

- reduce the demand for more expensive, imported water
- demonstrate continued commitment to the Best Management Practices
- ensure a reliable water supply

The District is a signatory to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California, which created the California Urban Water Conservation Council (CUWCC) in 1991. As a signatory, the District is required to submit biannual reports that detail the implementation of current water conservation practices. The District voluntarily agreed to implement the fourteen water conservation BMPs beginning in 1992. The District submits its annual report to the CUWCC every two years.

Section 5 – Recycled Water

WATER CODE SECTION – §10633

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

5.1 COORDINATION

FPUD provides water and sewer services for portions of the rural town of Fallbrook. Sewer service is provided for a population of approximately 22,500 in an unincorporated area of about 6.6 square miles. The remainder of customers in the District's service area is on a septic system. Currently the wastewater treatment plant treats an average of 1.8 million gallons per day (MGD) and has a rated capacity of 2.7 MGD.

PARTICIPATING AGENCIES (TABLE 29)

Participating agencies	Role in plan development
FPUD	Owns and operates treatment plant

5.2 WASTEWATER QUANTITY, QUALITY AND CURRENT USES

The District's collection system consists of 65 miles of sewer lines, 5 pumping stations and an 18-mile land-line to the ocean outfall in Oceanside. The wastewater treatment plant currently treats an average of 1.8 MGD and has a rated potential to treat 2.7 MGD. The treatment plant treats all wastewater to the tertiary level. Unit processes include preliminary treatment, grit removal, primary treatment, secondary treatment by activated sludge process, tertiary treatment and disinfection.

WASTEWATER COLLECTED AND TREATED AF/Y (TABLE 30)

	2005	2010	2015	2020	2025	2030	2035
Wastewater collected & treated in service area	1,895	1,825	1,769	1,879	2,040	2,188	2,287
Quantity that meets recycled water standard	1,895	1,825	1,769	1,879	2,040	2,188	2,287

Treated effluent is used for agriculture and irrigation purposes and the remainder is discharged to the ocean via our 18-mile ocean outfall. We have 26 recycled water meters over 16 recycled water user sites. Seven of the sites use recycled water for agriculture irrigation and 9 sites use recycled water for landscape irrigation.

DISPOSAL OF WASTEWATER AF/Y (TABLE 31)

Method of disposal	Treatment level	2010	2015	2020	2025	2030	2035
Sold recycled water	Tertiary effluent	485	611	639	689	739	739
Discharge to ocean outfall	Tertiary effluent	1,410	1,158	1,240	1,351	1,449	1,548

Approximately 47% of our recycled water is used for agricultural purposes and 53% is used for landscape irrigation. We have recycled an average of 171 million gallons (MG), or 526 acre-feet per year, over the past five years. It was slightly lower in 2010 due to upsets in the treatment plant.

RECYCLED WATER USES – ACTUAL AF/Y (TABLE 32A)

Type of Use	Treatment level	2010 AF/Y
Irrigation – Agricultural	Tertiary effluent	255
Irrigation – landscape	Tertiary effluent	230
Total		485

5.3 POTENTIAL AND PROJECTED USES, OPTIMIZATION PLAN WITH INCENTIVES

Currently, FPUD recycles an average of 25% of our total plant flow. We estimate wastewater flow increases at the same rate as the population growth, 3% per year. These projections are provided by San Diego Association of Governments (SANDAG), San Diego's regional planning agency.

RECYCLED WATER USES – POTENTIAL AF/Y (TABLE 32B)

Type of Use	Treatment level	2015	2020	2025	2030	2035
Irrigation – Agricultural	Tertiary effluent	100	100	100	100	100
Irrigation – landscape	Tertiary effluent	26	54	75	104	104
Total		126	154	179	204	204

The present recycled water distribution system and outfall line makes recycling 100% of our flow technically and economically unfeasible. However, there are no current plans to increase recycled water sales until the District can secure funding for recycled storage. This is because demand exceeds supply in the summer peak-demand periods.

PROJECTED FUTURE USE OF RECYCLED WATER IN SERVICE AREA – AF/Y (TABLE 33)

Type of Use	2015	2020	2025	2030	2035
Irrigation – Agricultural	100	100	100	100	100
Irrigation – landscape	26	54	75	104	104
Total	126	154	179	204	204

Fallbrook Public Utilities District Master Plan (2012) - Draft

Prepared by District Staff

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Chapter 2 – Recycled Water

2.1 Background

The District started serving reclaimed water in 1991. Currently the WWTP treats all influent flows to tertiary standards. The recycled sales peaked in 1997 at 860 AFY and sales have varied from 350 AFY to 675 AFY over the last few years. In 2010, two nursery customers who leased District property were required to relocate due to the construction of new District solar facilities, which resulted in reduced recycled usage. The average usage in 2011 was 600 AFY and this is used as the estimated average annual baseline usage with the current customers. The amount of recycled water available varies slightly due to minor infiltration in the wet season, but as shown in Table 2-1 is typical between 150-180 AF per month. The amount of recycled water used by customers varies significantly from summer to winter due to irrigation needs, but in the peak month of August recycled demand accounted for 77 AF or 44% of influent flows as shown in Table 2-1. The ratio of peak month (77 AF) demand to average monthly demand (50 AF) is 1.5:1.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
WWTP Influent Flow (AF)	183	162	177	163	168	164	165	165	160	162	159	170	2000
Recycled Water Sales (AF)	23	22	36	59	77	62	73	77	71	49	27	32	608
Unused Recycled Water (Ocean Disposal) (AF)	137	143	123	90	87	87	68	74	76	83	90	162	1220
% Recycled Usage	13%	13%	20%	36%	46%	38%	44%	47%	44%	30%	17%	19%	30%

Table 2-1 - Monthly Recycled Water Usage 2011 (All figures in AF)

The District currently serves the following recycled customers:

- Goodearth Nursery
- Silverthorne Nursery
- Crinklaw
- ColorSpot Nursery
- Fallbrook Sports Park
- Olive Hill Nursery
- Fallbrook High School
- Peppertree Park HOA
- Mission Road Median
- Fallbrook Airpark
- Mission Oaks HOA
- California Department of Transportation (Caltrans)
- Arrowood Golf Course
- Premier Color Nursery
- Orange Grove Energy

The District serves users within FPUD service area and also users within the City of Oceanside's service area through the land outfall and one user in Rainbow MWD service area (Orange Grove Energy) using fill trucks and a recycled fill station. The locations of the current users are shown on Figures 2-1 and 2-2.

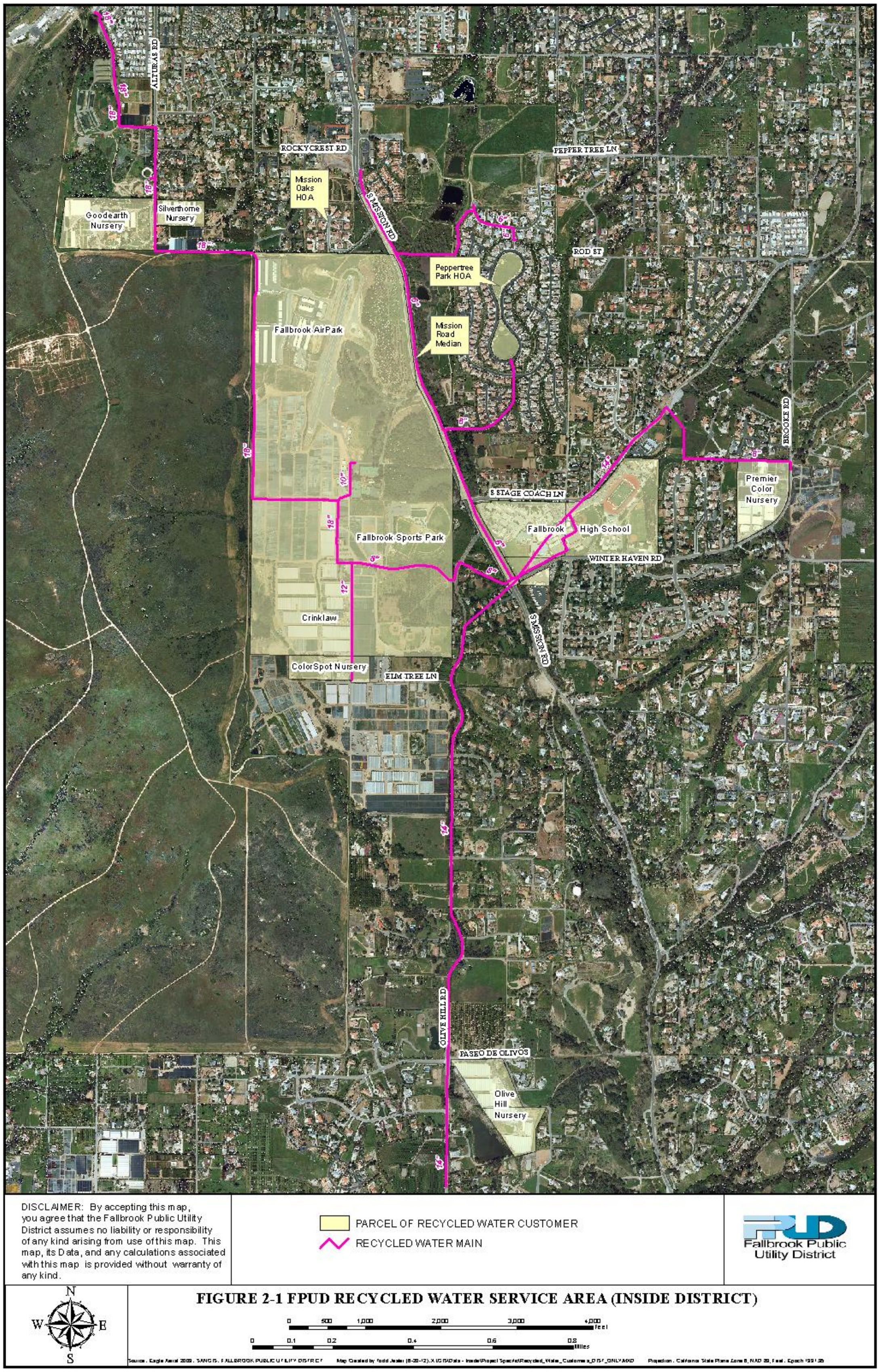


FIGURE 2-1 FPUD RECYCLED WATER SERVICE AREA (INSIDE DISTRICT)

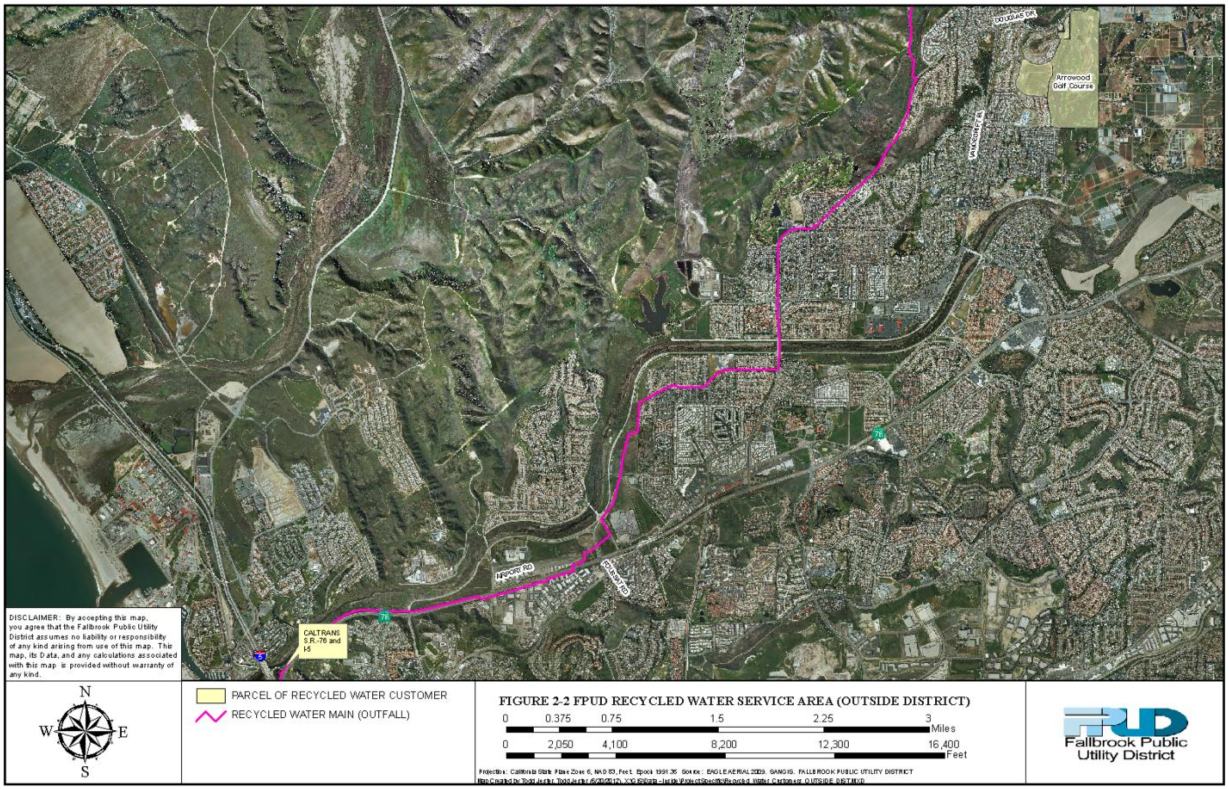


FIGURE 2-2 FPUD RECYCLED WATER SERVICE AREA (OUTSIDE DISTRICT)

2.2 Available Recycled Water Supply

The current recycled water system has reliability issues related to the age of the WWTP facilities and the lack of recycled storage. These issues have limited the ability of the District to add new customers since potable make-up water is often required when demands exceed supplies on peak demand days and when the plant is not producing tertiary effluent. In June 2011, the District evaluated alternatives to minimize use of potable make-up water for peak demand days. As shown in Figure 2-3, during certain hours on a peak day recycled demands can exceed effluent flows:

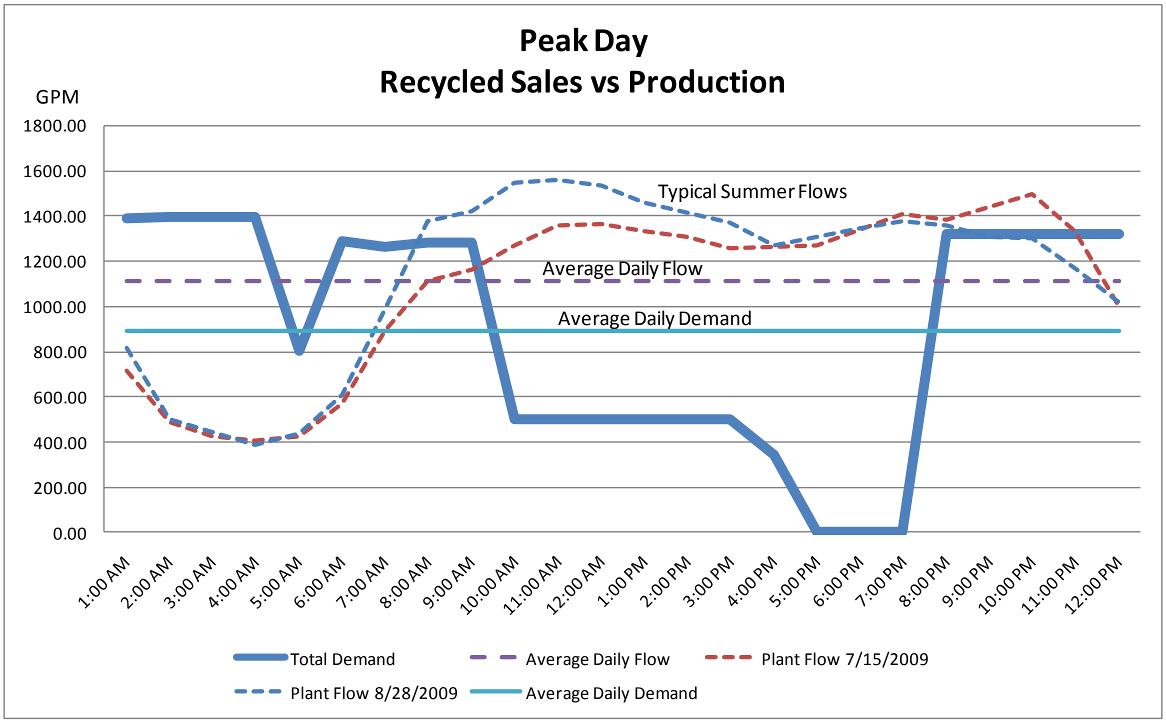


Figure 2-3 – Peak Day Recycled Demands versus Available Supply

Based on this evaluation, it was determined that recycled storage of at least 350,000 gallons is required to equalize flows during peak day demands. As part of the planned improvements at the WWTP approximately 1.5 MG of storage will be included to allow for equalization over several peak demand days. Once this storage is completed the District will be able to add additional recycled customers without increasing potable make-up water needs up to the approximate available monthly supply for the peak demand month.

Without any additional WWTP flows and with sufficient storage to deal with daily fluctuations, the recycled peak month demand could be expanded up to approximately the peak month supply. Without the construction of additional seasonal storage, the maximum recycled demand would be limited to the maximum recycled supply in the maximum demand month. This would allow an approximately 214% increase in demands, based on utilizing all recycled water in August which is the constraint on available supply versus demands as shown in Table 2-2. If it is assumed that the current demands could be increased proportionally in each month using our current demand profile, as shown in Table 2-2 then an estimated 1300 AFY would be available for additional recycled users. Since current usage is 600 AF, it would allow for up to 700 AF of new supply once the WWTP improvements are complete. Since the annual amount of influent wastewater is 2000 AF, at this utilization 700 AF would go out the outfall without additional of seasonal storage or 35% of the available supply.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
WWTP Influent Flow (AF)	183	162	177	163	168	164	165	165	160	162	159	170	2000
Current Recycled Water Sales (AF)	23	22	36	59	77	62	73	77	71	49	27	32	608
Maximum Potential Usage (Maximum Month - 100%)	49	46	77	126	165	133	157	164	152	106	58	69	1301
Unused Recycled Water (Ocean Disposal) (AF)	134	116	101	36	4	31	9	1	9	57	101	101	699
% Maximum Recycled Usage	27%	28%	43%	78%	98%	81%	95%	100%	95%	65%	36%	41%	65%

Table 2-2 – Projected Maximum Monthly Available Recycled Water for new Users (All figures in AF – Based on 2011 Influent Flow and Recycled Usage)

2.3 Recycled Expansion Options

A number of options were evaluated for the recycled water system to try and ensure the District is evaluating the economic impacts of all feasible wastewater disposal and reuse options:

1. Eliminating the Recycled Water Program
2. Developing Additional Recycled Water Demands in FPUD Service Area
3. Development of an Potable Recharge Project with Aquifer Storage and Recovery
4. Development of a Potable Recharge Project with Reservoir Augmentation

2.3.1 Option 1 - Stopping Recycled Water Production

The District is in the process of planning extensive improvements at the WWTP to improve reliability. The estimate total cost of the project is over $20 million. The improvements include extensive rehabilitation to the tertiary facilities that produce recycled water. If tertiary facilities were eliminated and all effluent was disposed of via the ocean outfall then the capital cost of the project could be reduced by about $3-$5 million. Recycled Water revenue is approximately $1480/AF including MWD and SDCWA rebates, service charges and water sales. Based on current annual sales of 515 AF per year[1] this results in $762,200 in annual revenue. If recycled sales were stopped it is estimated that O&M costs would reduce by $200,000 per year in reductions in equipment and materials. It is not expected that staffing requirements would decrease to the extent that staff reductions would be possible. There would be no savings on costs from previous capital expenditures on distribution and treatment. The net annual loss would be $562,000 per year. A summary of the capital, O&M and lifecycle cost for discontinuing recycled production is summarized below:

Capital Cost: $3-$5 million savings

O&M Cost: $-562,000

Present Worth Lifecycle Costs (30 years, 3%): -$8 to -$6 million

1. Although 600 AFY is utilized some recycled water is utilized for community areas at no cost so revenue was collected for 515 AF of the 600 AF used.

2.3.1 Option 2- Additional Recycled Users in FPUD service Area

The District has identified 42 AF of new recycled projects that will be included in existing development projects as shown in Table 2-3. The projects are already included in developer plans and it is not expected for there to be any cost to the District for these projects. Additional recycled projects were also identified as shown in Figure 2-3. These projects include a East, South and North Extension of recycled service.

Recycled Water Projects	Estimated Demand (AFY)	Estimated Cost	Cost (1,000$/AFY)
Peppertree Development Phase 7	14	0*	0
Peppertree Development Phase 8 and 9	28	0*	0
North Extension	55	$475,000	$8.6
East Extension	85	$780,000	$9.2
South Extension	40	$520,000	$13
Total	**222**	**$1,510,000**	**$8.9**
Total without North Extension**	**167**	**$1,035,000**	**$6.2**

*Costs Already included in the development
** North Extension Dependant on Construction of Army Reserve Base which is uncertain.

Table 2-3 – Additional Recycled Water Projects

The North Extension is tied to the potential construction of an Army Reserve Center on Naval Weapons Station Fallbrook. This project may not proceed and without this project there would not be sufficient demand for the extension, since the only additional demand on the North Extension would be from limited apartment complex retrofits and middle school outdoor irrigation. The East extension would feed a large nursery at the East end of the service area. The South extension would feed a nursery at the South Western end of our district. With the East and South extensions we would only be able to capture an additional 170 AFY. A summary of the estimated monthly supply and demands based on expanding the recycled system is shown in table 2-4.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
WWTP Influent Flow (AF)	183	162	177	163	168	164	165	165	160	162	159	170	2000
Current Recycled Water Sales (AF)	23	22	36	59	77	62	73	77	71	49	27	32	608
Projected Potential Usage (Additional 170 AFY)	29	28	46	76	98	79	94	98	91	63	35	41	778
Unused Recycled Water (Ocean Disposal) (AF)	153	135	131	87	70	84	72	67	70	99	125	129	1221
% Maximum Recycled Usage	16%	17%	26%	46%	58%	49%	57%	60%	57%	39%	22%	24%	39%

Table 2-4 – Projected Monthly Recycled Water Usage with New Users (All figures in AF)

Since the facility already produces tertiary water, there are no additional capital costs and the marginal O&M costs for production and supply are limited and estimate to be $166/AF additional cost so the annual revenue is estimated at $1314/AF. A summary of the capital, O&M and lifecycle cost for developing additional recycled pipelines based on details in Appendix A is summarized below:

Capital Cost: $1,035,000 million

Annual Revenue (170 AFY at $1314/AF): $223,380

Present Worth Lifecycle Costs (30 years, 3%): $3.3 million

Regulatory Issues:

The existing recycled permit should cover new users for the East and South extension which are in the San Luis Rey watershed. It will require requesting approval from the RWQCB and County, approval of recycled piping plans and having the County conduct an initial cross connection test. The North extension would result in additional users in the Santa Margarita Watershed which has stricter Total Dissolved Solids (TDS) and Nutrient limits and may require the District to complete a salt and nutrient management plan in order to obtain RWQCB approval.

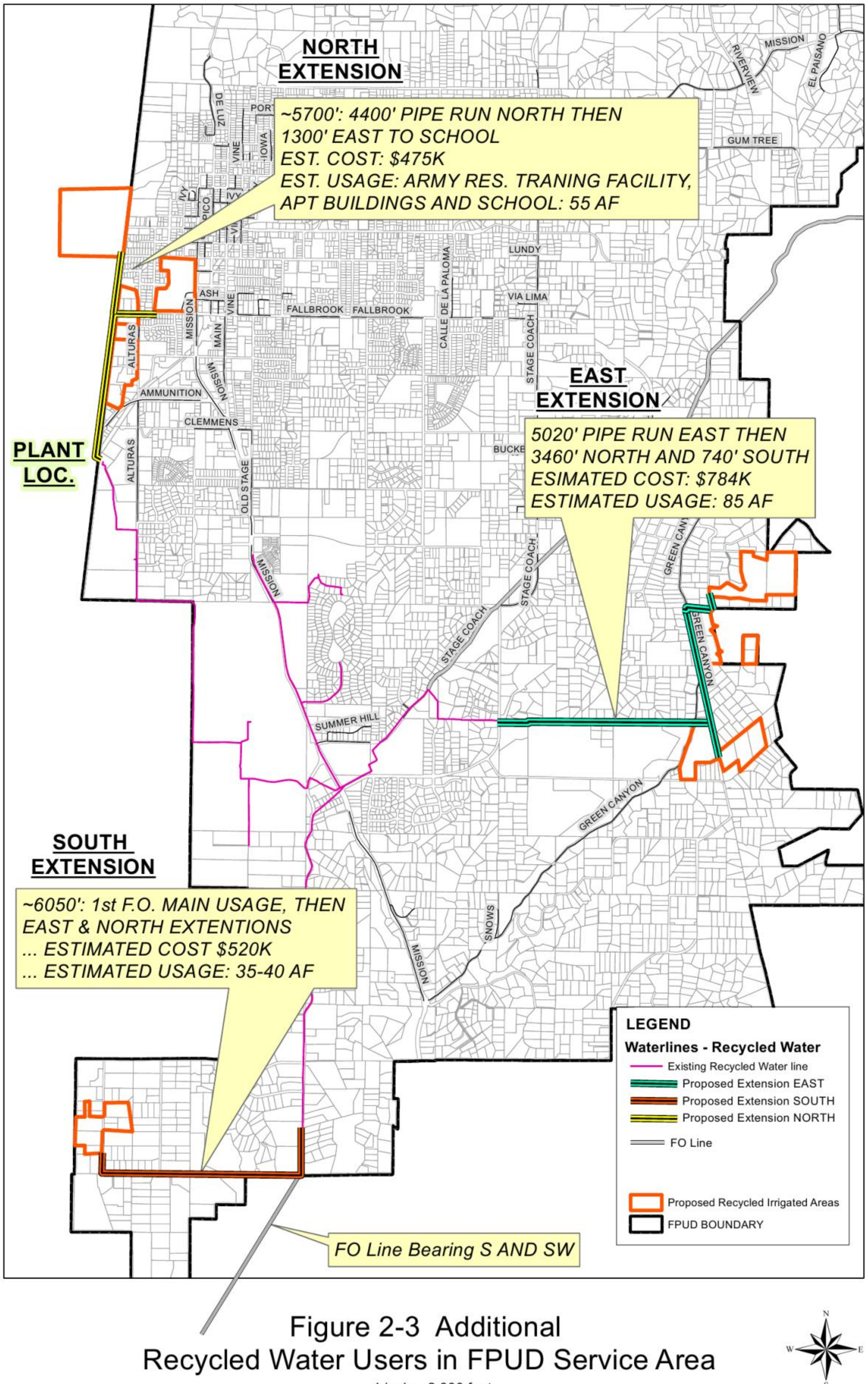


Figure 2-3 Additional Recycled Water Users in FPUD Service Area

1 inch = 2,000 feet

MAP BY SOLEIL DEVELLE 8/24/12
X:\SOLEIL\PROJECTS\Water usage_Reclaim water\RECYCLEDWATER_EXPANSION_PLAN_2012-8-11X17

WATER

Effective: 7/1/13

FALLBROOK PUBLIC UTILITY DISTRICT / CUSTOMER BILLING INFORMATION

Meters are read in three cycles each month for billing periods ending on the 10th, 20th, and 30th. An account is placed in a cycle according to the location of the meter within the District. All customers are billed on a monthly basis. Payment is due and payable upon receipt and delinquent after the due date shown on the bill. In the event delinquent accounts are not paid by the lock-off deadline indicated on the bill, a delinquent processing fee will be charged and services may be interrupted without further notice. The discount will be applied to non-delinquent accounts for which payment is received in the business office on or before the due date and automatically applied for ACH (auto-pay) customers. A Capital Improvement Charge of $8.00 / Equivalent Meter Unit (EMU) per month is added as a separate charge for water capital projects.

MONTHLY CHARGES

METER SIZE	EMU	AS, AT, CA, CB, G	D, LD, C, M, R	NON-ACH MONTHLY DISCOUNT	ACH MONTHLY DISCOUNT	RP DEVICE	CHECK VALVE	MWD RTS AS, AT, CA, CB, D, LD, C, M, G	CWA IAC All Classes Except R & SS
3/4"	1	44.89	36.63	4.00	5.00	6.06	4.89	3.92	2.64
1"	1.375	59.28	47.66	4.00	5.00	6.06	4.89	5.39	4.22
1 1/2”	2	85.69	68.02	4.00	5.00	8.76	6.42	7.84	7.92
2"	3.125	126.62	99.54	4.00	5.00	8.76	6.42	12.25	13.73
3"	5.25	208.35	162.38	4.00	5.00	9.92	6.80	20.58	25.34
4"	8.25	323.73	258.19	8.00	10.00	14.02	9.56	32.34	43.30
6"	15	583.40	461.43	10.00	10.00	16.79	12.63	58.80	79.20
SS		21.83	21.83	4.00	5.00			1.96	

C = Commercial; **M** = Multi Unit; **D** = Domestic; **LD** = Large Lot Domestic; **G** = Government; **SS** = Standby; **R**=Recycled; **CA** = Commercial Ag; **CB** = Commercial Ag Domestic; **AS** = Ag (SAWR); **AT** = Ag Domestic (SAWR)

Fire Service Detector Check: 2" $62.52; 3" $72.12; 4" $81.72; 6" $112.19; 8” $142.66

Temporary Construction Meter: $1,070 deposit plus $103 installation; $103 relocation; operations charge $149.31 per month

Extra Unit Charge: $5.77 per month / unit

Initiate Standby Service: $50

Pre-Lock Notice Processing Fee: $30 (*eff. 1/1/07*)

Delinquent Processing Fee: $50

Fire Flow Test: $449

Broken / Tampered Lock Fee: $100

Meter Testing Fee (*¾” & 1” meters*): $103

Meter Testing Fee (*1 ½” & 2” meters*): $139

Domestic (**D**), Large Lot Domestic (**LD**)
1 - 10 units per month if use ≤ 12 .... $4.03
11 - 12 units per month if use is ≤ 12 .... $4.64
1 - 30 units per month if use is > 12 .... $4.64
Over 30 units per month if use > 12............................ $5.11

Multi Unit (**M**)
1 - 6 units per month if use ≤ 8 units/DU $4.03
7 - 8 units per month if use ≤ 8 units/DU $4.64
1 - 18 units per month if use > 8 units/DU $4.64
Over 18 units per month if use > 8 units/DU $5.11

Government (**G**)/All usage $4.64

Commercial (**C**)
1 - 30 units per month... $4.03
Over 30 units per month $4.64

BASE RATE = $4.64

Recycled Water $3.47
Construction Water $5.71
Pumping Charges (*DSA & Toyon only*) $0.41

ALL PRICES ARE PER UNIT (*1 unit = 1,000 gal.*)

SAWR

Ag (**AS**): All usage.......................................$3.14

Ag Domestic (**AT**):
1 - 10 units/month if use ≤ 12.......$4.03
11-12 units/month if use ≤ 12......$4.64
1-20 units/month if use > 12.........$4.64
Over 20 units/month $3.14

Com Ag (**CA**): All usage.......................................$4.06

Com Ag Dom (**CB**):
1-10 units/month if use ≤ 12.........$4.03
11-12 units/month if use ≤ 12.......$4.64
1-20 units/month if use > 12.........$4.64
Over 20 units/month $4.06

W A T E R

Effective: 7/1/13

FALLBROOK PUBLIC UTILITY DISTRICT / METER AND SERVICE INSTALLATION CHARGES

Meter Size	3/4"	1"	1 ½"	2"	3"	4"	6"
Acreage Served	*0 - 1*	*1 - 3 ½*	*3 ½ - 8*	*8 - 15*	*15 - 35*	*35 - 80*	*80+*
Maximum Rate of Flow - GPM	*16 - 24*	*40*	*80*	*145*	*277*	*460*	*878*
METER Installation	$414	$570	$904	$1,043	Cost	Cost	Cost
SERVICE LINE Installation (*No Paving*)	$1,907	$2,051	$2,650	$3,221	Cost	Cost	Cost
Paving for Service Line <15' (*Add $1,600*)	$1,600	$1,600	$1,600	$1,600	Cost	Cost	Cost
Paving for Service Line = >15' <30' (*Add $3,199*)	$3,199	$3,199	$3,199	$3,199	Cost	Cost	Cost
County Inspection on Public Roadway (*Add $1,241*)	$1,241	$1,241	$1,241	$1,241	Cost	Cost	Cost
FPUD CONNECTION FEE	$5,115	$8,184	$15,345	$26,598	$49,104	$83,886	$153,450
SDCWA CONNECTION FEE	$4,492	$7,188	$13,476	$23,358	$43,124	$73,668	$134,760
Meter Relocation (*No Paving*)	$2,835	$2,978	$3,577	$4,149	Cost	Cost	Cost
Meter Relocation with Paving Up to 30' (*Add $4,201*)	$4,201	$4,201	$4,201	$4,201	Cost	Cost	Cost
County Inspection on Public Roadway (*Add $1,241*)	$1,241	$1,241	$1,241	$1,241	Cost	Cost	Cost
RP Backflow Device Installed with Meter*	$420	$495	$915	$1,098	Cost	Cost	Cost
RP Backflow Device Retrofit**	*Installation is the responsibility of the property owner; First inspection is free; additional inspection $123 plus costs (each).*						
RP Backflow Device on Reclaimed Water Meters	*Installed at no cost.*						

<u>FIRE HYDRANT, *including installation*</u>:
Model J-3700 ....$7,992
Model J-3765 ....$8,759
Trench > 20' ....$227/trench foot
County Inspection: ....$1,241 if required

* *The District shall install Reduced Pressure Backflow Preventers on new potable water meter services when applicable pursuant to Section 19 of the FPUD Administrative Code.*

** *The property owner shall be responsible for the Reduced Pressure Backflow Device Retrofit pursuant to Section 19 of the FPUD Administrative Code. Once the device is installed, passes the backflow test, and meets the District's standards, the device will become the property of the District. The device will be charged the standard monthly service charges and will be tested annually.*

FALLBROOK PUBLIC UTILITY DISTRICT

Initial Study

And

Negative Declaration

FPUD RECYCLED WATERLINE EXTENSION - EAST

Fallbrook Public Utility District

990 E. Mission Road

PO Box 2290

Fallbrook, CA 92088

April 22 2014

CEQA - Environmental Checklist Form

1. Project title:
   Fallbrook Reclaimed Waterline Extension

2. Lead agency name and address:
   Fallbrook Public Utility District
   990 E. Mission Rd,
   PO Box 2290
   Fallbrook, CA 92028 - 2290

3. Contact person and phone number:
   Brian Brady, General Manager, 760-728-1125 ext.1107

4. Project location:
   Starting point:
   2322 Brooke Rd, Fallbrook, CA 92028
   Then East to Mardavido Lane and then south to Via Del Robles

5. Project sponsor's name and address:
   Fallbrook Public Utility District
   990 E. Mission Rd,
   PO Box 2290
   Fallbrook, CA 92028 - 2290

6. General plan designation: A-70

7. Zoning: A-70

8. Description of project: (Describe the whole action involved including, but not limited to, later phases of the project and any secondary support or off-site features necessary for its implementation. Attach additional sheets if necessary.)

   The Fallbrook Public Utility District, here after called the District, supplies Reclaimed Water (RW) to certain customers in the District with in a limited Recalimed Water distribution system. The District is currently upgrading the Water Reclaimation Plant and increasing storage for RW. The District is expanding the infrastructure of the RW System in order to serve more RW customers. The district has prioritized expanding the system in the Easterly direction to serve the most benificial users. The District currently serves a large nursery at the beginning point of the project and plans to extend the RW waterline a short extension to the South along Brooke Road for approximately 220 feet and another extenstion East for approximately 5800 Feet as follows: Bearing Easterly and crossing the existing nursery, a vacant lot, along Moonshadow Ridge and Sunny Crest Lane and then continuing Easterly across two vacant lots, Green Canyon Rd and another Nursery to Mardavido Lane and then bearing Sourtherly along Mardavido Lane (easement) to the intersection of Via Del Robles. This extension will serve two (2) Nurserys with the potential of additional future recycled water users on the large lots that are crossed along the way. Environmental protection is an integral part of the design and mission of the District; extending and improving the reliability of the RW infrastructure is integral to this mission by ensuring that recycled water uses are maximized and thus resulting in greater controls of agricultural runoff and less pollution. A figure showing the proposed location and RW Alignment is attached as **FIGURES 1-2.**

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

   The existing 8" RW line ends on Brooke Road and serves the Nursery located there. The RW extension shall head East and traverse the Northern 40 feet of the Nursery parcel, 662 Feet. The RW pipe then travels in the Northern 20 feet of next parcel for 1500 Feet. This parcel is a vacant, open land of gently rolling hills, with some dead citrus and avocado trees. To the North are residential parcels with homes and one vacant lot. From there the pipe enters Moonshadow Ridge (485 Ft) and runs to the East. There are 3 homes to the north along Moonshadow Ridge and 2 homes to the south. The RW pipeline will cross Sunnycrest Lane to the large vacant lot to the Southeast and run Easterly along the Northern 20 feet of this parcel. To the North are homes on Westview lane and Marymac . Continuing Easterly across another vacant lot along the Northern 20 feet with 4 homes located to the North. A total of 1775 feet are traversed across these 2 vacant lots. The RW pipe must then go over a drainage canal and under Green Canyon Road to the East side and along the Northern 20 feet of a Nursery parcel. to the Mardivido Easement on the East side of said parcel and the pipe will run south easterly to Via Del Robles to allow for servicing the Nursery on the parcel to the Southeast of the termination point There are a few residential homes adjacent to this alignment, which is running along Potable waterlines at the last 750 ft. This area is residential besides the Nurseries that exist there.

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

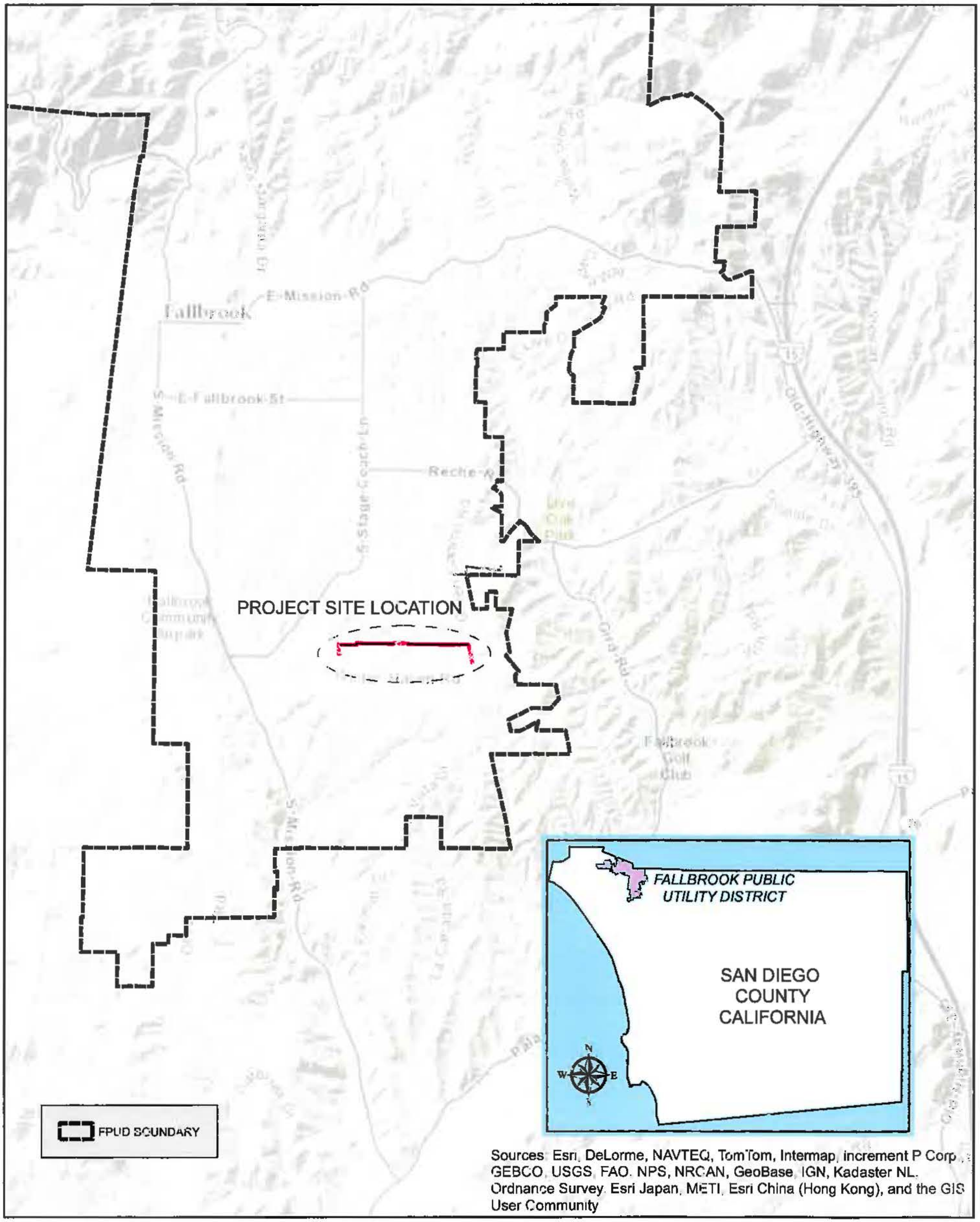
    None

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

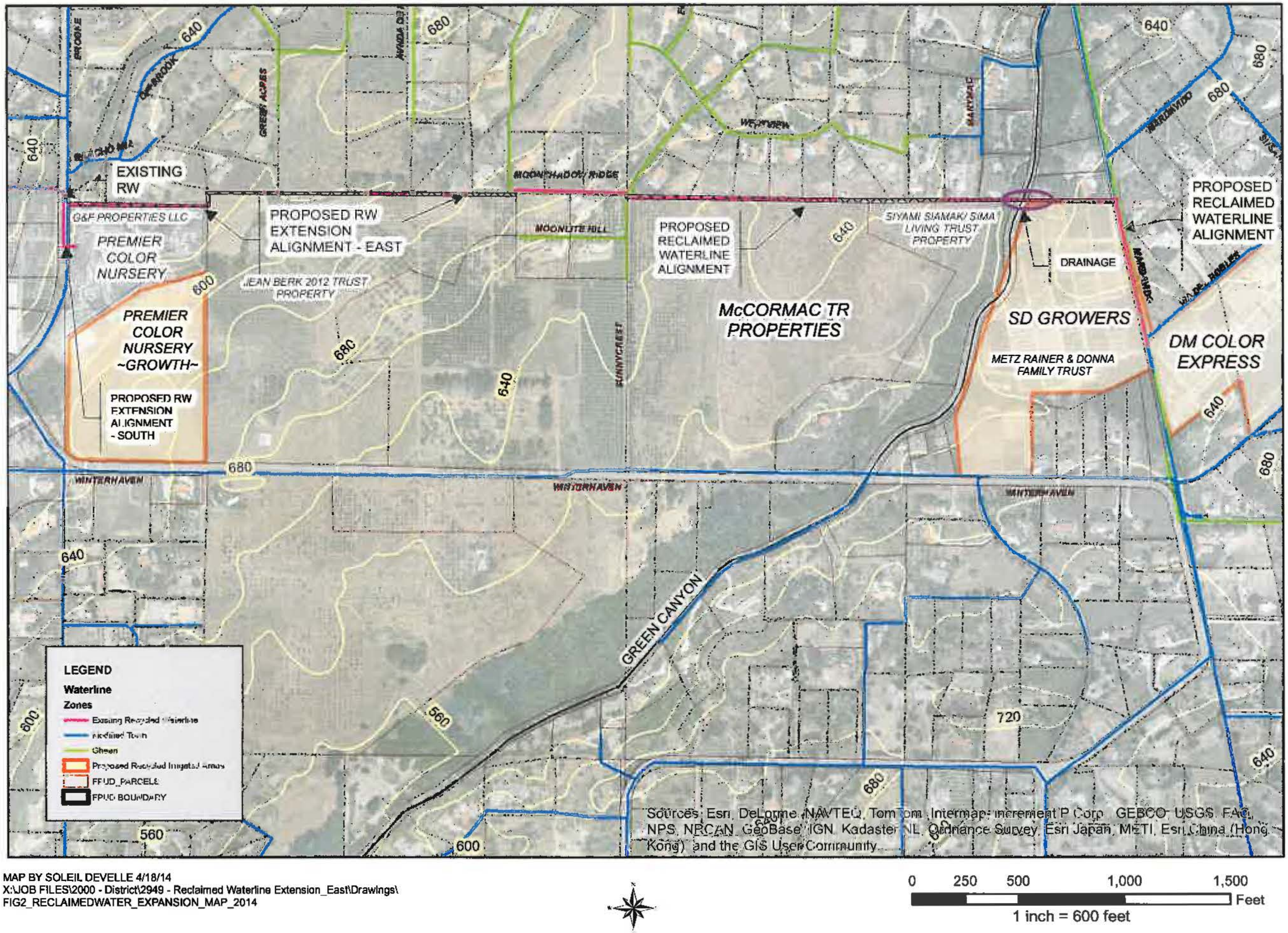
- ☐ Aesthetics
- ☐ Biological Resources
- ☐ Hazards & Hazardous Materials
- ☐ Mineral Resources
- ☐ Public Services
- ☐ Utilities/Service Systems
- ☐ Agriculture Resources
- ☐ Cultural Resources
- ☐ Hydrology/Water Quality
- ☐ Noise
- ☐ Recreation

FIG.1-FPUD RECLAIMED WATERLINE EXTENSION PROJECT SITE MAP



MAP BY SOLEIL DEVELLE 4/14/14
X:\JOB FILES\2000 - District\2949 - Reclaimed Water Line Extension_East\Documents\CEQA\FIG.1

FIG. 2
RECLAIMED WATERLINE EXTENSION MAP



MAP BY SOLEIL DEVELLE 4/18/14
X:\JOB FILES\2000 - District\2949 - Reclaimed Waterline Extension_East\Drawings\FIG2_RECLAIMEDWATER_EXPANSION_MAP_2014

☐ Mandatory Findings of Significance

☐ Air Quality

☐ Geology/Soils

☐ Land Use/Planning

☐ Population/Housing

☐ Transportation/Traffic

DETERMINATION: (To be completed by Lead Agency)

On the basis of this initial evaluation:

☒ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Printed Name	For

TECHNICAL MEMORANDUM

April 15, 2014

SUBJECT: **Preliminary Assessment Report (Recycled Water System East Expansion Planning)**

TO: Jack Bebee, Assistant General Manager

FROM: Soleil Develle, Engineering Technician

COPY: David Horn, Operations Manager

BACKGROUND

The District completed a Recycled Water Master Plan that was adopted by the board in 2012. The Recycled Water (RW) system was reviewed for potential RW Extensions in locations where demand could be found. Primary points of interest are nurseries, large landscaping such as Schools and HOA entries, and large undeveloped lands. The master plan recommended three potential extensions of the recycled system with the priority being an extension to the East to serve nursery operations. Potable usage replacement was calculated for each location base on current usage and length of pipe and costs were weighed to determine and prioritize the extension route. The East route was determined to have the highest usage potential of the locations reviewed. The initial east extension plan provided 88 AFY of use with 2 new nursery users. An additional extension was also shown from the end of this extension but the additional extension and use was not included in the Master Plan. The proposed extension was evaluated for addition potential users.

The District currently only uses 600 AFY of the 2000 AFY produced. The District has been evaluating addition users, but the system expansion was on hold while additional storage and reliability improvements were implemented at the Water Reclamation Plant. The improvements are underway and a one million gallon reservoir for recycled water storage has been completed.

OBJECTIVES

There is a production of 2000 AF of RW with current usage of 600 AF. The Primary object is to find high volume RW users and install the pipe to serve them. Nurseries provide the greatest potential for the RW system expansion due to the consistent use on the system.

The District identified a total of five potential use sites including the two included in the master plan. The master plan included only SD growers and DM Color Express (See Figure 1). The District identified an extension to Premier Color Nursery that it currently using recycled water which has benefited the nursery and has provided opportunity for growth and expansion. In addition to this initial line expansion, Premier Color is in negotiations to purchase an adjacent 55 acres adjacent to the recycled water line extension. The District also identified an Phase II extension to serve Olivehill Greenhouses and Roseland Nursery.

USAGE CALCULATIONS

Where significant usage data exists the District utilized the usage data to estimate the recycled water usage. Based on discussions with existing users the current recycled water does not require any blending, even for low salt tolerant products. Where existing usage data was not available, the District calculated the application rate based on existing Premier Color operations as identified below.

TABLE 1 (Usage units are Kgal, or 1000 gallon units) **Potable Water usage** RW usage

Nursery	Meter #	FY13	FY12	FY11	FY10	FY09	FY08	FY07	Average Kgal		AF/Y
SD Growers	**2862**	5300	4147	3406	4689	5412	8172	8376	**5643**		**17.3**
DM Color	**5322**	7021	6536	4348	2052	1571	2185	2432	**3735**		
	3041				1042	3585	10076	8890	**5898**		
	5323	103	107	120	76	176	446	182	**173**		
	total	7124	6643	4468	3170	5332	12707	11504	**7278**		**22.3**
Premier Color [(1)]	**200030**	11830	11281	10249	9040	2110			**8902**		**27.3**
	3814	1726	2140	1366	866	2750	5953	11682	**3783**		
Premier Color [(2)]	**Initial**								**15750**		**48.3**

(1) Premier Color Nursery (1) existing annual usage was averaged over 7 years (note: the usage is up significantly in the last 2 years so this will be a conservative estimate). This usage is divided by the acres of the area served to obtain AF/Acre/Year. (b = 4.2 AF/Ac/Y)

(2) Estimated Initial Expansion and is 11.5 acres total times 4.2 AF for future usage.

For Roseland Nursery and Olivehill Greenhouses which did not have complete historical usage data the projected usage was based on the calculated usage rate of 4.2 AF/Acre/year and the irrigated area using the same approach as the Premier Color future expansion.

Table 2 – Projected usage for additional parcels based on existing nursery areas

Nursery	Acreage[(1)]	Projected Usage
Olive Hill Greenhouses	31.4	130.2
Roseland Nursery	45.9	193.2
Premier Color (Future)[(2)]	55	231

(1) Based on GIS polygon data

(2) We are aware that Premier Color Nursery is negotiating with the owner of the adjacent 55 acre parcel for purchase. We included this area because the potential for agricultural usage is high and further increased with our outreach program that will encourage development in proximity to the RW waterline.

PIPE COST CALCULATIONS

The waterline extension was mapped and length calculated (see attached Map). The cost of the pipe is based on the length of the pipe, as noted, times $88 / Linear foot based on historic pipeline construction costs maintained by the District. Of which $13.6/LF is estimated as administrative costs: admin, construction management and permitting; and the remaining $74.58/LF is installation, including equipment materials and labor.

Phase I total length is 5976 LF and Phase II is 3478 LF for a total of 9454 LF.

EASEMENTS

Easements that are required are within the Phase I part of the project only. Phase II is along existing Easements or road ROW area. Phase I easements are mostly obtained and there is agreement from the remaining that easement will be granted.

RECOMMENDATION

Initiate planning and design of the east extension and work with nursery owners to ensure commitment to use and long-term operation. Seek allocation of funding for the project and stage as necessary depending on funding availability to achieve additional usage per Table 3.

The estimated total cost is:

Installation of initial 220 Ft (Premier Color Initial):	$19,360
Installation of remaining Phase I - 5756 LF: (SD Growers, DM Color)	$506,528
Installation of Phase II - 3478 LF: (Olivehill, Roseland)[1]	$306,064

1. Also assume Premier Expansion will occur during Phase II

Total Cost:	**$831,952**

Table 3 – Projected Additional Recycled Water Usage

Nursery	Projected Usage (AFY)
Premier Color (2)	48.3
SD Growers	17.3
DM Color	22.3
TOTAL PHASE I	**88**
Olive Hill Greenhouses	130.2
Roseland Nursery	193.2
undeveloped potential	231
TOTAL PHASE II	**554**
Total	**642**

Hydrol. Earth Syst. Sci., 16, 3817–3833, 2012
www.hydrol-earth-syst-sci.net/16/3817/2012/
doi:10.5194/hess-16-3817-2012

Hydrology and Earth System Sciences

A basin-scale approach for assessing water resources in a semiarid environment: San Diego region, California and Mexico

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[1]US Geological Survey, Sacramento, CA, USA
[2]US Geological Survey, Salt Lake City, UT, USA
[3]US Geological Survey, San Diego, CA, USA

Correspondence to: L. E. Flint (lflint@usgs.gov)

Received: 10 February 2012 – Published in Hydrol. Earth Syst. Sci. Discuss.: 1 March 2012
Revised: 12 August 2012 – Accepted: 21 September 2012 – Published: 26 October 2012

Abstract. Many basins throughout the world have sparse hydrologic and geologic data, but have increasing demands for water and a commensurate need for integrated understanding of surface and groundwater resources. This paper demonstrates a methodology for using a distributed parameter water-balance model, gaged surface-water flow, and a reconnaissance-level groundwater flow model to develop a first-order water balance. Flow amounts are rounded to the nearest 5 million cubic meters per year.

The San Diego River basin is 1 of 5 major drainage basins that drain to the San Diego coastal plain, the source of public water supply for the San Diego area. The distributed parameter water-balance model (Basin Characterization Model) was run at a monthly timestep for 1940–2009 to determine a median annual total water inflow of 120 million cubic meters per year for the San Diego region. The model was also run specifically for the San Diego River basin for 1982–2009 to provide constraints to model calibration and to evaluate the proportion of inflow that becomes groundwater discharge, resulting in a median annual total water inflow of 50 million cubic meters per year. On the basis of flow records for the San Diego River at Fashion Valley (US Geological Survey gaging station 11023000), when corrected for upper basin reservoir storage and imported water, the total is 30 million cubic meters per year. The difference between these two flow quantities defines the annual groundwater outflow from the San Diego River basin at 20 million cubic meters per year. These three flow components constitute a first-order water budget estimate for the San Diego River basin. The ratio of surface-water outflow and groundwater outflow to total water inflow are 0.6 and 0.4, respectively. Using total water inflow determined using the Basin Characterization Model for the entire San Diego region and the 0.4 partitioning factor, groundwater outflow from the San Diego region, through the coastal plain aquifer to the Pacific Ocean, is calculated to be approximately 50 million cubic meters per year.

The area-scale assessment of water resources highlights several hydrologic features of the San Diego region. Groundwater recharge is episodic; the Basin Characterization Model output shows that 90 percent of simulated recharge occurred during 3 percent of the 1982–2009 period. The groundwater aquifer may also be quite permeable. A reconnaissance-level groundwater flow model for the San Diego River basin was used to check the water budget estimates, and the basic interaction of the surface-water and groundwater system, and the flow values, were found to be reasonable. Horizontal hydraulic conductivity values of the volcanic and metavolcanic bedrock in San Diego region range from 1 to 10 m per day. Overall, results establish an initial hydrologic assessment formulated on the basis of sparse hydrologic data. The described flow variability, extrapolation, and unique characteristics represent a realistic view of current (2012) hydrologic understanding for the San Diego region.

1 Introduction

Current hydrologic understanding of the San Diego region consists of generalized summaries, site-specific evaluations, and project-design engineering studies (Ellis and Lee, 1919; Izbicki, 1985; Bondy and Huntley, 2000; CH2MHILL, 2003). Characterization of area-scale recharge/runoff,

Table 3. Average annual recharge calculated using the Basin Characterization Model for all river basins in the San Diego/Tijuana study area for 1940–2009.

River basin	Area (km^2)	Average annual recharge (million m^3 yr^{-1})		(mm yr^{-1})	
		1940–2009	2000–2009	1940–2009	2000–2009
San Dieguito River	894	33.7	8.5	37.6	9.6
Poway Creek	244	4.1	1.5	16.9	6.1
Mission Bay	160	1.7	1.2	10.6	7.4
San Diego Bay	237	0.4	0.0	1.5	0.1
San Diego River	1121	53.9	17.5	48.1	15.6
Sweetwater River	564	25.3	7.4	45.0	13.2
Otay River	368	12.2	4.7	33.1	12.9
Tijuana River	4376	92.8	25.7	21.2	5.9

Table 4. Average annual recharge calculated using the Basin Characterization Model for geologic units in the San Diego region.

Geologic unit	Bedrock permeability (mm day^{-1})	Area (km^2)	Mean recharge (1940–2009) (millions m^3 yr^{-1})	Mean recharge (2000–2009) (millions m^3 yr^{-1})
Alluvium	500.0	508	2.37	1.72
Gabbro	0.1	120	0.37	0.26
Granite	5.0	1437	49.70	33.30
Granite-mixed	10.0	387	31.52	19.74
Metamorphics – gneiss/schist	0.1	81	0.20	0.14
Metasediments	5.0	34	3.27	2.02
Metavolcanics	15.0	289	6.61	3.83
Sandstone La Jolla Group	5.0	165	0.81	0.64
Sandstone Otay Formation	50.0	34	0.21	0.07
Sandstone Poway Group	2.0	261	3.96	2.06
Sandstone Rosario Group	2.0	11	0.04	0.04
Sandstone San Diego Formation	5.0	131	0.55	0.12
Sandstone Mission Valley Formation	40.0	38	0.34	0.15
Sandstone Stadium Conglomerate	100.0	44	1.11	0.59

San Diego River, Sweetwater River, and Otay River basins, and have a long-term (1940–2009) average recharge volume of 91.4 million m^3 yr^{-1}, and a recent (2000–2009) average volume of 29.7 million m^3 yr^{-1}.

Within the San Diego River basin, a large proportion, at least an order of magnitude more, of the modeled recharge is located in the region defined by hard rock geology and dominated by granites (Fig. 3c; Table 4). This implies that the largest volume of recharge within the river basins is occurring east of the band of metasediments and metavolcanics that divide the coastal plain from the higher elevation hard rocks. In an effort to collect evidence supporting this preliminary conceptualization of the regional hydrology, groundwater data was collected from wells at a range of elevations throughout the region to determine the chemical characteristics of the locally recharged groundwater (as δ deuterium ‰; Williams and Rodoni, 1997). Those results were then compared to groundwater samples collected from basin aquifers on the coastal plain to assess which elevations may have contributed the most to the recharge (Fig. 3c). The recharge to the coastal plain was calculated for each of the three contributing river basins (Table 5). Although the data does not discriminate between river basin sources, it does indicate that the most recharge occurs in the −50 ‰ δ deuterium zone, which coincides with the high elevation, hard rock zone.

In addition, BCM output indicates that 90 % of simulated BCM_{rch} occurred during 3 % of the 1982–2009 period. A compilation of papers by IAEA (2001) based on field studies that estimate recharge at 44 benchmark sites showed that rainfall below 200 mm usually results in negligible recharge, similar to the model results shown in Fig. 9. An analysis of maps of recharge over a series of years clearly showed that very seldom does any recharge occur directly on the coastal plain, and only in years with very high precipitation. Additional details of episodic recharge in semiarid and arid environments are given in Appendix B.

Prepared for
San Diego Gas & Electric Company
101 Ash Street, HQ13
San Diego, California 92101

REVISED FINAL ENGINEERING REPORT FOR DISTRIBUTION AND USE OF RECLAIMED WATER SUNRISE POWERLINK PROJECT SAN DIEGO COUNTY, CALIFORNIA

DEH Control No. RW 3140
CDPH Control No. RW 767

August 2011

Prepared by

Geosyntec consultants

engineers | scientists | innovators

10875 Rancho Bernardo Road, Suite 200
San Diego, California 92127
(858) 674-6559

Project Number: SC0522

SDGE

Southern California Gas Company

Sempra Energy utilities

Prepared for
San Diego Gas & Electric Company
101 Ash Street, HQ13
San Diego, California 92101

REVISED FINAL ENGINEERING REPORT FOR DISTRIBUTION AND USE OF RECLAIMED WATER SUNRISE POWERLINK PROJECT SAN DIEGO COUNTY, CALIFORNIA

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REGISTERED PROFESSIONAL ENGINEER
STEVEN M. FITZWILLIAM
2501
EXP. 6/30/13
GEOTECHNICAL
STATE OF CALIFORNIA

Steven M. Fitzwilliam
California Geotechnical Engineer No. 2501

31 August 2011
Date

PROFESSIONAL GEOLOGIST
VERYL L. WITTIG
No. 7115
STATE OF CALIFORNIA

Veryl Wittig
California Professional Geologist No. 7115

31 August 2011
Date

Project Number: SC0522

3. TRANSMISSION AND DISTRIBUTION SYSTEMS

SDG&E is committed to utilizing sustainable resources for the Project's water needs, to the extent feasible. SDG&E has coordinated (with the City and/or CP) to obtain reclaimed water for construction use. The location of SDG&Es distribution system (fill stations, construction yards, weed control stations, and construction areas) is presented on Figures D-1 through D-13 within Appendix D.

For the City of San Diego SDG&E has developed a single fill station design (Figure 4). To facilitate filling of trucks, a coded keypad will be installed, with a backup configuration allowing manual filling if necessary. The manual fill option will be housed within the locked fill station structure. Both the coded keypad and locked structure will serve as the security measures to prevent unauthorized public access to reclaimed water resources.

Currently, the location and configuration of the fill station at CP has not been determined. To ensure compliance, SDG&E will provide the DEH and CDPH details and plans for the CP temporary fill station to review and approve, prior to construction and use. At all times the fill stations are in use, an adequately trained site supervisor will be available for oversight to control the distribution of reclaimed water and prevent any cross-connections. The site supervisor will retain up to date as-built plans onsite at all times.

Details for the construction yards are provided in Appendix E. In the event that additional construction yards are identified during construction, SDG&E will notify the appropriate parties. The orientation of site facilities (potable water stations, eating/break areas, etc) will be determined on a site specific basis depending on the site characteristics. Where necessary, engineering controls will be implemented to mitigate any hazards to site workers associated with reclaimed water distribution activities.

The staging area distribution systems will consist of 12,000 gallon drop tanks fed by up to 7,000 gallon tanker trucks. Smaller support trucks (up to 3,000 gallon capacity) will be responsible for transporting reclaimed water from the construction yards to the construction areas along the alignment (Appendix D). It is anticipated that 9 tanker trucks will be used to transport water resources from the fill stations for use on the overhead portion of the alignment. Up to 18 tanker trucks will be used to transport water associated with the construction at the Suncrest Substation.

Approximately 14 weed control stations will be set up at construction yards and along the alignment during construction (Figures D-1 through D-13 within Appendix D). The function of these facilities is to prevent the transport of invasive weed and/or plant seeds to non-native areas. Weed control will be conducted by rinsing wheels and wheel wells using high pressure spray nozzles, and secondary containment units will be constructed to capture all water used during rinsing so that it can be filtered and reused. It is anticipated that the frequency of rinsing will be low enough that evaporation will eliminate the need to pump water from the containment units. If evaporation is not sufficient to remove water, SDG&E will obtain a permit to discharge these waters to a nearby sanitary sewer.

Employees operating the equipment at the weed control stations will not be required to don personnel protection equipment above what is already in use for the Project (long pants and long sleeve shirts), unless cuts are present on their hands (employees will be required to wear latex/nitrile gloves, or equivalent), or excessive back spray or mist is occurring during vehicle washing (workers will be required to wear face shields; such as Pyramex S1010, or equivalent). Additionally, workers will be required to wash their hands after operating the wash station and prior to eating or smoking. The locations of the proposed weed control stations are presented in Appendix D. Should the locations of weed control stations using reclaimed water vary from what is presented, SDG&E will notify all appropriate agencies.

Additionally, from mile post (MP) MP-92 to MP-98 a portion of the alignment will be installed below ground (Appendix D; Figure D-4). It is anticipated that potable water obtained from the Padre Dam Municipal Water District (PDMWD) will be used for construction in these areas.

Free Trash Collection Could End for San Diego City Residents

Download this video (33.1 MB, MP4 format)

July 31, 2009 – San Diego Week host Gloria Penner speaks with KPBS reporter Katie Orr and local editors about trash fees in the City of San Diego.

Related story: Free Trash Pickup in San Diego

Video Transcript:

GLORIA PENNER (Host): This week, the San Diego City Council responded to a county grand jury report calling for residents of the city to pay a fee fo

KATIE ORR (Reporter): Well basically that's a law that prohibits San Diego for charging for trash collection if you can get your trash to a public st

PENNER: So along comes our county grand jury, recently, and says "OK it's time to put an end to that law and it's time to start charging for trash co

ORR: Well, they said that the ordinance as it is now is unfair. In the '80s it was amended so that the city could start charging some businesses and

PENNER: When, we talk about paying, that means that the City of San Diego is actually paying for trash collection for most of the residences. How muc

ORR: Well, it's estimated, it's about 305,000 customers get this service for free and it costs the city, the most common figure is $54 million but th

PENNER: Yeah, that's a significant portion of our general fund. Then of course it had to go to the San Diego City Council to make some decision on th

ORR: Well they basically decided to agree to disagree. There really isn't a consensus. the councilmembers said that it comes down to a fundamental di

PENNER: Because?

ORR: Well because people would probably vote it down. No one wants to pay for a service that they're getting for free right now, so none of the polit

PENNER: So when you talk about it not reaching a consensus, did they really expect that all of the members of the City Council were going to agree on

ORR: I don't think they did. They had to legally send something back to the grand jury. They had to get it back by August 14. They are in recess in A

PENNER: So this is the City of San Diego. We have a wide range of other cities and unincorporated areas where they do pay for trash collection. Is it

ORR: The fees range from about $14 to $23 for residential customers.

PENNER: A month?

ORR: A month, yes. It's different for businesses those are higher fees, but citizens pay between $14 and $23 a month.

PENNER: Quite a difference between that and the City of San Diego. What's next?

ORR: Well, they will send their report to the grand jury, but really they probably won't take much action. They said if the people want to overturn t

PENNER: Thank you very much, Katie Orr. Joining me now to talk about how trash collection is paid for in the City of San Diego is Ricky Young, he's t

RICKY YOUNG (San Diego Union-Tribune): There are certainly constituencies that say that the grand jury, as Katie talked about, has said that the city

PENNER: But what's at the heart of the issue? Is it that San Diego city residents simply don't want to pay for city services?

YOUNG: It's what you might call an entitlement, which is something people get used to and then they don't want to let go of and you know, once you ha

PENNER: Alright, so Miriam, as someone who works outside and works outside of the City of San Diego, what do you make of the argument that San Diego

MIRIAM RAFTERY (East County Magazine): Well, I was actually very surprised to hear about that, because out in East County, in our cities, we all pay

PENNER: Right, but politicians haven't done anything about it either. Ricky, the City Council basically agreed to do nothing about this. Does that sh

YOUNG: Well, that's been the mayor's line, that when the people come to him and say that they want this, he will show leadership on it. I think that

PENNER: I guess what it comes down to, Miriam, is the question of politicians. Are they simply reluctant to take steps that are considered risky and

RAFTERY: Well absolutely, Republicans in particular, but everyone in this climate, if you come out and you publicly favor a tax increase, it can be a

PENNER: And were they necessarily Republicans or Democrats?

RAFTERY: Actually, in the areas out there, it was all Republicans, there were no elected officials that were Democrats, with one exception I guess, b

Technical Support Document: -
Social Cost of Carbon for Regulatory Impact Analysis -
Under Executive Order 12866 -

Interagency Working Group on Social Cost of Carbon, United States Government

With participation by

Council of Economic Advisers
Council on Environmental Quality
Department of Agriculture
Department of Commerce
Department of Energy
Department of Transportation
Environmental Protection Agency
National Economic Council
Office of Energy and Climate Change
Office of Management and Budget
Office of Science and Technology Policy
Department of the Treasury

February 2010

Executive Summary

Under Executive Order 12866, agencies are required, to the extent permitted by law, "to assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs." The purpose of the "social cost of carbon" (SCC) estimates presented here is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO_2) emissions into cost-benefit analyses of regulatory actions that have small, or "marginal," impacts on cumulative global emissions. The estimates are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts.

The SCC is an estimate of the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.

This document presents a summary of the interagency process that developed these SCC estimates. Technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. The main objective of this process was to develop a range of SCC values using a defensible set of input assumptions grounded in the existing scientific and economic literatures. In this way, key uncertainties and model differences transparently and consistently inform the range of SCC estimates used in the rulemaking process.

The interagency group selected four SCC values for use in regulatory analyses. Three values are based on the average SCC from three integrated assessment models, at discount rates of 2.5, 3, and 5 percent. The fourth value, which represents the 95^{th} percentile SCC estimate across all three models at a 3 percent discount rate, is included to represent higher-than-expected impacts from temperature change further out in the tails of the SCC distribution.

Social Cost of CO_2, 2010 – 2050 (in 2007 dollars)

Discount Rate Year	5% Avg	3% Avg	2.5% Avg	3% 95th
2010	4.7	21.4	35.1	64.9
2015	5.7	23.8	38.4	72.8
2020	6.8	26.3	41.7	80.7
2025	8.2	29.6	45.9	90.4
2030	9.7	32.8	50.0	100.0
2035	11.2	36.0	54.2	109.7
2040	12.7	39.2	58.4	119.3
2045	14.2	42.1	61.7	127.8
2050	15.7	44.9	65.0	136.2

Table 4 shows the four selected SCC values in five year increments from 2010 to 2050. Values for 2010, 2020, 2040, and 2050 are calculated by first combining all outputs (10,000 estimates per model run) from all scenarios and models for a given discount rate. Values for the years in between are calculated using a simple linear interpolation.

Table 4: Social Cost of CO_2, 2010 – 2050 (in 2007 dollars)

Discount Rate Year	5% Avg	3% Avg	2.5% Avg	3% 95th
2010	4.7	21.4	35.1	64.9
2015	5.7	23.8	38.4	72.8
2020	6.8	26.3	41.7	80.7
2025	8.2	29.6	45.9	90.4
2030	9.7	32.8	50.0	100.0
2035	11.2	36.0	54.2	109.7
2040	12.7	39.2	58.4	119.3
2045	14.2	42.1	61.7	127.8
2050	15.7	44.9	65.0	136.2

The SCC increases over time because future emissions are expected to produce larger incremental damages as physical and economic systems become more stressed in response to greater climatic change. Note that this approach allows us to estimate the growth rate of the SCC directly using DICE, PAGE, and FUND rather than assuming a constant annual growth rate as was done for the interim estimates (using 3 percent). This helps to ensure that the estimates are internally consistent with other modeling assumptions. Table 5 illustrates how the growth rate for these four SCC estimates varies over time. The full set of annual SCC estimates between 2010 and 2050 is reported in the Appendix.

Table 5: Changes in the Average Annual Growth Rates of SCC Estimates between 2010 and 2050

Average Annual Growth Rate (%)	**5%** Avg	**3%** Avg	**2.5%** Avg	**3.0%** 95th
2010-2020	3.6%	2.1%	1.7%	2.2%
2020-2030	3.7%	2.2%	1.8%	2.2%
2030-2040	2.7%	1.8%	1.6%	1.8%
2040-2050	2.1%	1.4%	1.1%	1.3%

While the SCC estimate grows over time, the future monetized value of emissions reductions in each year (the SCC in year *t* multiplied by the change in emissions in year *t*) must be discounted to the present to determine its total net present value for use in regulatory analysis. Damages from future emissions should be discounted at the same rate as that used to calculate the SCC estimates themselves to ensure internal consistency—i.e., future damages from climate change, whether they result from emissions today or emissions in a later year, should be discounted using the same rate. For example,

Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change

Summary for Policymakers

This summary, approved in detail at the Eighth Session of IPCC Working Group II (Brussels, Belgium, 2-5 April 2007), represents the formally agreed statement of the IPCC concerning the sensitivity, adaptive capacity and vulnerability of natural and human systems to climate change, and the potential consequences of climate change.

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Impacts due to altered frequencies and intensities of extreme weather, climate and sea-level events are very likely to change.

Since the IPCC Third Assessment, confidence has increased that some weather events and extremes will become more frequent, more widespread and/or more intense during the 21st century; and more is known about the potential effects of such changes. A selection of these is presented in Table SPM.1.

The direction of trend and likelihood of phenomena are for IPCC SRES projections of climate change.

Some large-scale climate events have the potential to cause very large impacts, especially after the 21st century.

Very large sea-level rises that would result from widespread deglaciation of Greenland and West Antarctic ice sheets imply major changes in coastlines and ecosystems, and inundation of low-lying areas, with greatest effects in river deltas. Relocating populations, economic activity, and infrastructure would be costly and challenging. There is medium confidence that at least partial deglaciation of the Greenland ice sheet, and possibly the West Antarctic ice sheet, would occur over a period of time ranging from centuries to millennia for a global average temperature increase of 1-4°C (relative to 1990-2000), causing a contribution to sea-level rise of 4-6 m or more. The complete melting of the Greenland ice sheet and the West Antarctic ice sheet would lead to a contribution to sea-level rise of up to 7 m and about 5 m, respectively [Working Group I Fourth Assessment 6.4, 10.7; Working Group II Fourth Assessment 19.3].

Based on climate model results, it is very unlikely that the Meridional Overturning Circulation (MOC) in the North Atlantic will undergo a large abrupt transition during the 21st century. Slowing of the MOC during this century is very likely, but temperatures over the Atlantic and Europe are projected to increase nevertheless, due to global warming. Impacts of large-scale and persistent changes in the MOC are likely to include changes to marine ecosystem productivity, fisheries, ocean carbon dioxide uptake, oceanic oxygen concentrations and terrestrial vegetation [Working Group I Fourth Assessment 10.3, 10.7; Working Group II Fourth Assessment 12.6, 19.3].

Impacts of climate change will vary regionally but, aggregated and discounted to the present, they are very likely to impose net annual costs which will increase over time as global temperatures increase.

This Assessment makes it clear that the impacts of future climate change will be mixed across regions. For increases in global mean temperature of less than 1-3°C above 1990 levels, some impacts are projected to produce benefits in some places and some sectors, and produce costs in other places and other sectors. It is, however, projected that some low-latitude and polar regions will experience net costs even for small increases in temperature. It is very likely that all regions will experience either declines in net benefits or increases in net costs for increases in temperature greater than about 2-3°C [9.ES, 9.5, 10.6, T10.9, 15.3, 15.ES]. These observations confirm evidence reported in the Third Assessment that, while developing countries are expected to experience larger percentage losses, global mean losses could be 1-5% GDP for 4°C of warming [F20.3].

Many estimates of aggregate net economic costs of damages from climate change across the globe (i.e., the social cost of carbon (SCC), expressed in terms of future net benefits and costs that are discounted to the present) are now available. Peer-reviewed estimates of the SCC for 2005 have an average value of US$43 per tonne of carbon (i.e., US$12 per tonne of carbon dioxide), but the range around this mean is large. For example, in a survey of 100 estimates, the values ran from US$-10 per tonne of carbon (US$-3 per tonne of carbon dioxide) up to US$350 per tonne of carbon (US$95 per tonne of carbon dioxide) [20.6].

The large ranges of SCC are due in the large part to differences in assumptions regarding climate sensitivity, response lags, the treatment of risk and equity, economic and non-economic impacts, the inclusion of potentially catastrophic losses, and discount rates. It is very likely that globally aggregated figures underestimate the damage costs because they cannot include many non-quantifiable impacts. Taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time [T20.3, 20.6, F20.4].

It is virtually certain that aggregate estimates of costs mask significant differences in impacts across sectors, regions, countries and populations. In some locations and among some groups of people with high exposure, high sensitivity and/or low adaptive capacity, net costs will be significantly larger than the global aggregate [20.6, 20.ES, 7.4].

Why the Grass Isn't Always Greener

In the United States in the eighteenth century, lawns were a novelty, green carpets grown by the wealthy as part of a new European, "naturalistic" fashion in gardening. As farming diminished and cities grew, lawns grew with them, naturalizing into U.S. culture to such a degree that the month of April is known not only for its showers and Earth Day, but also for being National Lawn Care Month.

In the United States, some 46.5 million acres of roadsides, lawns, golf courses, cemeteries, parks, and sports fields are blanketed with turf—more than the total U.S. acreage of cotton, sorghum, barley, and oats, according to the EPA. The green carpet has spread past U.S. borders into Canada and Europe, while booming new turf markets have opened in Southeast Asia and Australia. With the growth of lawns has come a host of concerns about human and environmental health.

Today, some see a velvety lawn as an ideal, others as a plague. Environmentalists and communities accuse the golf and turf industries of misuse or overuse of pesticides and water, destruction of ecosystems, and threats to biodiversity; turf proponents see lawns as a functionally useful and beautiful feature of a developing world. Sorting fact from falsehood involves sifting through a tangle of influencing factors, including the paucity of data on grass and turf, differences in scientific views, and clashes among the cultures of science, business, environmentalism, and recreation.

"This is a very complex field," says James B Beard, a turf grass stress physiologist, professor emeritus at Texas A&M University in College Station, and president of the International Sports Turf Institute. "You can't just focus on a single issue. You need to take a balanced view, and consider the interacting impacts together."

A History of Grass

The grass family Poaceae is among the most abundant of the vascular and flowering plants. Grasses are quick to colonize barren territory, spreading by means of an extensive fibrous root system. Only about 50 of the estimated 7,500 grass species are cultivated for turf. All 50 of these species are naturalized. Colonists imported them to the United States (along with clover, dandelions, and other "weeds") to feed their livestock—also imported—because the native grasses were so low in nutrition.

Beard says there is an ecological reason why low-growing grasses were superior for this purpose. "Native grasses of North America evolved in concert with bison, antelope, and deer, [whose] mouthparts are adapted to grazing tall grasses. Most of the turf grasses evolved 40 million years ago in Central Europe, along with ungulates like cows and sheep. The basal growth of the European grasses allows them to survive grazing—and mowing. Evolution favors their present function."

The popularization of lawns ran parallel to urbanization, technological advances, and the expansion of national distribution networks. The first U.S. lawn mower patents were filed in 1868, the first sprinkler patents in 1871. By 1987, an agrostologist at the U.S. Department of Agriculture (USDA) publicly advocated single-species lawns for all suburban homes, the grooming of which would "bespeak the character of the owner." And in her book *The Lawn: A History of an American Obsession*, author Virginia Scott Jenkins cites numerous quotes and advertisements implying that well-tended lawns and high moral fiber are inextricably linked. Golf, a game that may have originated in Julius Caesar's day, made its U.S. debut in 1888 in a New York cow pasture; by 1902, there were 1,000 golf courses in the United States. By 1912, the USDA and the U.S. Golf Association (USGA) were collaborating on turf studies.

Today, the lawn and turf industry, including machinery, sod farms, and private and commercial lawn care, generates approximately $25 billion annually and employs over 500,000 people. The U.S. golf industry, with an estimated 16,000 courses covering some 2.4 million acres, 25 million U.S. players, construction, maintenance, club dues, and employment, generates $64 billion each year, and spends $8 billion in chemicals and equipment, according to the Golf Course Superintendants Association of America (GCSAA). Overseas turf sales, though hard to track, are growing; Toro, a Minnesota-based lawn maintenance and irrigation company, earned $152 million in overseas revenues in 1995 alone.

Golf is an international sport. A 1996 survey by the renowned Scottish golf club St. Andrews, though incomplete, tallied over 25 million golfers from respondents at 11,600 golf clubs in Europe, Australia, and parts of South America, Africa, the Middle East, and the Far East.

The Pros and Cons of Lawns

There's no doubt that a "perfect," weed-free green lawn takes effort to maintain. "I don't think you'd find an ecologist who would say that a treated lawn is not a high-energy, unstable system," says Sam Droege, a wildlife biologist with the U.S. Geological Survey's (USGS) Wildlife Research Center in Patuxent, Maryland.

The roar of lawn machinery contributes to noise pollution, with machines such as leaf blowers reaching 120 decibels, a potentially damaging level. Lawn equipment also contributes to air pollution: according to the EPA, 90 million lawn and garden machines emit 6 million tons of pollutants—5% of total annual emissions—including hydrocarbons, particulates, nitrogen oxides, carbon monoxide, and carbon dioxide. The EPA also reports that lawn clippings constitute almost 21%, or 31 million tons, of material added to municipal dumps annually—an unnecessary use of space, as clippings can benefit lawns if left to decay.

Opponents say that the spread of lawns and golf courses has destroyed native plants and ecosystems in favor of an artificial, "chemically addicted," unsustainable monoculture. In *The Lawn: A History of an American Obsession*, Jenkins describes how forests and marshes have vanished before the "front-lawn aesthetic," creating "a savannah from coast to coast."

The Chemicals Question

During the post-World War II boom years, a new breed of chemical weapons was trained at the Japanese beetles, crabgrass, grubs, earthworms, and other "pest" organisms that threatened U.S. lawns. Environmental awareness was virtually absent, and DDT (called "the atomic bomb of the insect world") and other pesticides were heavily marketed. Protests against the demands and environmental effects of lawn care surfaced in the mid-1950s and gained momentum with the 1962 publication of *Silent Spring*. In this book, author Rachel Carson pointed out the dangers of lawn care "super poisons" such as arsenic, 2,4-D, chlordane, and DDT. These chemicals, she wrote, "give a giddy sense of power over nature to those who wield them." Arsenic, chlordane, and DDT were eventually banned for most uses, but 2,4-D and other chemicals, some of them highly toxic, are still on the market. Their use and alleged abuse constitute the most complex and controversial issues in the turf wars.

According to the EPA, in 1996 U.S. citizens used an estimated 70 million tons of fertilizer (lawn and garden use combined) and 70–75 million pounds of pesticide active ingredients (12 million pounds of insecticides, 45 million pounds of herbicides, and 5.4 million pounds of fungicides), valued at a total of $1.13 billion. The EPA's 1996 *Fact Sheet on Lawn Care Pesticide Use* reports that approximately 55 pounds of pesticide active ingredients per acre were applied annually to the average golf course. Homeowners rank above lawn care organizations (LCOs) in insecticide and herbicide use, while golf courses lead in fungicide use, employing more than six times more fungicide than homeowners, and nearly 15 times more than LCOs. (Putting greens receive the most intensive doses; roughs may receive little or no pesticides.) This pesticide use has generated outcries among the environmental community against the turf and golf industries, and against lawn cultivation in general.

The EPA is responsible for regulating lawn pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). FIFRA establishes a tolerance, or allowable residue, in raw and processed foods, animal feeds, and food additives, based on the Federal Food, Drug, and Cosmetic Act. All registered chemicals undergo extensive mandatory testing that includes determination of residues in food, environmental fate, degradation rate, accumulation, acute and subchronic hazards from oral and dermal absorption, metabolism if absorbed, teratogenicity and mutagenicity, spray drift, nontarget exposure, and exposure of employees. Registration does not imply that a product is safe, only that it will perform its intended function without "undue adverse effects on the environment." Under the latest modification to FIFRA, the 1996 Food Quality Protection Act, the EPA has also added testing to address risk to vulnerable populations such as children and the elderly, endocrine-disrupting potential, and aggregate risks posed by multiple chemicals with a common mode of action whose synergistic effects must now be examined.

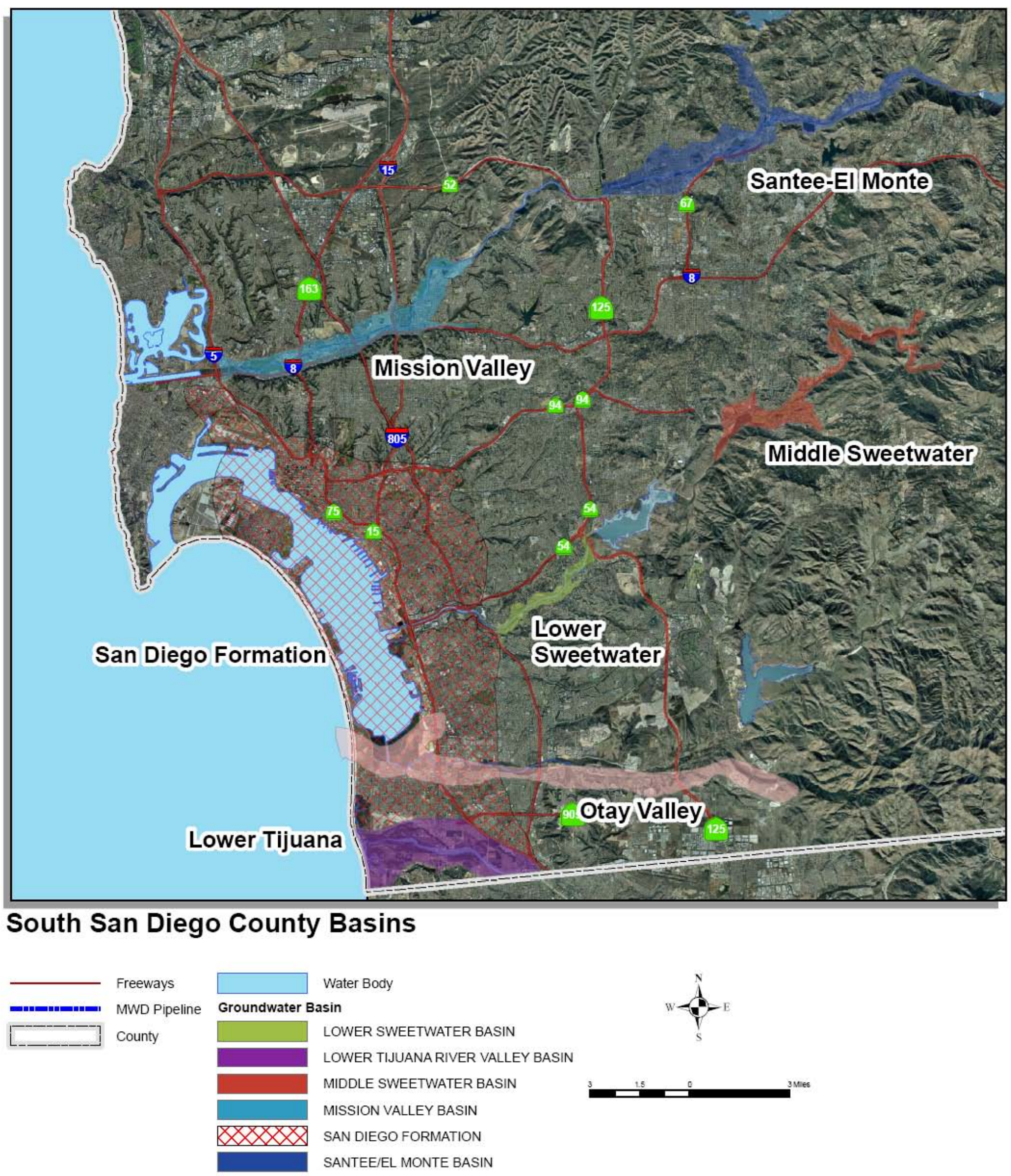
The EPA has been subject to criticism because pesticide reregistration, originally scheduled to be completed in 1976, is still incomplete (with 170 active ingredients reregistered in a 1995 count). Additionally, some groups claim that labeling regulations prevent consumers from assessing potential risks not only from active ingredients, but also from inactive ingredients that are not always listed, though they can also be highly toxic.

One objection to lawn pesticides is their effect on nontarget organisms. In 1986, the EPA banned diazinon for use on golf courses and sod farms because of frequent incidents of bird kills (ranging from 1 to 800 birds at a time) related to its use. However, diazinon is still approved for household use. An insecticide, it is also toxic to beneficial animals such as bees. Chlorpyrifos, used in agriculture and also to control mosquitoes and turf-destroying insects on golf courses, has been shown to cause harm or death to nontarget organisms such as fish, aquatic invertebrates, birds, and humans. In his 1987 book *Pesticide Use and Toxicology in Relation to Wildlife*, Gregory Smith stated that, though there is little evidence that organophosphates and carbamates are causing significant population changes in wildlife species, pesticide users should understand that following label instructions does not ensure wildlife will not be killed—weather conditions, the season, and mating and migratory habits of local fauna should also be considered.

Other concerns center on the level of risk to human health from chemicals that the EPA considers acceptable. In the United States, organochlorines such as DDT, which persist in the environment and in human tissue, have largely been replaced by organophosphates and carbamates. Although these chemicals usually degrade quickly in the environment (though tests of the herbicide glyphosphate showed that the pesticide lingered as long as 140 days in the environment), many can

The groundwater basins in south San Diego County discussed in this section include: Lower Sweetwater Basin, Middle Sweetwater Basin, San Diego Formation, Santee-El Monte Basin, Mission Valley Basin, Otay Valley Basin, and Lower Tijuana River Valley Basin. Because available data are limited for several of the smaller basins, basin descriptions are combined where applicable. The South San Diego County Basins underlie the service area of the San Diego County Water Authority (SDCWA). A map of the South San Diego County Basins is presented in **Figure 23-1**.

Figure 23-1
Map of the South San Diego County Basins



Source: SDCWA

BASIN CHARACTERIZATION

The following section provides a physical description of the Sweetwater Basins, the San Diego Formation, and the Santee-El Monte Basin including its geographic location and hydrogeologic character.

Basin Producing Zones and Storage Capacity

Table 23-1 provides a summary of hydrogeologic parameters of the South San Diego County Basins. Each basin is discussed separately in the following section.

Sweetwater Basins-San Diego Formation

The Sweetwater Basins underlie an alluvial valley of the Sweetwater River that empties into the San Diego Bay near the cities of National City and Chula Vista. The basins include the Lower Sweetwater Basin and the Middle Sweetwater Basin. The San Diego Formation is part of a thick wedge of sediments that was deposited along the coast in the San Diego Bay area in southwestern San Diego County. The San Diego Formation is believed to be at least 1,000 feet thick in an area that underlies the cities of Imperial Beach, Chula Vista, and National City, and southern portions of the city of San Diego.

The Sweetwater Basins within the alluvial plain of the Sweetwater River are unconfined. The San Diego Formation is confined, with a basin ground surface area of 79,724 acres. San Diego County Water Authority estimates a groundwater storage capacity of 13,000 AF in the Lower Sweetwater Basin, 28,900 AF in the Middle Sweetwater Basin, and about 960,000 AF in the San Diego Formation. These values suggest a total storage capacity of about 973,000 AF for the Sweetwater Basins-San Diego Formation. DWR (1986) estimated that between 17,000 and 20,000 AF of groundwater was in storage. Based upon current understanding of the hydrogeology of the San Diego Formation, the usable and more cost-effective storage in the formation has been approximated to be on the order of 40,000 to 90,000 AFY.

Santee-El Monte Basin

The Santee-El Monte Basin is an unconfined groundwater basin located in the eastern portion of the San Diego River watershed near the cities of Santee, La Mesa, El Cajon, and Lemon Grove. The groundwater basin is comprised of commingling alluvial valleys of the San Diego River, San Vicente Creek, Forester Creek, Los Coches Creek, and Sycamore Canyon Creek.

The alluvial aquifer ranges in thickness up to 230 feet or more and is thickest in the eastern portion of the basin. In Santee, the alluvium thickness is limited, ranging from less than 10 feet to approximately 30 feet. According to Helix Water District (Helix WD), a water purveyor in the basin, numerous studies have been performed on the El Monte Basin with estimates of total storage capacity ranging from 18,000 to 50,000 AF. Other reports suggest a range from 70,000 to 97,000 AFY (Anchor Environmental, 2004). The basin yield during a drought period, with an initially full basin, was modeled to be approximately 24,000 AF.

California Friendly® Turf Replacement Incentive Program
Southern California

Final Project Report

Agreement # R11AP35314
The Metropolitan Water District of Southern California
700 N. Alameda Street
Los Angeles, CA 90012-3352
September 30, 2013

lawn without applying for an incentive after seeing drought tolerant landscapes, hearing marketing, receiving a high bill, or experiencing the general trend toward accepting drought tolerant yards.

The total quantifiable water savings of the 2,439,025 square feet of turf removed with an incentive from this program was 2,745 AF over a 10 year life. Assuming another 2.4 million square feet of turf was removed without an incentive, the total AF saved over 10 years is 5,490. This savings meets the approximate program goal of saving 5,520 AF. Additional information on water savings is contained in Appendix E.

Continue collaborating with Reclamation to promote California Friendly landscape and encourage the evolution of landscape norms from high-water use to water efficient landscape norms

The California Friendly Turf Replacement Incentive Program has successfully continued the collaboration between Metropolitan and USBR to promote California Friendly landscapes. Currently, Metropolitan is also collaborating with USBR on the Sprinkler Nozzle Incentive Program (Agreement Number R12AP35351). The Sprinkler Nozzle Incentive Program is designed to change consumer preference for efficient irrigation devices by 1) increasing consumer awareness of the efficient devices and 2) reducing the cost difference between traditional nozzles with high precipitation rates and newer technologies with lower precipitation rates. It is anticipated that the Sprinkler Nozzle Incentives will replace 500,000 high-water use nozzles with efficient nozzles; the changeover of so many nozzles will encourage the evolution of landscape norms from high-water use to water efficient landscape norms.

In addition to incentives, Metropolitan also utilizes education as a strategy to change landscape norms. The California Friendly Landscape Training (CFLT) program was implemented in 2013 to provide California friendly landscaping workshops to residential customers throughout Metropolitan's service area. The CFLT program teaches residential property owners about water efficient landscape practices, design and construction, irrigation systems, plant selection, and runoff minimization.

Provide water agencies with the opportunity to augment the base incentive with additional funding to create a greater incentive for their customers to participate

Metropolitan successfully provided water agencies with the opportunity to augment the \$1.00 per square foot base incentive. Through yearly agreements, water agencies could designate the amount of augmentation added to the base incentive in their service area. In FY 2012-2013, six the nineteen participating member agencies added additional funds onto the base incentive of \$1 per square foot. With the added incentive, customer incentives ranged from \$1.25 to \$3.00 per square foot.

There are multiple factors that affect program participation ranging from the nation's economic health, to the regional housing market, to local water rates. In addition to these factors outside of the program's control, there are also factors directly associated with the Program. Examples of these are the tendency for successful conservation programs to gain momentum over the years, program specific marketing efforts, and an overall cultural trend away from turf lawns. Within this mix of factors, the impact of increased turf removal incentive amounts is difficult to determine.

From Report to Reality; One Agency's Delayed Success Story

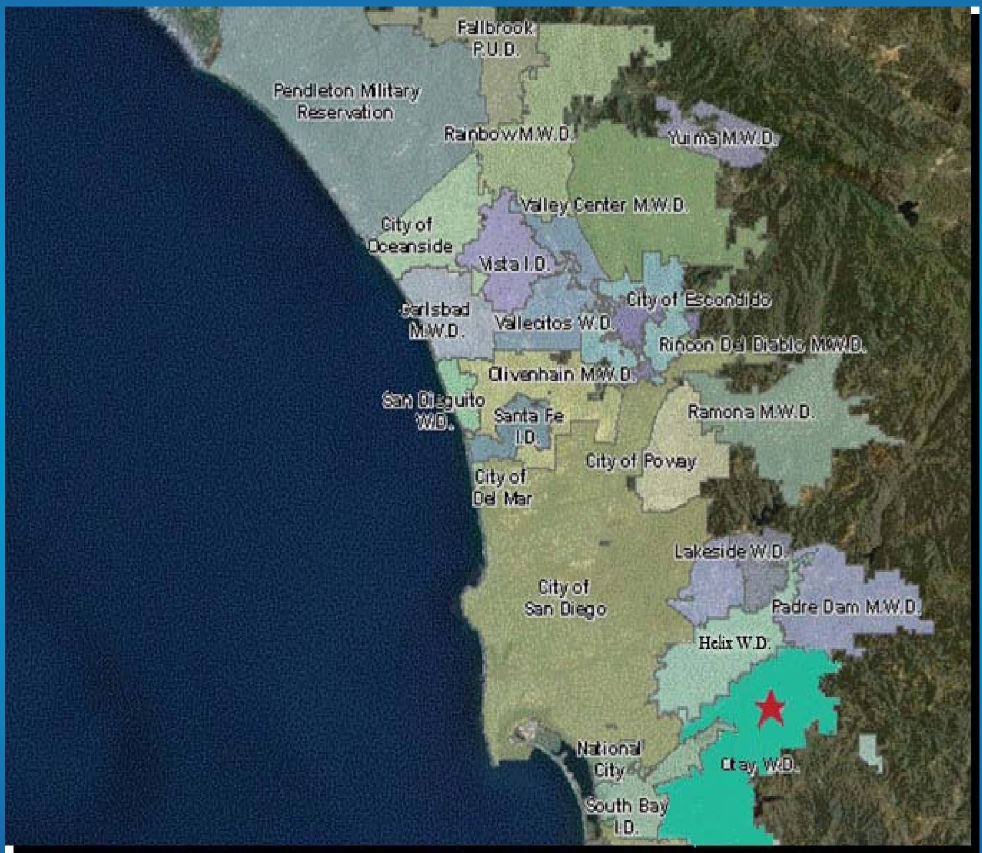
WaterSmart Innovations Conference and Exposition

October 6, 2010

Rhianna Pensa, Water Conservation Specialist
Otay Water District

The Otay Water District

About the Otay Water District



- **Established in 1956 as a California Special District**
- **Governed by elected five member Board of Directors, serving five divisions**
- **125.5 square mile service area with 206,000 customers in San Diego County including Spring Valley, Rancho San Diego, Jamul, La Presa, eastern Chula Vista and Otay Mesa**

Otay's Customer Classes & Percent of Total Sales

- **40,992 Single Family Accounts; 51% Total Sales**
- **3,421 Multi-Family Accounts; 11% Total Sales**
- **1,432 CII Accounts; 12% Total Sales**
- **1,884 Irrigation Only Accounts; 23% Total Sales**

Why is Otay Focusing on CII Accounts?

- **SANDAG's projected growth in Otay's service area**
- **Water shortage declaration**
- **State mandate to reduce 20% 2020**
- **CUWCC BMP compliance**
- **CII funded audits as a pilot study in June 2005**

Funding the CII Audits

- **Otay identified top 10 CII users and developed RFP for pilot CII audit**
- **FY 2005 co-funding with San Diego County Water Authority (CWA)**
- **Contract awarded to Water Management Incorporated (WMI)**

Otay's Top 10 Commercial & Institutional Water Users: FY 04

Donovan	872 AF*
Bailey	482 AF*
Delimex	86 AF*
Veterans Home	80 AF*
Cuyamaca College	69 AF*
Sharp CV Medical Center	69 AF*
Bonita Vista High School	61 AF*
Southwestern College	46 AF*
Knotts Soak City	21 AF*
Olympic Training Center	11 AF*

AF= Acre-feet

The Audit/Report

- WMI conducted audits in March 2005
- Report results finalized in February 2006

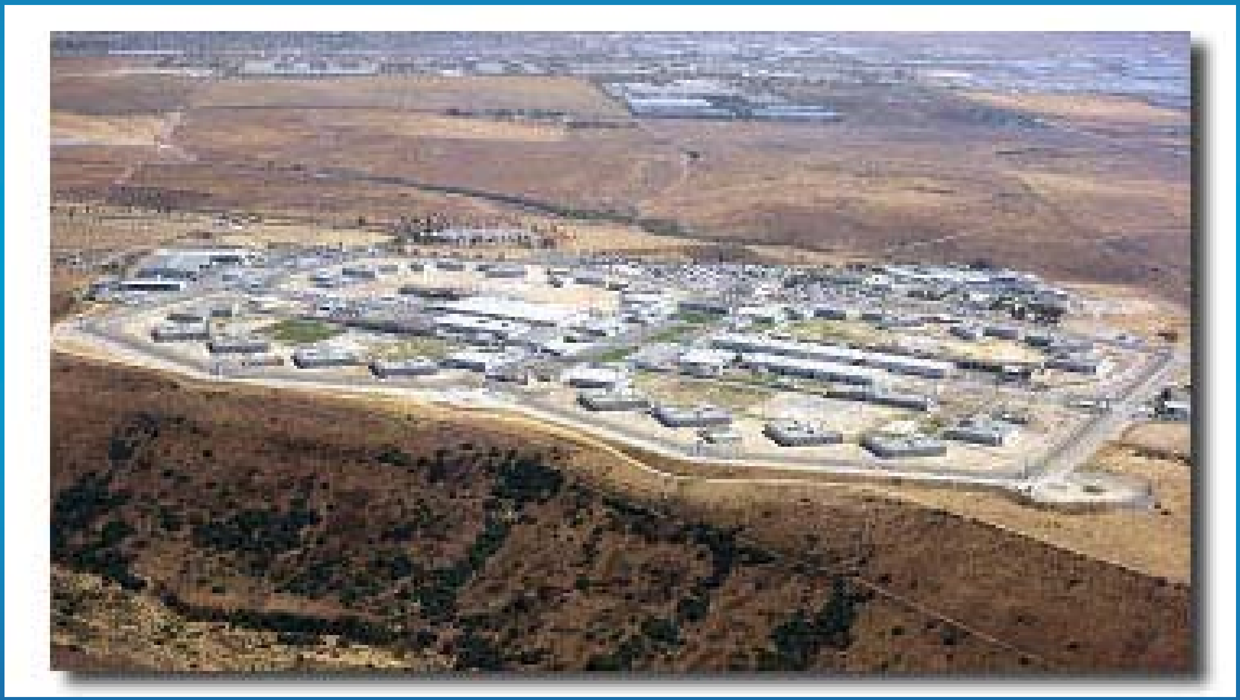
facilities selected for the audits :

- – Donovan (CA state prison)
- – Bailey Detention Center (county jail)

Entire Project Timeline FY 05-06

Mar 2005	June 2005	Feb 2006	July 2008	Nov 2008	July 2009	Dec 2009
WMI hired	WMI completes audits and submits draft of final reports for Donovan and Bailey	Otay, CWA, WMI meet with both Donovan and Bailey to discuss final recommendations	Donavan begins retrofit	Donovan completes retrofit	Bailey begins retrofit	Bailey completes retrofit

R.J. Donovan Correctional Facility (State of California)



Donovan

- **Medium-high custody facility**
- **4,500 Inmates**
- **1,300 Staff**
- **55% of the site's water usage is for inmate bathrooms**

WMI's Recommendations

Measures	Quantity	Gallons/ Year Savings	Annual Savings	Installed Cost	Payback with Incentives
Inmate Bathroom Fixtures – Facility 1-4					
I-CON Electronic Bathroom Controls	2,092	57,834,260	$421,039	$1,851,420	4.0
I-CON Electronic Shower Controls	176	13,094,010	$114,812	$155,760	1.0
I-CON Electronic Faucet Controls	500	5,840,000	$51,207	$442,500	8.3
Inmate Bathroom Fixtures- Facility 5					
Replace commercial toilets	26	1,790,592	$12,714	$26,185	1.9
Replace urinal flush valves	4	156,160	$1,109	$2,026	1.8
Install flow reducers for faucets	44	78,022	$554	$2,577	4.7
Common Area Bathrooms Facility 1-5					
Replace common area toilets	267	2,797,729	$19,865	$237,700	10.7
Replace common area urinals	23	468,096	$3,324	$9,965	3.0
Replace common area faucet aerators	265	68,270	$591	$4,770	8.1
Laundry					
Ozone Laundry System	1	1,750,000	$38,704	$151,429	2.8
Kitchen					
Kitchen Pre Rinse Spray Nozzles	8	175,200	$1,789	$0	-
Total		**84,052,339**	**$665,706**	**$2,884,331**	**4.6 years**

Measures Implemented- Donovan

Survey Findings	Recommendations	QTY
3.5 gpf toilets, flushing 18 times a day	Electronic Flush Valve Controls Acorn Master-Trol	2,000

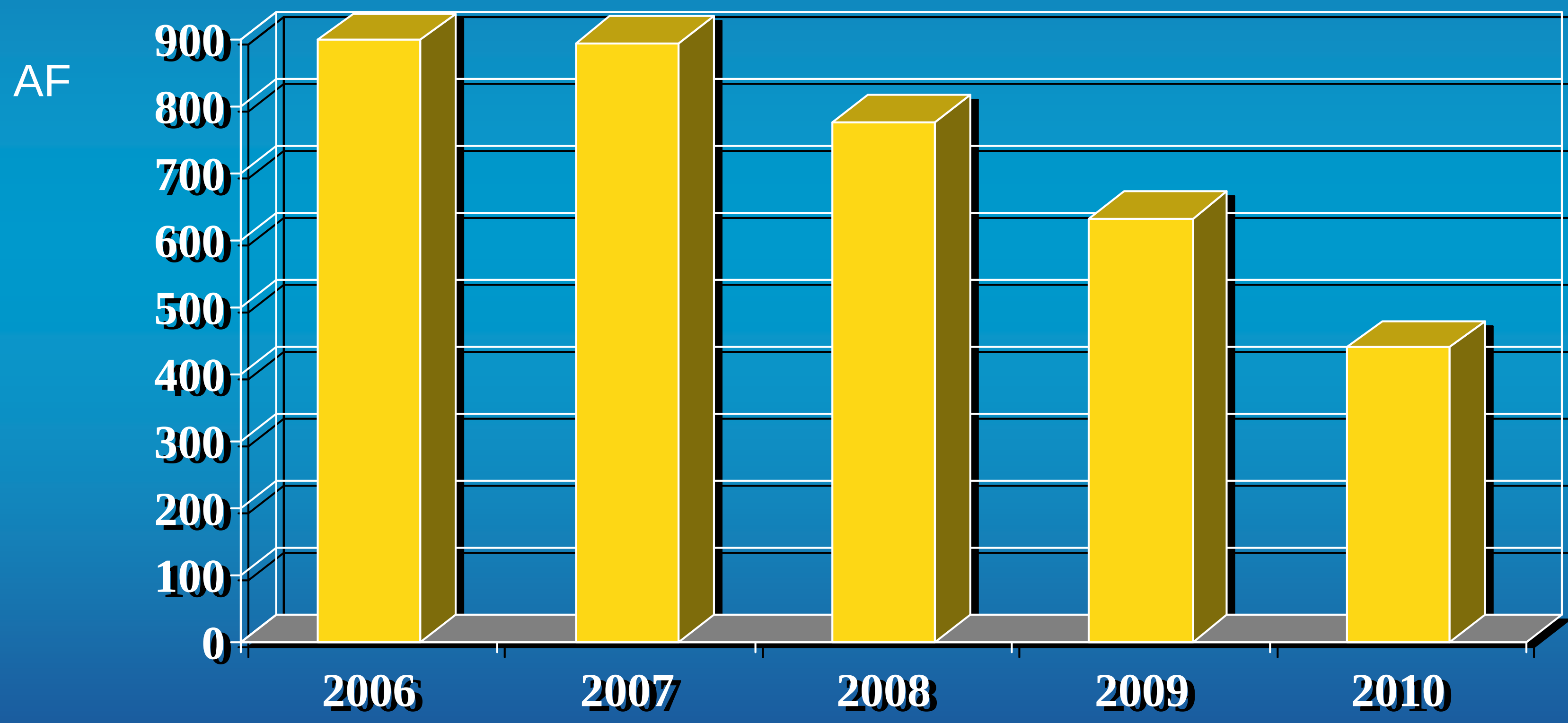
Electronic Plumbing Fixture Controls

- **Acorn Master-Trol Flush Valve Assemblies**
  - **Electronically controlled**
  - **Flushing limited to 12 flushes per day for each unit**

Donovan Timeline

- **Began retro-fit July 2008**
- **Completed retro-fit November 2008**

Donovan Water Use CY 2006-2010



George F. Bailey Detention Center& East Mesa Detention Facilities San Diego County

Bailey

- Bailey Detention center houses max security prisoners
- 2,000 total prisoners
- 453 sworn and professional staff
- 40% of the site's water usage is for inmate bathrooms

WMI's Recommendations

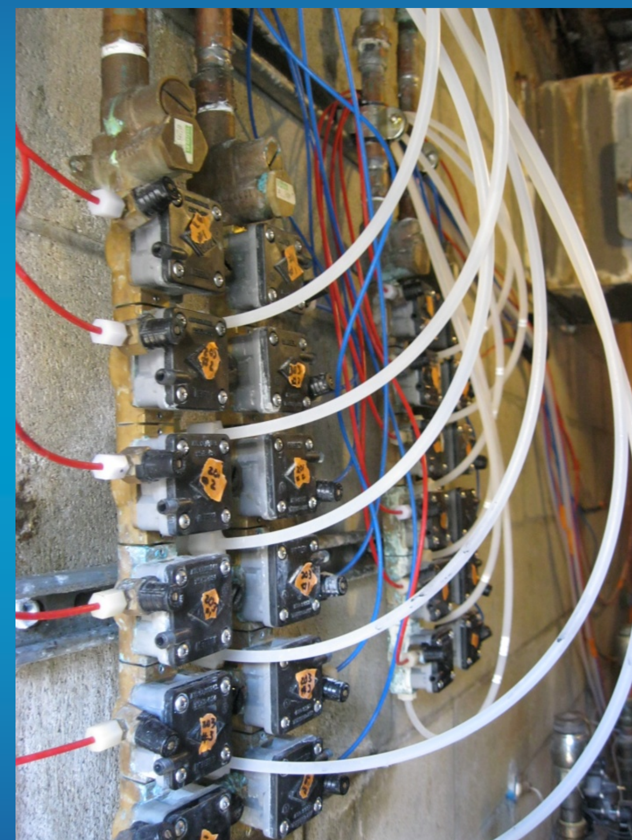
Measures	Quantity	Gallons/Year Savings	Annual Savings	Installed Cost	Water & Energy Incentives	Cost with Incentives	Payback with Incentives (years)
Inmate Bathroom Measures - Bailey							
I-CON Electronic Bathroom Controls	480	18,930,120	$141,716	$424,800	$56,790	$368,010	2.6
Showers- See Text	96				$0	$0	
Inmate Bathroom Measures - East Mesa							
Replace Inmate Toilets	64	1,615,260	$12,092	$54,080	$6,080	$48,000	4.0
Replace Urinal & Flush Valves	48	12,614,400	$82,342	$40,560	$0	$40,560	0.5
Common Area Bathroom Measures							
Replace Commercial Toilets	35	1,093,173	$8,184	$22,265	$3,325	$18,940	2.3
Urinal Valve Replacement	8	59,359	$444	$3,114	$0	$3,114	7.0
Faucet Aerators	38	115,083	$1,041	$684	$0	$684	0.7
Laundry							
Ozone System	1	2,620,800	$58,789	$134,563	$64,082	$70,481	1.2
Kitchen							
Pre-Rinse Spray Nozzles	5	219,000	$2,321	$0	$0	$0	0.0
Water Softener Line Fix	1	2,628,000	$19,674	$0	$0	$0	0.0
Total		**39,895,195**	$326,604	$680,066	$130,278	$549,788	**1.7**

Measures Implemented- Bailey

Survey findings	Recommendations	QTY
3.5 gpf toilets	1.28 gpf toilets	40
1.5 gpf Urinal Valve	.125 gpf Urinal Valve	49
2.2 gpm Sink Aerators	1.0 gpm Sink Aerators	51
3.5 gpf Flush Valves	1.6 Electronic Flush Valves ICON	488

Electronic Plumbing Fixture Controls

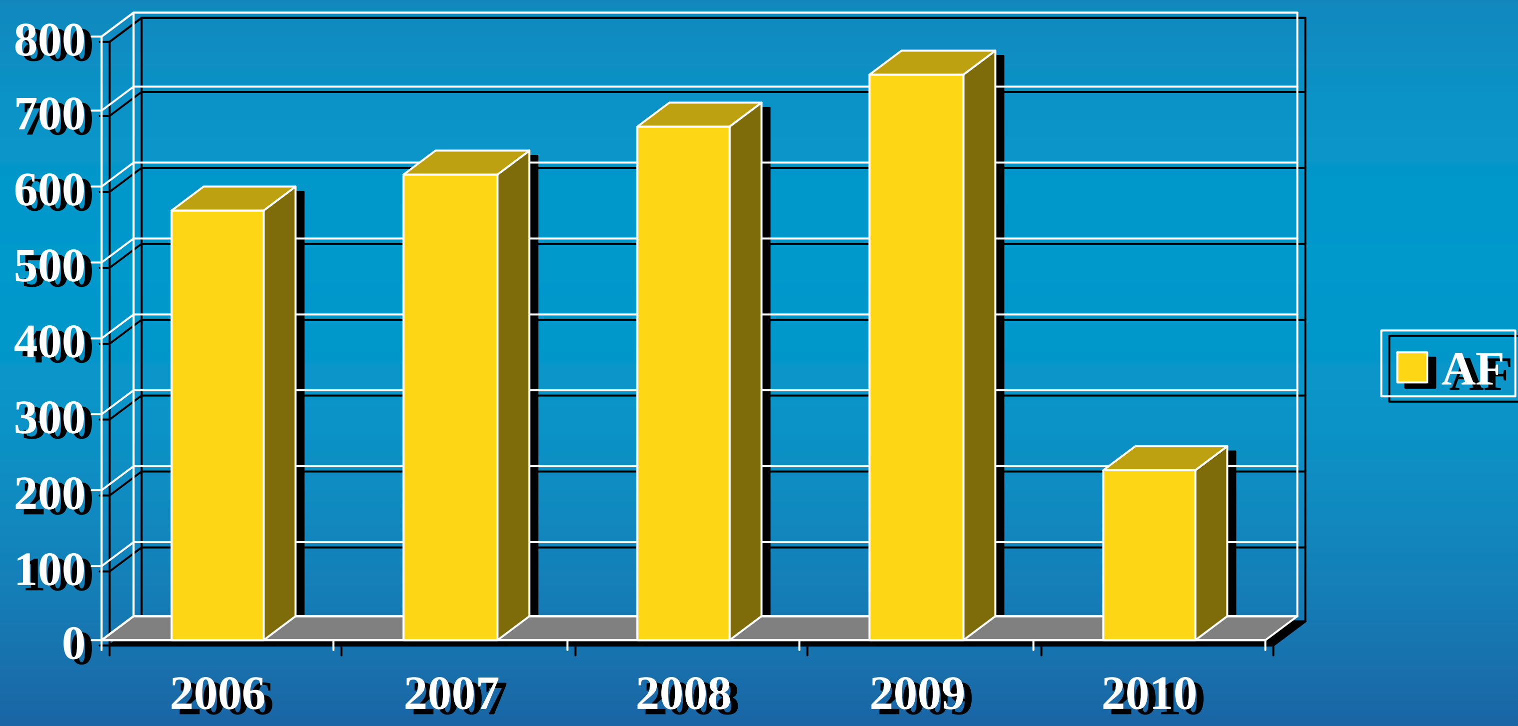
- **ICON**
  - **Electronically controlled**
  - **Flushing limited to 12 per day for each unit**



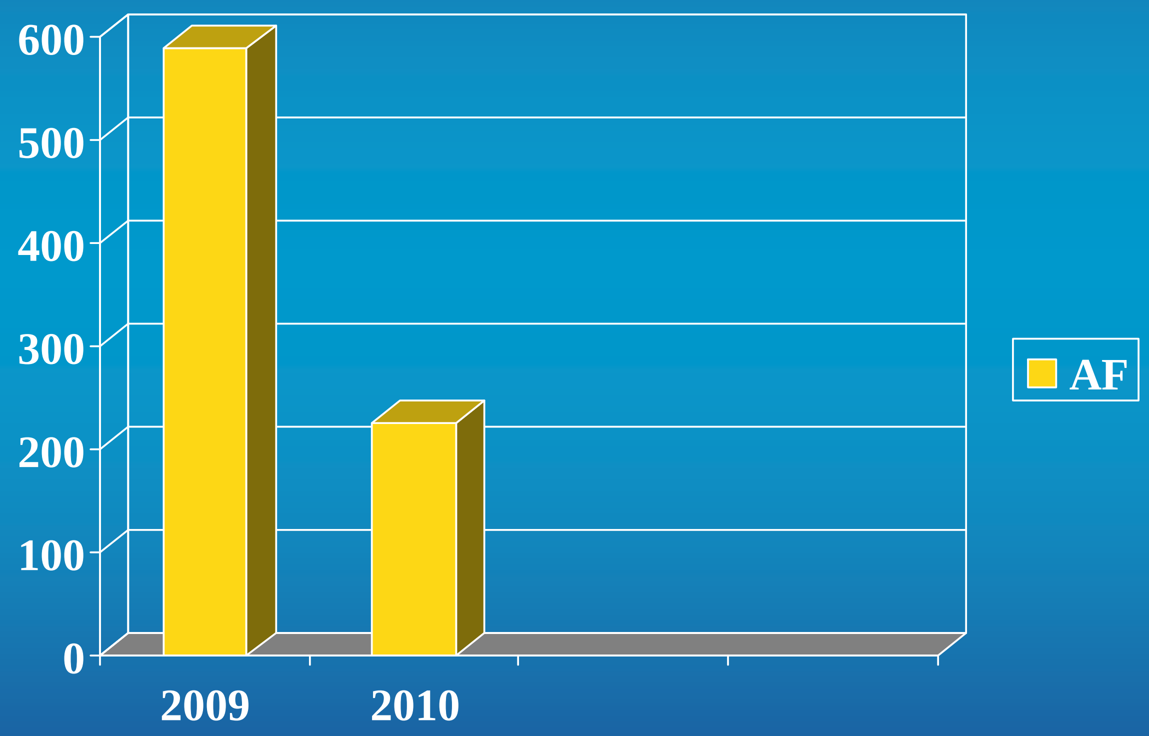
Bailey's Timeline

- **Began retro-fit July 2009**
- **Completed retro-fit December 2009**

Bailey Water Use CY 2006-2010

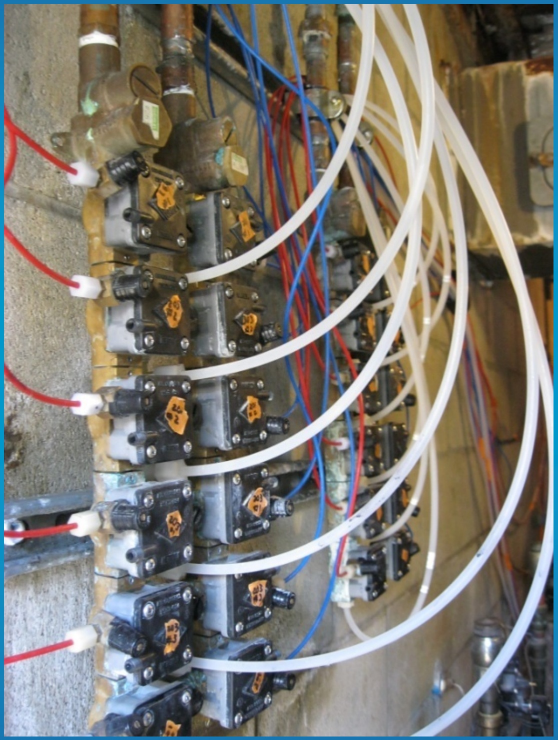


Bailey: 9 Months of CY 2009 vs. 9 Months of CY 2010



Issues and Obstacles for Delayed Success

- **Bailey**
  - **– Delays occurred due to electrical conduit issues**
- **Donovan**
  - **– Paperwork issues**



Potential Donovan Projects

- **Laundry- 4% capacity to process over 6 million pounds per year**
- **Kitchen- 12%**
- **Common area toilets-3 %**

Potential Bailey Projects

- **Laundry- 6.15%**
  - **Serves all SD County detention facilities**
  - **5 Washex 440 pound industrial sized washers**
  - **12K pounds per day; 5 days a week**
- **Kitchens- 4%**
  - **Serves all SD County detention facilities**
  - **38,000 meals per day**

ESTABLISHED 1956 OTAY WATER DISTRICT

Otay's CII Present and Future Plans

- **Created a Commercial Process Improvement Program (PIP) in January of 2010**
- **Continuing to work with our top CII users, especially top 10**
- **Requesting consultants to conduct up to 10 commercial audits**

Current CII PIP Projects

- **Fuller Ford**
  - **Recovers and reuse of car wash's reverse osmosis (RO) reject water for irrigation water**

Current CII PIP Projects

- **Chula Vista Elementary School District urinal change-out**
  - **102 urinals flushing at changed out to waterless urinals**

Pre Retro-Fit

Post Retro-Fit

Otay's FY 10 Top 10 CII

Name	AF
Donovan State Prison	590
Bailey Correctional Facility	532
Cal Pine-Otay Mesa	*188*
Southwestern College	132
Cuyamaca College	96
Sharps Chula Vista Medical Center	91
Delimex	86
Circle Foods LLC	*82*
Otay Ranch Town Center	*58*
Knotts Soak City USA	41

Otay's Top 10 Commercial & Institutional Water Users: FY 04

Donovan	872 AF
Bailey	482 AF
Delimex	86 AF
Veterans Home	80 AF
Cuyamaca College	69 AF
Sharps Chula Vista Medical Center	69 AF
Bonita Vista High School	61 AF
Southwestern College	46 AF
Knotts Soak City	21 AF
Olympic Training Center	11 AF

Questions?

Rhianna Pensa

Water Conservation Specialist

Otay Water District

Rhianna.Pensa@Otaywater.Gov

Customer Agreement
Pressure Regulating Valve
Rebate Program

Important: Please read the agreement carefully. If you have any questions, please call the Otay Water District at 619.670.2730.

Participant Information					
Name of Participant/Customer					
Address			City	State	Zip
Daytime Phone	Email Address		Water Account #:		

Agreement

I, the Participant, agree to participate in the Otay Water District (District) Pressure Regulating Valve Rebate Program (Program). I understand and agree to the following:

- I understand that, as a participant in the Program, I am eligible to receive reimbursement, up to $350, from the District for costs incurred to retrofit a new pressure regulator or replace a faulty regulator in the existing private plumbing system of the above listed address (the Project). The Program is limited to one rebate per household for customers affected by the Dorchester Reservoir removal on Dorchester Street, Cornwall Street, and Brampton Street.

- The District is not responsible or liable for any damage to property in any way connected to the Project. The District is not affiliated with nor does it recommend any particular contractor(s) to complete the Project. Customers must consider carefully any recommendations associated with the Project. The Project is the sole responsibility of the property owner.

- The pressure regulator will be installed by a licensed plumber meeting County of San Diego (County) adopted California Plumbing Code 2010 (UPC 2009) code requirements. The pressure regulator must be approved by the International Association of Plumbing and Mechanical Officials (IAPMO). A County plumbing permit is required for a new regulator (call 858 565-5920 for questions). In order to qualify for the Program, the regulator must be set to a maximum of 65 psi and provide no pressures less than 35 psi. The pressure regulating valve must be installed in an accessible location for maintenance.

- I shall notify District's Engineering staff representative upon completion of the Project and schedule an inspection to document meeting all qualifying standards. The work may be documented and photographed by the District.

- I will provide a total cost of the Project and copies of all itemized receipts and invoices associated with the Project. **The reimbursement amount will be limited to and will not exceed the cost of the Project and under no circumstances will exceed $350, regardless of the actual cost of the Project.** The plumber's license number and installation date must be on the receipt. The application and receipts must be mailed or hand-delivered to the Otay Water District, 2554 Sweetwater Springs Blvd, Spring Valley, CA 91978-2004 no later than August 31, 2012. A rebate check will be mailed 30 days after the District receives a qualifying application. Rebates will be issued to account holders, property owners, or utility account designees only.

- I, the Participant, agree to defend, indemnify, protect and hold the Otay Water District and its agents, officers, and employees harmless from and against any and all claims or liability for injuries or damages to any person or property which arise from or are connected with or are caused or claimed to be caused by the acts or omissions of the Participant related to the Project, or from conditions on the Customer's property related to the Project; however, the Participant's duty to indemnify and hold harmless shall not include any claims or liability arising from the established sole negligence or willful misconduct of the Otay Water District, its agents, officers, or employees in performing the work or services or supplying materials or equipment to the Participant.

Pressure Regulator Installation Information			
Name of Contractor and Phone Number			Contractor License Number
New Regulator or Replacement of faulty regulator?	Pressure Regulator Brand and Model Number		Pressure Regulator Size
County of San Diego Permit Number	Installation Date	County Inspection Date	Otay Water District Inspection Date

______________________________ ______________

Customer's Signature Date

February 2012

For Otay Water District Use Only

Customer's Name

has qualified to start the above referenced project on ___________________________

The project will be completed on________________________ ___

___________________________________ __________
Otay Water District Staff Representative Date

Budget

Fiscal Years 2013-14 and 2014-15

1920 North Iris Lane, Escondido, CA 92026 760-745-5522 www.rinconwater.org

Mission Statement

To deliver quality water to meet present and future needs in an environmentally and economically responsible manner, maintain infrastructure integrity, foster conservation, and maintain excellence in service as stewards of a natural resource for the public trust.

Board of Directors

Rincon del Diablo Municipal Water District
1920 North Iris Lane
Escondido, California 92026
760-745-5522
www.rinconwater.org

SDCWA - Infrastructure Access Charges are a direct pass-through of the funds collected through water sales for active potable water meters in the District's system. Current charges are $2.65 per Equivalent Meter Unit (EMU) per month for the remainder of calendar year 2013, and are proposed to increase by approximately 1.1% to $2.68 per EMU for calendar year 2014.

MWD - Readiness-to-Serve charges are currently $199,843 for fiscal year 2012-2013. Charges for FY 2013-14 are estimated at $213,943, representing a 7% increase, and are based on a 10-year rolling average of water purchases.

MWD - Capacity Reservation charges are based on averaged five-year flow data with costs for calendar year 2014 budgeted at $114,789, in comparison to $95,257 for calendar year 2013, representing a 20% increase.

Other

MWD/SDCWA –TSAWR Agricultural Credits will be passed through to the end user, as received. These credits will fluctuate depending on the per-acre foot cost of water and the timing of water cost increases. The Board of Directors has approved the automatic pass-through of any additional program credits received from MWD or SDCWA.

Potable Water Sales

The District calculated water sales at 6,235 acre-feet each year for FY 2013-14 and 2014-15. As with water purchases, actual water sales can be significantly affected by weather, conservation efforts, and the possible implementation of stringent drought related restrictions. In addition, sales trends are expected to fluctuate depending on customer-use patterns, and offsets from the distribution of recycled water.

Revenue from water sales has been calculated using the tiered rate schedules approved following the June 25, 2013 Public Rate Hearing. Actual revenues collected are monitored closely to ensure that the rate structure provides adequate resources to fund the District's operations and equitable distribution of costs.

Recycled Water Purchases and Sales

The Recycled Water Project has been online since October 2004, with recycled water provided to the District from the City of Escondido's (City) Hale Avenue Resource Recovery Facility. The Recycled Water System consists of approximately 4.5 miles of distribution pipeline and two pump stations. Currently, there are 72 customers receiving recycled water, the largest of which is the SDG&E 500-megawatt Power Plant cooling tower.

Recycled water sales revenue for the estimated 3,600 acre-feet contractually available for SDG&E is addressed in a specific agreement. The District's Recycled Water Fund revenue forecasts sales to customers other than SDG&E at 185 acre-feet with a rate of $4.27 per 1,000 gallons effective September 1, 2013. The agreement with SDG&E is to pay a monthly take-or-pay amount which is adjusted annually.

FINANCIAL OPERATIONS

Rates, Fees and Charges

Information used for developing the District's rates, fees, and charges is derived from various sources including the current and historic revenue and expenditure data; future projections for infrastructure replacement and refurbishment (R&R) costs, and water purchases and sales.

The District diligently employs strict financial controls. The Governing Board concluded that rate increases are necessary to fund vital District services, including continued maintenance of the water system, and to fulfill the objectives of our financial plan. This District held personnel and internal operating expenses to the same levels as the six prior years.

For the current year, water purchases are anticipated to increase slightly, while water supply costs increased by approximately 4% per acre-foot. The District has been notified by SDCWA and MWD, that increases are projected to continue over the next several years due to fixed obligations (debt service) and increased cost of more diversified water supplies.

On May 14, 2013, a draft Budget was presented to the Board of Directors that included proposed operational expenses, capital projects, and anticipated revenue requirements. As required by Proposition 218, notices were distributed on May 7, 2013 advising District customers that the Board of Directors would be conducting a Public Rate Hearing on June 25, 2013 to consider rate increases of up to a maximum of 11.9% for potable commodity and meter-related charges, and 11.9% for Recycled Water. On June 11, 2013, the Board discussed rate alternatives, and the impact each would have on the District's current billing structure; at this meeting, the Board directed staff to prepare the final budget using the 3-step rate scenario, which utilizes the rate stabilization fund for the two years of the budget period.

Restricted and Unrestricted Appropriated Fund Balances

The District has a Restricted and Unrestricted Appropriated Fund Balance Policy (reserves) that details the purpose, target balance, approved use, and funding methodology for those funds. The Board of Directors has placed minimum and maximum funding levels to maintain operational, administrative, and infrastructure project functions.

Rincon del Diablo Water

Water Rates and System Operations Charges

Effective September 1, 2013

WATER USAGE RATES $/UNIT (1)

WATER USER TYPE	RATE
Residential	
1 – 6 Units (2)	$4.78
7 – 20 Units	$4.93
21 – 35 Units	$5.17
36 – 45 Units	$5.54
46 Units or more	$6.03
Mobile Home Parks	
1 – 3 Units per Space	$4.78
4 – 6 Units per Space	$4.93
7 – 8 Units per Space	$5.17
9 – 10 Units per Space	$5.54
11 Units or more per Space	$6.03
Apartments	
1 – 2 Units per Apartment	$4.78
3 – 4 Units per Apartment	$4.93
5 Units or more per Apartment	$5.17
Commercial/Industrial	
1 – 3 Units per Enterprise	$4.93
4 – 7 Units per Enterprise	$5.17
8 Units or more per Enterprise	$5.54
Medical Care Facilities	
1 – 2 Units per Bed	$4.93
3 – 4 Units per Bed	$5.17
5 Units or more per Bed	$5.54
Agricultural - TSAWR (3)	
1 – 6 Units	$4.78
7 – 19 Units	$4.93
Up to Budgeted Units	$4.93
Above Budgeted Units (4)	$5.17
Commercial Agricultural	
Up to 60% of Budget	$4.78
61% – 80% of Budget	$4.93
81% – 90% of Budget	$5.17
91% – 100% of Budget	$5.54
101% or more of Budget	$6.03
Landscape/Irrigation	
Up to 60% of Budget	$4.78
61% – 80% of Budget	$4.93
81% – 90% of Budget	$5.17
91% – 100% of Budget	$5.54
101% or more of Budget	$6.03
Construction Water (Flat Rate)	$5.70
Recycled Water (Flat Rate)	$4.07

SYSTEM OPERATIONS CHARGE $/MONTH

METER SIZE	RINCON RATE	SDCWA IAC RATE
Potable		
5/8”	$24.47	$2.68
1”	$32.60	$4.29
1.5”	$61.81	$8.05
2”	$97.60	$13.94
3”	$162.52	$25.74
4”	$203.12	$43.97
6”	$269.63	$80.44
8”	$365.62	$139.42
Recycled		
5/8”	$12.24	
1”	$16.30	
1.5”	$30.91	
2”	$48.78	
3”	$81.26	
4”	$101.56	
6”	$134.82	
8”	$182.81	
16”	$731.24	

MISCELLANEOUS CHARGES

Inactive Meter	1/2 potable charge rate
Multiple User (5)	$14.96
Fire Meter Service	
2” or smaller	$14.65
3” or larger	$97.49
Construction	$165.54

PUMPING CHARGES

Pumping Zone/unit	$0.55	per unit

NOTES

1. Water rates are per unit - 1 unit equals 1,000 gallons.
2. Usage not exceeding this level receives 30% frugal user discount off monthly System Operations Charge.
3. Agricultural Transitional Special Agricultural Water Rate (TSAWR) is based on budgeted units that includes evapotranspiration coefficients and irrigated square footage. Budgeted unit pricing does not include discounts provided by MWD and/or SDCWA.
4. Penalties are levied for "Above Budget" usage.
5. Charged for each service with a master meter.

1920 North Iris Lane, Escondido, CA 92026 760-745-5522 www.rinconwater.org

2013
URBAN WATER MANAGEMENT PLAN

Adopted (Tentative) February 11, 2014

DRAFT

SECTION 3. SYSTEM DEMANDS

3.1. Historical Water Demands

District records from 1965 indicate that agricultural water constituted approximately 83 percent of all water deliveries. Over the years, the District, which once served chiefly agricultural operations, has slowly urbanized. At the end of fiscal year (FY) 2010, agricultural water use amounted to just 3 percent of total deliveries, while residential water sales represented approximately 50 percent.

Table 4 presents actual water deliveries and the number of service connections for FYs 2000, 2005, and 2010. All District service connections are metered.

Table 4. Recent Historical Water Deliveries

	2000		2005		2010	
Water Use Sectors	**Accounts**	**Delivery (AF/Yr)**	**Accounts**	**Delivery (AF/Yr)**	**Accounts**	**Delivery (AF/Yr)**
Single Family	6,256	4,802	6,479	4,480	6,690	3,870
Multi-Family	94	774	89	670	89	600
Commercial	671	975	715	880	778	790
Institutional/Governmental	4	84	9	80	9	80
Landscape	193	804	158	580	149	490
Agriculture	101	1,114	63	620	27	270
Potable Subtotal	**7,319**	**8,553**	**7,513**	**7,310**	**7,742**	**6,100**
Recycled	0	0	38	50	69	3,280
Total	**7,319**	**8,553**	**7,551**	**7,360**	**7,811**	**9,380**

Notes:
1) All of the District's customer service connections are metered.
2) Potable use is inclusive of system losses of approximately 3%.

Water demands for FY 2010 were significantly less than those projected in the 2005 UWMP. This variance was likely the result of mandatory water use restrictions in effect in response to drought conditions, depressed economic conditions, increased water prices, and cooler than normal seasonal temperatures.

3.2. Supply Sources

The District currently receives its potable water from SDCWA and its recycled water from the City's Hale Avenue Resource Recovery Facility (HARRF). Additionally, the District maintains interconnections with neighboring agencies to supplement the system. These interconnections are currently closed or disconnected but are available should additional water supplies and/or emergency water backup be required.

ID-1

Potable water customers in this improvement district receive water purchased from SDCWA, off of the SDCWA First Aqueduct. SDCWA, in turn, purchases treated water for the First Aqueduct from the Metropolitan Water District of Southern California (Metropolitan). Metropolitan imports water from two sources, the Colorado River and the State Water Project. Metropolitan treats blended water from these two sources at its Skinner Filtration Plant in Riverside County, for conveyance to SDCWA and hence to the District's ID-1.

SDCWA was organized in 1944 and annexed to Metropolitan in 1946 for the express purpose of importing Colorado River water to San Diego County. Today, SDCWA represents 24 member agencies located in San Diego County. SDCWA is represented on Metropolitan's Board by four directors. SDCWA is the second largest of Metropolitan's member agencies, but is the largest of Metropolitan sales. SDCWA purchases approximately 30 percent of Metropolitan's total water supply, which makes up approximately 50 percent of SDCWA's water supplies.

ID-A

Potable water customers in this improvement district receive water that is provided by the City, although purchased from SDCWA. The City has two sources of water. The first source is purchased from SDCWA. The second is local water primarily from Lake Henshaw located in the San Luis Rey River watershed. Both sources may be blended at Lake Dixon and treated at the Escondido Water Treatment Plant before delivery into the ID-A system.

The City of Escondido was chartered in 1888. The City's water service area contains approximately 20,000 acres (about 33.42 square miles). The City, also a member agency of SDCWA, supplies potable water to ID-A customers by exchange agreements through SDCWA.

3.3. Water Quality

As required by federal and state governments, the District publishes a Consumer Confidence Report (CCR) each year for both ID-1 and ID-A. The CCR lists all constituents found in the District's water, the source of those constituents, testing standards that must be met, a range of testing results, and non-compliance events that occurred. All customers are notified of the CCR through their water bills, and the CCR is posted on the District's website.

3.4. Projected Water Demands – 2015 to 2035

The District's projections of future water demands for its service area are listed in **Table 5**. The District projects that demands will increase, but at a slower rate than the projected growth in population and employment. Growth in demands will be tempered by increased adoption by customers of conservation efficiencies, driven in part by increases in water rates. Temperature increases resulting from climate change will exert upward pressure on water demands, but this effect will be counteracted by increased conservation.

3.7. Total Water Deliveries

Total water deliveries are summarized in **Table 7**.

Table 7. Total Water Deliveries

Water Use	2013	2015	2020	2025	2030	2035
Total Potable - Before Offsets (1) **(Tables 4 and 6)**	7,000	7,050	7,280	7,550	7,790	7,900
Sales to Other Water Agencies	0	0	0	0	0	0
Additional Water Uses & Losses	0	0	0	0	0	0
Raw Water	0	0	0	0	0	0
Recycled Water	3, 030	3,030	3,250	3,400	3,400	3,400
System Losses	(2)	(2)	(2)	(2)	(2)	(2)
Other	0	0	0	0	0	0
Total	10,030	10,080	10,530	10,950	11,190	11,300

Units: AF/yr

(1) The District plans to develop new local supplies sufficient to offset the 900 AF increase in annual potable demand projected for the period from 2013 to 2035. If these new supplies are recycled water, then potable demands will decrease by a like amount, and recycled demands will increase by a like amount.

(2) System losses from Table 6 are already included in the potable use data in the first row of Table 7.

3.8. Metered Purchases and Sales

The District purchases potable water that is delivered from two metered SDCWA turnouts. SDCWA reads these meters daily. The District purchases its recycled water from the City and calculates recycled water usage by the sum of individual meters, since there is no single metered turnout on the City's recycled water distribution system. These calculations are done monthly and are reconciled with the City. The District does not have any unmetered customers. Water use data is collected daily through the Automated Meter Intelligence (AMI) system. Customers are billed on a monthly basis.

3.9. Projected Water Use for Low Income Families

The District serves primarily low-density single family homes. In 2008, the median annual household income was $85,300 for ID-A and $51,374 for ID-1. The District does not anticipate any city, county, or general plans that identify planned lower income housing projects within the District's service area.

3.10. Baselines and Targets

In November 2009, the Water Conservation Act of 2009 (SBX7-7) was signed into law, addressing agricultural and urban water conservation and codifying the 20 x 2020 Plan. SBX7-7 requires urban retail water suppliers such as the District to reduce per capita water use by approximately 20 percent compared to historical baseline conditions, or to comply with other measures consistent with a high level of conservation efficiency. SBX7-7 defined several methodologies for determination of baseline and target per capita use figures, with each agency having the option to select the methodology best suited for its service area.

forming and carrying out a regional alliance in accordance with CWC § 10608.28(a) and related provisions of SBX7-7. Retail water suppliers are eligible to form a regional alliance in accordance with CWC § 10608.28(a) if the suppliers meet at least one of several specified criteria, such as (1) the suppliers are recipients of water from a common wholesale water supplier, or (2) the suppliers are located within the same hydrologic region, which for purposes of a regional alliance refers to the 10 hydrologic regions as shown in the California Water Plan.

The District, along with VWD, OMWD, and the San Dieguito Water District, have formed a regional alliance pursuant to CWC § 10608.28(a). All of these members are recipients of water from a common wholesale water supplier, in this case, SDCWA, and all of the members are located within the South Coast Hydrologic Region as shown in the California Water Plan. **Figure 5** shows an area map of the Regional Alliance.

The members have entered into a cooperative agreement to establish and carry out a regional alliance and have jointly notified DWR of the formation of their regional alliance (copies of the Cooperative Agreement and notification to DWR are set forth in **Appendix E**. In accordance with DWR guidance, the members have prepared an urban water use target and an interim urban water use target for the region, which is further set forth herein and within each of the other member's individual UWMPs.

Additionally, each member of the regional alliance has developed its own set of interim and urban water use targets, along with other supporting data and determinations, all of which is included in each member's individual UWMP. The District's individual interim and urban water use targets are shown in **Table 10**. The Regional Alliance Demand Target is shown below in **Table 11**.

Table 11. Regional Alliance Demand Target

Alliance Member	2015	2020	2025	2030	2035
Olivenhain MWD					
GPCD Goal	319	283	283	283	283
Population Projection	66,993	67,987	69,003	71,101	72,095
20X2020 Demand Target (AF/yr)	23,938	21,552	21,859	22,523	22,838
Rincon del Diablo MWD					
GPCD Goal	239	218	218	218	218
Population Projection	30,400	31,500	33,000	34,500	35,200
20X2020 Demand Target (AF/yr)	7,820	7,390	7,700	8,250	8,500
San Dieguito Water District					
GPCD Goal	180	160	160	160	160
Population Projection	40,515	41,870	44,271	45,531	46,425
20X2020 Demand Target (AF/yr)	8,147	7,484	7,913	8,138	8,298
Vallecitos Water District					
GPCD Goal	179	159	159	159	159
Population Projection	96,123	98,001	105,428	109,751	112,007
20X2020 Demand Target (AF/yr)	19,273	17,454	18,777	19,547	19,949
REGIONAL ALLIANCE					
GPCD Goal	227	202	201	201	201
Population Projection	232,843	238,842	250,991	260,959	266,161
20X2020 Demand Target (AF/yr)	59,178	53,880	56,249	58,458	59,585

APPENDIX C

2050 Regional Growth Forecast - ID 1 and ID A,

San Diego Association of Governments

2050 REGIONAL GROWTH FORECAST
Improvement District 1

POPULATION AND HOUSING

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Total Population	**25,473**	**29,132**	**32,360**	***33,818***	***34,304***	**8,831**	**35%**
Household Population	25,110	28,693	31,777	*33,064*	*33,416*	8,306	33%
Group Quarters Population	363	439	583	*754*	*888*	525	145%
Civilian	363	439	583	*754*	*888*	525	145%
Military	0	0	0	*0*	*0*	0	0%
Total Housing Units	**10,076**	**11,142**	**12,074**	***12,313***	***12,334***	**2,258**	**22%**
Single Family	5,822	6,876	7,819	*8,133*	*8,133*	2,311	40%
Multiple Family	2,090	2,115	2,115	*2,115*	*2,115*	25	1%
Mobile Homes	2,164	2,151	2,140	*2,065*	*2,086*	-78	-4%
Occupied Housing Units	**9,662**	**10,769**	**11,695**	***11,928***	***11,965***	**2,303**	**24%**
Single Family	5,538	6,610	7,543	*7,842*	*7,858*	2,320	42%
Multiple Family	2,032	2,074	2,075	*2,076*	*2,076*	44	2%
Mobile Homes	2,092	2,085	2,077	*2,010*	*2,031*	-61	-3%
Vacancy Rate	**4.1%**	**3.3%**	**3.1%**	***3.1%***	***3.0%***	**-1.1**	**-27%**
Single Family	4.9%	3.9%	3.5%	*3.6%*	*3.4%*	-1.5	-31%
Multiple Family	2.8%	1.9%	1.9%	*1.8%*	*1.8%*	-1.0	-36%
Mobile Homes	3.3%	3.1%	2.9%	*2.7%*	*2.6%*	-0.7	-21%
Persons per Household	**2.60**	**2.66**	**2.72**	***2.77***	***2.79***	**0.19**	**7%**

HOUSEHOLD INCOME (real 1999 dollars, adjusted for inflation)

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Households by Income Category							
Less than $15,000	1,058	899	772	*644*	*556*	-502	-47%
$15,000-$29,999	1,560	1,406	1,281	*1,134*	*1,023*	-537	-34%
$30,000-$44,999	1,610	1,637	1,614	*1,506*	*1,411*	-199	-12%
$45,000-$59,999	1,419	1,489	1,542	*1,496*	*1,436*	17	1%
$60,000-$74,999	1,085	1,246	1,338	*1,351*	*1,330*	245	23%
$75,000-$99,999	1,186	1,556	1,781	*1,866*	*1,877*	691	58%
$100,000-$124,999	691	1,007	1,262	*1,379*	*1,458*	767	111%
$125,000-$149,999	395	579	758	*901*	*994*	599	152%
$150,000-$199,999	376	586	795	*948*	*1,054*	678	180%
$200,000 or more	282	364	552	*703*	*826*	544	193%
Total Households	9,662	10,769	11,695	*11,928*	*11,965*	2,303	24%
Median Household Income							
Adjusted for inflation ($1999)	$51,374	$59,532	$67,158	*$73,146*	*$78,017*	$26,643	52%

*IMPORTANT INFORMATION ABOUT THIS FORECAST:

This forecast was accepted by the SANDAG Board of Directors in February 2010 for distribution and use in planning and other studies. This forecast represents one possibility for future growth in the San Diego region. It is intended to represent a likely prediction of future growth, but it is not intended to be a prescription for growth. The 2050 Regional Growth Forecast represents a combination of economic and demographic projections, existing land use plans and policies, as well as potential land use plan changes that may occur in the region between 2030 and 2050. In general, growth between 2008 and 2030 is based on adopted land use plans and policies, and growth between 2030 and 2050 includes alternatives that may, in some cases, reach beyond existing adopted plans.

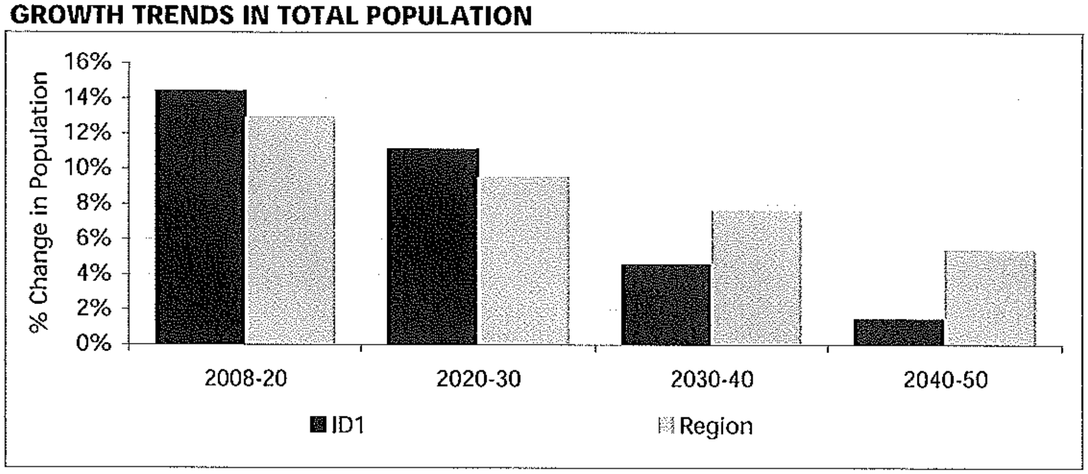
POPULATION BY AGE

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Total Population	**25,473**	**29,132**	**32,360**	***33,818***	***34,304***	**8,831**	**35%**
Under 5	1,788	4,763	6,110	*6,160*	*6,241*	4,453	249%
5 to 9	1,739	1,719	1,846	*2,011*	*2,039*	300	17%
10 to 14	1,590	1,698	1,780	*1,986*	*1,933*	343	22%
15 to 17	1,048	972	969	*1,033*	*963*	-85	-8%
18 to 19	666	548	627	*632*	*621*	-45	-7%
20 to 24	1,566	1,405	1,738	*1,631*	*1,587*	21	1%
25 to 29	1,506	1,721	1,897	*1,869*	*1,831*	325	22%
30 to 34	1,613	1,698	1,676	*1,888*	*1,806*	193	12%
35 to 39	1,721	1,485	1,829	*1,824*	*1,855*	134	8%
40 to 44	1,680	1,577	1,658	*1,635*	*1,887*	207	12%
45 to 49	1,856	1,608	1,507	*1,768*	*1,885*	29	2%
50 to 54	1,856	1,630	1,427	*1,596*	*1,617*	-239	-13%
55 to 59	1,638	1,764	1,585	*1,437*	*1,727*	89	5%
60 to 61	551	658	577	*585*	*751*	200	36%
62 to 64	657	979	913	*904*	*859*	202	31%
65 to 69	1,041	1,507	1,709	*1,582*	*1,388*	347	33%
70 to 74	810	1,276	1,577	*1,484*	*1,404*	594	73%
75 to 79	721	733	1,134	*1,232*	*1,142*	421	58%
80 to 84	646	542	851	*1,100*	*962*	316	49%
85 and over	780	849	950	*1,461*	*1,806*	1,026	132%
Median Age	38.5	35.1	33.6	*34.2*	*35.4*	-3.1	-8%

POPULATION BY RACE AND ETHNICITY

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Total Population	**25,473**	**29,132**	**32,360**	***33,818***	***34,304***	**8,831**	**35%**
Hispanic	6,223	11,263	14,503	*17,126*	*19,233*	13,010	209%
Non-Hispanic	19,250	17,869	17,857	*16,692*	*15,071*	-4,179	-22%
White	16,163	14,298	13,514	*11,645*	*9,468*	-6,695	-41%
Black	585	788	1,037	*1,318*	*1,550*	965	165%
American Indian	126	74	111	*64*	*71*	-55	-44%
Asian	1,588	1,799	2,137	*2,470*	*2,704*	1,116	70%
Hawaiian / Pacific Islander	45	61	77	*95*	*100*	55	122%
Other	43	60	66	*63*	*68*	25	58%
Two or More Races	700	789	915	*1,037*	*1,110*	410	59%

GROWTH TRENDS IN TOTAL POPULATION



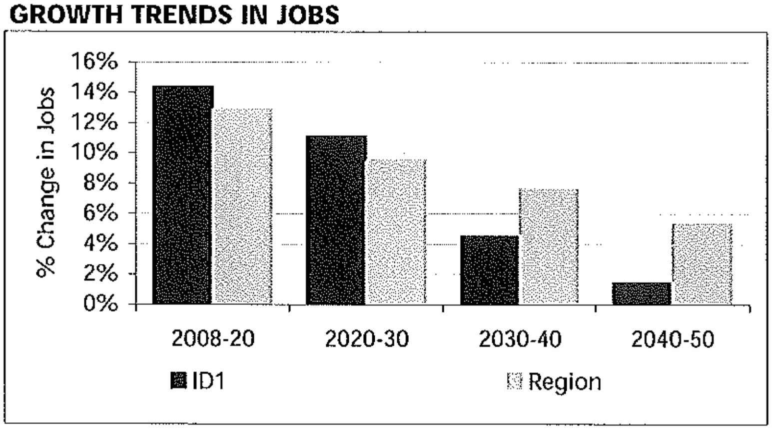
EMPLOYMENT

	2008	2020	2030	2040	2050	2008 to 2050 Change* Numeric	Percent
Jobs	**18,270**	**21,876**	**24,402**	***24,857***	***24,865***	**6,595**	**36%**
Civilian Jobs	18,270	21,876	24,402	*24,857*	*24,865*	6,595	36%
Military Jobs	0	0	0	*0*	*0*	0	0%

LAND USE[1]

	2008	2020	2030	2040	2050	2008 to 2050 Change* Numeric	Percent
Total Acres	**7,945**	**7,945**	**7,945**	***7,945***	***7,945***	**0**	**0%**
Developed Acres	**6,494**	**7,160**	**7,500**	***7,730***	***7,730***	**1,237**	**19%**
Low Density Single Family	1,113	1,746	2,143	*2,449*	*2,449*	1,335	120%
Single Family	1,944	2,075	2,113	*2,120*	*2,120*	176	9%
Multiple Family	113	117	117	*117*	*117*	4	3%
Mobile Homes	285	285	285	*285*	*285*	0	0%
Other Residential	9	9	9	*9*	*9*	0	0%
Mixed Use	0	0	0	*0*	*0*	0	0%
Industrial	570	607	647	*659*	*659*	90	16%
Commercial/Services	218	276	287	*287*	*287*	69	32%
Office	4	14	23	*23*	*23*	19	460%
Schools	100	130	136	*136*	*136*	35	35%
Roads and Freeways	819	819	819	*819*	*819*	0	0%
Agricultural and Extractive[2]	519	282	123	*28*	*28*	-491	-95%
Parks and Military Use	798	799	799	*799*	*799*	0	0%
Vacant Developable Acres	**1,405**	**739**	**398**	***169***	***168***	**-1,237**	**-88%**
Low Density Single Family	999	575	338	*127*	*127*	-872	-87%
Single Family	187	79	42	*36*	*36*	-151	-81%
Multiple Family	0	0	0	*0*	*0*	0	0%
Mixed Use	0	0	0	*0*	*0*	0	0%
Industrial	93	57	17	*4*	*4*	-90	-96%
Commercial/Services	69	11	0	*0*	*0*	-69	-100%
Office	19	9	0	*0*	*0*	-19	-100%
Schools	35	5	0	*0*	*0*	-35	-100%
Parks and Other	0	0	0	*0*	*0*	0	-100%
Future Roads and Freeways	2	2	2	*2*	*2*	0	0%
Constrained Acres	**47**	**47**	**47**	***47***	***47***	**0**	**0%**
Employment Density[3]	**20.5**	**21.3**	**22.3**	***22.5***	***22.5***	**2.0**	**10%**
Residential Density[4]	**2.9**	**2.6**	**2.6**	***2.5***	***2.5***	**-0.4**	**-15%**

GROWTH TRENDS IN JOBS



Notes:

1 - Figures may not add to total due to independent rounding.
2 - This is not a forecast of agricultural land, because the 2050 Regional Growth Forecast does not account for land that may become agricultural in the future. Also, some types of development that occur on agricultural land, such as low density single family residential, may allow for the continuation of existing agricultural use.
3 - Civilian jobs per developed employment acre (industrial, retail, office, schools, and half of mixed use acres).
4 - Total housing units per developed residential acre (single family, multiple family, mobile home, other, and half of mixed use acres).

2050 REGIONAL GROWTH FORECAST
Improvement District A

POPULATION AND HOUSING

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Total Population	**2,695**	**2,710**	**3,028**	***3,157***	***3,188***	**493**	**18%**
Household Population	2,674	2,682	2,981	*3,085*	*3,100*	426	16%
Group Quarters Population	21	28	47	*72*	*88*	67	319%
Civilian	21	28	47	*72*	*88*	67	319%
Military	0	0	0	*0*	*0*	0	0%
Total Housing Units	**942**	**949**	**1,043**	***1,064***	***1,064***	**122**	**13%**
Single Family	942	949	1,043	*1,064*	*1,064*	122	13%
Multiple Family	0	0	0	*0*	*0*	0	0%
Mobile Homes	0	0	0	*0*	*0*	0	0%
Occupied Housing Units	**919**	**924**	**1,016**	***1,036***	***1,036***	**117**	**13%**
Single Family	919	924	1,016	*1,036*	*1,036*	117	13%
Multiple Family	0	0	0	*0*	*0*	0	0%
Mobile Homes	0	0	0	*0*	*0*	0	0%
Vacancy Rate	**2.4%**	**2.6%**	**2.6%**	***2.6%***	***2.6%***	**0.2**	**8%**
Single Family	2.4%	2.6%	2.6%	*2.6%*	*2.6%*	0.2	8%
Multiple Family	0.0%	0.0%	0.0%	*0.0%*	*0.0%*	0.0	0%
Mobile Homes	0.0%	0.0%	0.0%	*0.0%*	*0.0%*	0.0	0%
Persons per Household	**2.91**	**2.90**	**2.93**	***2.98***	***2.99***	**0.08**	**3%**

HOUSEHOLD INCOME (real 1999 dollars, adjusted for inflation)

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Households by Income Category							
Less than $15,000	28	25	20	*18*	*11*	-17	-61%
$15,000-$29,999	60	53	49	*41*	*32*	-28	-47%
$30,000-$44,999	98	108	103	*93*	*76*	-22	-22%
$45,000-$59,999	101	106	114	*115*	*105*	4	4%
$60,000-$74,999	121	120	148	*156*	*156*	35	29%
$75,000-$99,999	125	129	142	*142*	*150*	25	20%
$100,000-$124,999	123	130	137	*142*	*142*	19	15%
$125,000-$149,999	98	89	100	*102*	*102*	4	4%
$150,000-$199,999	72	78	92	*98*	*99*	27	38%
$200,000 or more	93	86	111	*129*	*163*	70	75%
Total Households	919	924	1,016	*1,036*	*1,036*	117	13%
Median Household Income							
Adjusted for inflation ($1999)	$85,300	$84,690	$88,028	*$91,725*	*$98,000*	$12,700	15%

*IMPORTANT INFORMATION ABOUT THIS FORECAST:

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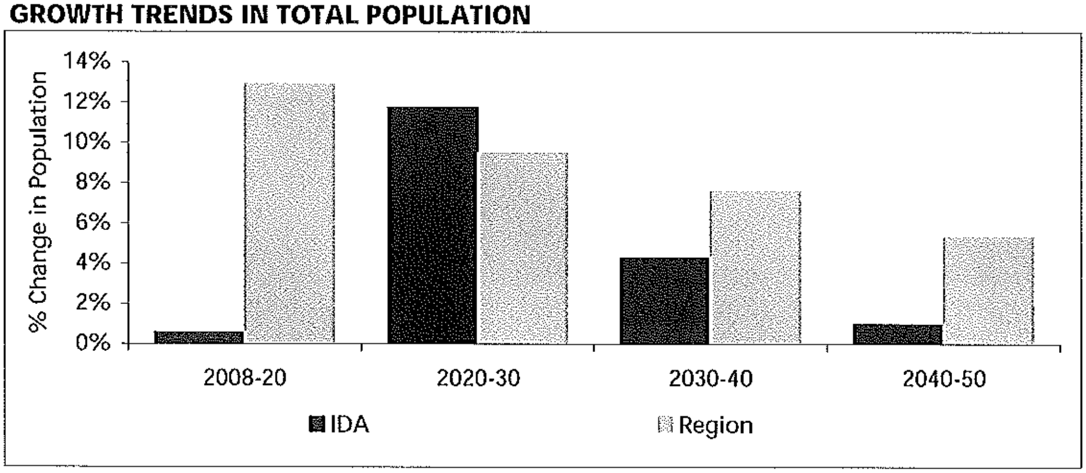
POPULATION BY AGE

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Total Population	**2,695**	**2,710**	**3,028**	***3,157***	***3,188***	**493**	**18%**
Under 5	128	81	93	*97*	*95*	-33	-26%
5 to 9	108	87	104	*117*	*105*	-3	-3%
10 to 14	154	159	148	*140*	*131*	-23	-15%
15 to 17	109	106	113	*111*	*103*	-6	-6%
18 to 19	86	51	55	*62*	*61*	-25	-29%
20 to 24	223	181	200	*178*	*191*	-32	-14%
25 to 29	131	180	156	*164*	*167*	36	27%
30 to 34	89	83	102	*127*	*107*	18	20%
35 to 39	73	81	91	*88*	*98*	25	34%
40 to 44	110	95	140	*125*	*141*	31	28%
45 to 49	214	145	144	*188*	*186*	-28	-13%
50 to 54	288	177	202	*200*	*193*	-95	-33%
55 to 59	225	281	222	*199*	*239*	14	6%
60 to 61	128	152	122	*134*	*130*	2	2%
62 to 64	123	188	169	*136*	*138*	15	12%
65 to 69	157	227	285	*283*	*217*	60	38%
70 to 74	124	189	262	*254*	*245*	121	98%
75 to 79	85	111	185	*215*	*210*	125	147%
80 to 84	64	46	109	*147*	*157*	93	145%
85 and over	76	90	126	*192*	*274*	198	261%
Median Age	48.2	53.0	54.2	*54.5*	*55.3*	7.1	15%

POPULATION BY RACE AND ETHNICITY

	2008	2020	2030	*2040*	*2050*	2008 to 2050 Change* Numeric	Percent
Total Population	**2,695**	**2,710**	**3,028**	***3,157***	***3,188***	**493**	**18%**
Hispanic	429	586	815	*1,101*	*1,318*	889	207%
Non-Hispanic	2,266	2,124	2,213	*2,056*	*1,870*	-396	-17%
White	1,973	1,799	1,793	*1,551*	*1,293*	-680	-34%
Black	29	29	42	*72*	*85*	56	193%
American Indian	5	4	3	*4*	*5*	0	0%
Asian	194	209	260	*284*	*326*	132	68%
Hawaiian / Pacific Islander	3	3	5	*7*	*7*	4	133%
Other	12	19	17	*26*	*28*	16	133%
Two or More Races	50	61	93	*112*	*126*	76	152%

GROWTH TRENDS IN TOTAL POPULATION



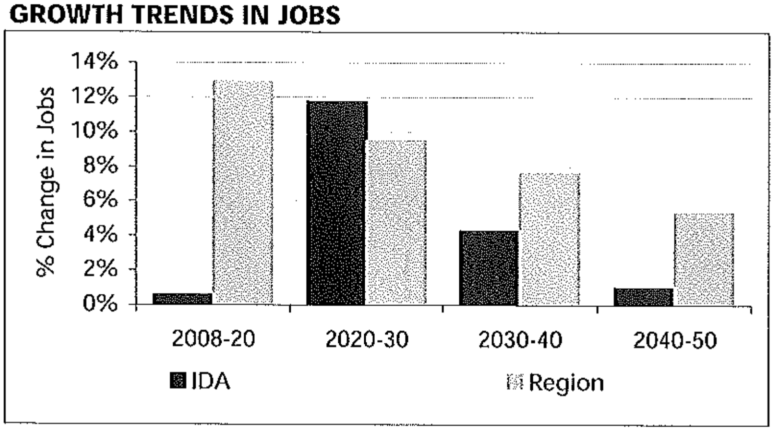
EMPLOYMENT

	2008	2020	2030	2040	2050	2008 to 2050 Change* Numeric	Percent
Jobs	**237**	**237**	**237**	***237***	***237***	**0**	**0%**
Civilian Jobs	237	237	237	*237*	*237*	0	0%
Military Jobs	0	0	0	*0*	*0*	0	0%

LAND USE[1]

	2008	2020	2030	2040	2050	2008 to 2050 Change* Numeric	Percent
Total Acres	**1,210**	**1,210**	**1,210**	***1,210***	***1,210***	**0**	**0%**
Developed Acres	**1,060**	**1,069**	**1,141**	***1,155***	***1,155***	**95**	**9%**
Low Density Single Family	467	473	601	*632*	*632*	164	35%
Single Family	294	298	301	*304*	*304*	10	3%
Multiple Family	0	0	0	*0*	*0*	0	0%
Mobile Homes	0	0	0	*0*	*0*	0	0%
Other Residential	0	0	0	*0*	*0*	0	0%
Mixed Use	0	0	0	*0*	*0*	0	0%
Industrial	0	0	0	*0*	*0*	0	0%
Commercial/Services	0	0	0	*0*	*0*	0	0%
Office	0	0	0	*0*	*0*	0	0%
Schools	5	5	5	*5*	*5*	0	0%
Roads and Freeways	85	85	85	*85*	*85*	0	0%
Agricultural and Extractive[2]	80	80	19	*0*	*0*	-79	-100%
Parks and Military Use	129	129	129	*129*	*129*	0	0%
Vacant Developable Acres	**99**	**90**	**19**	***4***	***4***	**-95**	**-96%**
Low Density Single Family	88	83	15	*3*	*3*	-85	-97%
Single Family	11	7	4	*2*	*2*	-10	-86%
Multiple Family	0	0	0	*0*	*0*	0	0%
Mixed Use	0	0	0	*0*	*0*	0	0%
Industrial	0	0	0	*0*	*0*	0	0%
Commercial/Services	0	0	0	*0*	*0*	0	0%
Office	0	0	0	*0*	*0*	0	0%
Schools	0	0	0	*0*	*0*	0	0%
Parks and Other	0	0	0	*0*	*0*	0	0%
Future Roads and Freeways	0	0	0	*0*	*0*	0	0%
Constrained Acres	**51**	**51**	**51**	***51***	***51***	**0**	**0%**
Employment Density[3]	**45.9**	**45.9**	**45.9**	***45.9***	***45.9***	**0.0**	**0%**
Residential Density[4]	**1.2**	**1.2**	**1.2**	***1.1***	***1.1***	**-0.1**	**-8%**

GROWTH TRENDS IN JOBS



Notes:

1 - Figures may not add to total due to independent rounding.

2 - This is not a forecast of agricultural land, because the 2050 Regional Growth Forecast does not account for land that may become agricultural in the future. Also, some types of development that occur on agricultural land, such as low density single family residential, may allow for the continuation of existing agricultural use.

3 - Civilian jobs per developed employment acre (industrial, retail, office, schools, and half of mixed use acres).

4 - Total housing units per developed residential acre (single family, multiple family, mobile home, other, and half of mixed use acres).

Source: 2050 Regional Growth Forecast
SANDAG
www.sandag.org

RINCON DEL DIABLO MUNICIPAL WATER DISTRICT

ACTION

March 25, 2014

SECTION 3: ENGINEERING & LONG-RANGE PLANNING COMMITTEE

3-C: Authorize Budget Increase for the Completion of the District's Advanced Metering Infrastructure (AMI) System

BACKGROUND:

After the successful completion of a comprehensive pilot study, the District engaged in an aggressive AMI change-over project. The project began, after Board approval, in January of 2011. The system for the project, KP Electronics MegaNet, was selected because of its ability to interface with multiple meter manufacturers and to provide two watts of output power. In order to perform the meter replacements and radio installations it was decided that using District personnel would be more cost-effective. Staff had considered using the District's contract engineering firm to manage the project however, again chose to self-manage to save costs. Opting for the savings in labor ($12.50 per meter with District personnel versus $65.00 per meter for contract labor) unfortunately resulted in the project extending well beyond the project goal of one year.

During the course of the project, several factors have affected the scope of work, duration of project, and have impacted the budget including the following:

- Four key members of the Operations staff retired or found other jobs.
- There was no inventory of meter box type, size, material, quality, or quantity. Therefore, special orders, custom lid sizing, and special manufacturing we required, resulting in additional costs of over $70,000.
- Meter costs increased by 20% as a result of manufacturers converting to no-lead bronze.

In addition to the above, District staff was informed in January of 2013 that Elster AMCO, the main supplier of meters for the District and least expensive, was no longer going to distribute mechanical water meters in North America.

- It is important for the success of the AMI system that meters are at least as durable as their non-radio predecessors. The reason the system was required to be compatible with multiple manufacturers was to ensure access to quality products and engage in competitive purchasing. Additionally, the District could also rely on other manufacturers in case of poor product performance or the manufacturer went out of business.

- The initial phase of the project included meters from six different manufacturers. Within the first five months of the project, all but two were eliminated because of poor performance and unreasonable rates of failure. The two remaining manufacturers were the Elster AMCO and Badger Metering companies. Unfortunately, as previously mentioned, Elster AMCO is no longer selling meters, therefore leaving the Badger Company as the sole provider.

- Badger meters have proven to be the most reliable product in terms of durability and compatibility; however, they are also 17% more expensive than the competition.

Switching to this type of technology delivers tremendous benefits for the District and its customers. It is a difficult project with numerous, potential obstacles, some of which have not been experienced. One of the keys to realizing these benefits lies with the data it delivers. Collecting quality data is a process that requires patience and dedication. The increase in funds is necessary and recommended for the completion of this valuable project

PREVIOUS BOARD ACTION(S):

11/12/08 Brief presentation by Badger Meter, Inc.
06/11/09 Approved Minutes of Engineering Committee (Progress Update)
08/13/09 Approved Minutes of Engineering Committee (Progress Update)
11/12/09 Approved Minutes of Engineering Committee (Progress Update)
01/14/10 Approved Minutes of Engineering Committee (Progress Update)
02/11/10 Approved Minutes of Engineering Committee (Progress Update)
03/03/10 Approved Minutes of Engineering Committee (Progress Update)
04/07/10 Approved Minutes of Engineering Committee (Progress Update)
07/07/10 Approved Minutes of Engineering Committee (Progress Update)
08/04/10 Approved Minutes of Engineering Committee (Progress Update)
09/08/10 Approved Minutes of Engineering Committee (Progress Update)
12/14/10 Presentation by Director of Operations and Engineering, Clint Baze (no formal action)
01/11/11 Board Approved the Project and Authorized the initial expenditures of up to $750.000.
07/12/11 Board Authorized the second portion of the project expenditures of up to $850.000.
07/27/11 Approved Minutes of Engineering Committee (Progress Update)
01/10/12 Approved Minutes of Engineering Committee (Progress Update)
02/14/12 Approved Minutes of Engineering Committee (Progress Update)
03/13/12 Approved Minutes of Engineering Committee (Progress Update)
04/10/12 Approved Minutes of Engineering Committee (Progress Update)
06/12/12 Approved Minutes of Engineering Committee (Progress Update)
07/10/12 Approved Minutes of Engineering Committee (Progress Update)
05/12/13 Approved Minutes of Engineering Committee (Progress Update)

11/12/13 Presentation by Director of Operations and Engineering, Clint Baze, (no formal action)

FISCAL IMPACT:

This project is included in the 2013-14 and 2014-15 Capital Budget, however, capital project expenditures will need to be realigned to include the additional request. It is recommended that the budget be realigned by transferring funds from the Sierra Linda Pipeline project (05-58000370). The Sierra Linda Pipeline is nearing completion of design and construction and will be deferred to determine the feasibility of constructing an intertie between the ID-1 and ID-A service areas (as recommended in the draft Master Plan).

Initial projected costs	$1,500,000.00
2011-2012 budget addition	150,000.00
2012-2013 budget addition	157,000.00
2013-2014 budget addition	50,000.00
Project total to date	$1,857,000.00
Additional Request	300,000.00
Total Project Cost	$2,157,000.00

RECOMMENDATION:

That the Committee recommends to the Board of Directors the General Manager be authorized to realign the Capital Improvements budget, in the amount of $300,000, for the sole purpose of completing of the District's AMI system.

Accounts

Total accounts on system 6486

Freeze/Flag Accounts

Flag Account | Freeze Account

Flag | Freeze

Account Details

- View/Edit Account
- New Account
- Clone Account

Open | Delete

Search

- MTU
- Name
- Acc#
- Address
- Cycle
- Parcel #
- Service #
- N/A
- EXCHANGE READ
- ACCT ROOT#
- Meter S.N
- Account Type

Search

Acc#	MTU ID	Name	Address	Frozen	Flagged
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8003404	1-0-17648	[redacted]	[redacted]	☐	☐
8002605	1-0-17647	[redacted]	[redacted]	☐	☐
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8002801	1-0-17645	[redacted]	[redacted]	☐	☐
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1404205	1-0-17639	[redacted]	[redacted]	☐	☐
1304203	1-0-17638	[redacted]	[redacted]	☐	☐
1317008	1-0-17636	[redacted]	[redacted]	☐	☐
1006000	1-0-17635	[redacted]	[redacted]	☐	☐
8030801	1-0-17634	[redacted]	[redacted]	☐	☐
1678002	1-0-17633	[redacted]	[redacted]	☐	☐
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3142704	1-0-17631	[redacted]	[redacted]	☐	☐
1677902	1-0-17630	[redacted]	[redacted]	☐	☐
3101908	1-0-17629	[redacted]	[redacted]	☐	☐
8003802	1-0-17628	[redacted]	[redacted]	☐	☐

Freeze comments

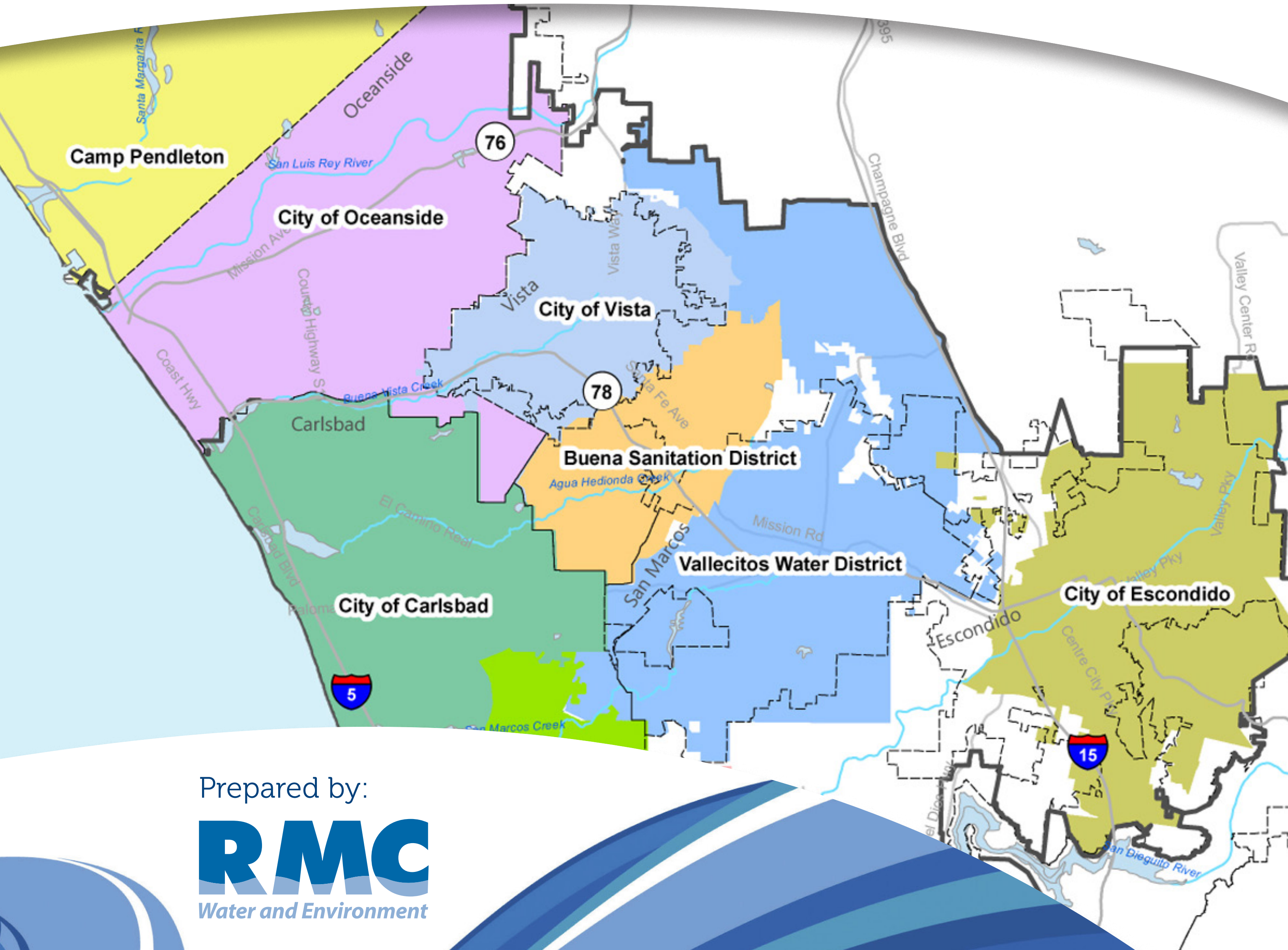
Flag comments

Edit Comments | Close

North San Diego County

Regional Recycled Water Project

May 2012
(Revised February 6, 2013)



Prepared by:

RMC
Water and Environment

North San Diego County Regional Recycled Water Project

Regional Recycled Water Facilities Plan

Prepared by:

RMC Water and Environment

May 2012
(REVISED FEBRUARY 6, 2013)

Acknowledgements

The following agencies and team members participated in the development of this regional project report:

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Javier De La Cruz

Revisions

February 6, 2013:

- Page 3-5: Added missing description of the Gafner WRP

Table of Contents

Appendices

List of Tables

List of Figures

List of Abbreviations

af	acre feet
afy	acre feet per year
AWWA	American Water Works Association
BPA	Basin Plan Amendment
BOD	biochemical oxygen demand
CDPH	California Department of Public Health
CIP	Capital Improvement Program
CIPP	Cured-in-place pipe
ft	feet
FY	fiscal year
GIS	Geographic Information System
gpm	gallons per minute
GMZ	Groundwater Management Zones
HDPE	high-density polyethylene
hp	horsepower
kWh/af	kilowatt-hours per acre-foot
IPR	Indirect Potable Reuse
LF	linear feet
MG	million gallons
mgd	million gallons per day
MND	Mitigated Negative Declaration
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NPR	Non-Potable reuse
psi	pounds per square inch
PVC	polyvinyl chloride
RWC	recycled water contribution
SRF	State Revolving Fund
SWRCB	California State Water Resources Control Board
TDS	total dissolved solids
TIN	total inorganic nitrogen
TSS	total suspended solids
USBR	United States Bureau of Reclamation
UV	ultraviolet
UWMP	Urban Water Master Plan
WDR	Waste Discharge Requirements
WRF	Water Reclamation Facility

Chapter 1 Introduction

1.1 Introduction

Southern California faces many water supply challenges. Droughts, climate change, population growth, and legal and environmental constraints combine to reduce or strain water supply reliability. Recycled water offers a reliable, drought-proof approach for augmenting local and imported supplies. Twelve agencies, which consist of the Olivenhain Municipal Water District (OMWD), Carlsbad Municipal Water District (Carlsbad MWD), San Elijo Joint Powers Authority (San Elijo JPA), Leucadia Wastewater District, City of Oceanside, City of Vista/Buena Sanitation District, Vista Irrigation District (VID), Vallecitos Water District, City of Escondido, Rincon del Diablo Municipal Water District, Santa Fe Irrigation District (SFID), and the United States Marine Corps Base Camp Pendleton, have joined together to develop this Regional Recycled Water Facilities Plan. This plan analyzes the recycled water facilities and demands for each agency to develop a regional project consisting of several different components.

1.2 Purpose of Report

This study is intended to assist the North San Diego County water and wastewater agencies in identifying the benefits of regionalization of existing and planned recycled water systems to further maximize the use of recycled water. Regionalization of facilities will allow recycled water to play an even more significant role in meeting the future water needs in the north San Diego County area. In 1998, four agencies, Olivenhain MWD, Carlsbad MWD, San Elijo JPA and the Leucadia Wastewater District received USBR Title XVI grant funds for the construction of various recycled water facilities within each of the north county agencies. The facilities that were included in that original regional effort have been constructed and are in use. As a result of these previous successes, a larger group consisting of twelve North County Agencies (Group) has been formed to investigate expanded use of recycled water within north San Diego County. The intent of this study is to identify new local and regional recycled water projects that will provide additional recycled water supplies to the local water agencies beyond what they could utilize individually.

1.3 Background and Previous Studies

In preparation of this study, the Group supplied many reports, drawings, data, and other documents. During progress meetings, the study team reviewed and discussed the existing system and facilities, previously studied projects, and current agency plans. Pertinent documents reviewed during the planning process include:

Camp Pendleton:

- Draft Urban Water Management Plan, August, 2010
- Camp Pendleton Water Resource Plan, April, 2011
- Recycled Water Master Plan, January, 2012
- Pilot Test – Recycled Water Injection to Control Against Sal Water Intrusion Lower Ysidora Sub-basin

Carlsbad Municipal Water District:

- Phase II Recycled Water Project Implementation Plan, April 2004
- Reclaimed Water Master Plan Update, October 1997
- Sewer Master Plan Update, March 2003
- Draft Sewer Master Plan Update, October 2009
- Phase II Recycled Water Project Implementation Plan, April 2004
- Encina JPA Phase II As-Built Drawings, 2005

City of Escondido:

- Hale Avenue Resource Recovery Facility, Recycled Water Quality, Production, Distribution Data

Leucadia Wastewater District (for Gafner Water Recycling Plant):

- North County Water Reclamation Project Phase II Master Plan, April 1997
- Initial Study for the North County Water Reclamation Project, June 1997
- Reclaimed Water Facilities Plan, May 1999
- Recycled Water Facilities Improvement Project, December 1999
- Recycled Water Production Evaluation (Draft), July 2010

City of Oceanside:

- Recycled Water Master Plan, October 2005
- Recycled Water Quality Reports, July 2010

San Elijo Joint Powers Authority:

- Recycled Water Optimization and Expansion Study, July 2005
- San Elijo Water Reclamation Facility Master Plan, December 2007

Santa Fe Irrigation District:

- Final Asset Management Master Plan, March 2009
- Recycled Water Master Plan, August 2005

Vallecitos Water District:

- Meadowlark WRP Tech Memo 3, Chapter 7 (2008 Master Plan Update), August 2009

Vista Irrigation District:

- Water Reclamation Master Plan, August, 1993

Appendix A contains a complete list of the documents and data collected as part of this review effort.

1.4 Study Area Description

North San Diego County is located along the Pacific Ocean in Southern California. The study area for this project, Phase II, consists of nine water agencies, as shown in **Figure 1-1.** The study area includes eight wastewater collection agencies as shown in **Figure 1-2**. The study area also includes seven cities and unincorporated areas of San Diego County as shown in both figures.

With respect to water resources, north San Diego County contains a number of regional agencies founded for the purpose of implementing regional wastewater systems and managing groundwater uses. These agencies include California Department of Public Health (CDPH), the San Diego Regional Water Quality Control Board (RWQCB – Region 9), and the San Diego County Water Authority. Additionally, there are several agencies that currently distribute and serve recycled water in the study area: Carlsbad Municipal Water District, City of Escondido, Leucadia Wastewater District, City of Oceanside, Olivenhain MWD, San Elijo JPA, Vallecitos WD, and Camp Pendleton. The Vista Irrigation District has not distributed any reclaimed water since the Shadowridge Reclamation Plant has been shut down.

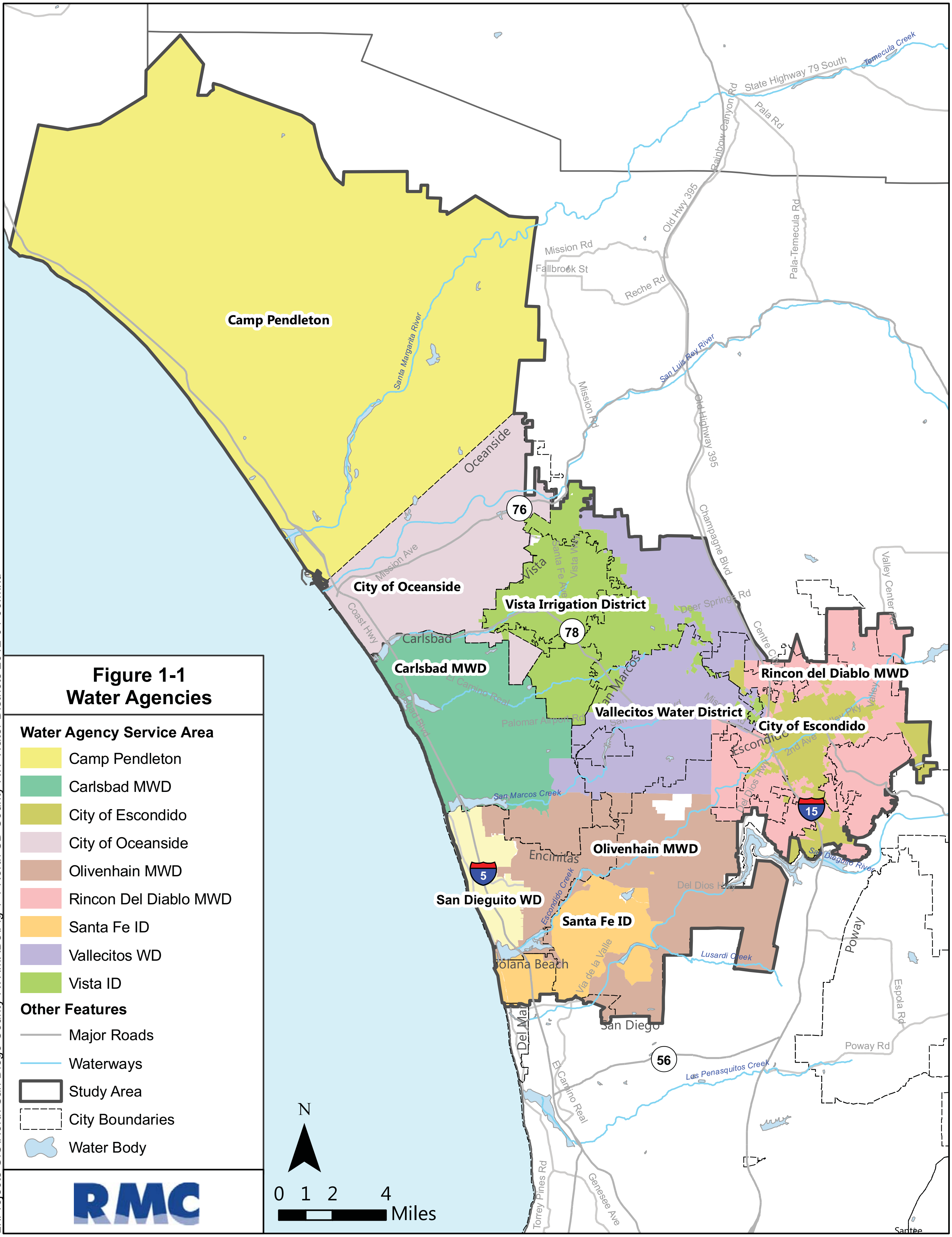

Figure 1-1
Water Agencies

L:\Projects GIS\North San Diego County RWM\MXDs\Fig 1-1 North SD County RW Water Districts 2012-04-06.mxd

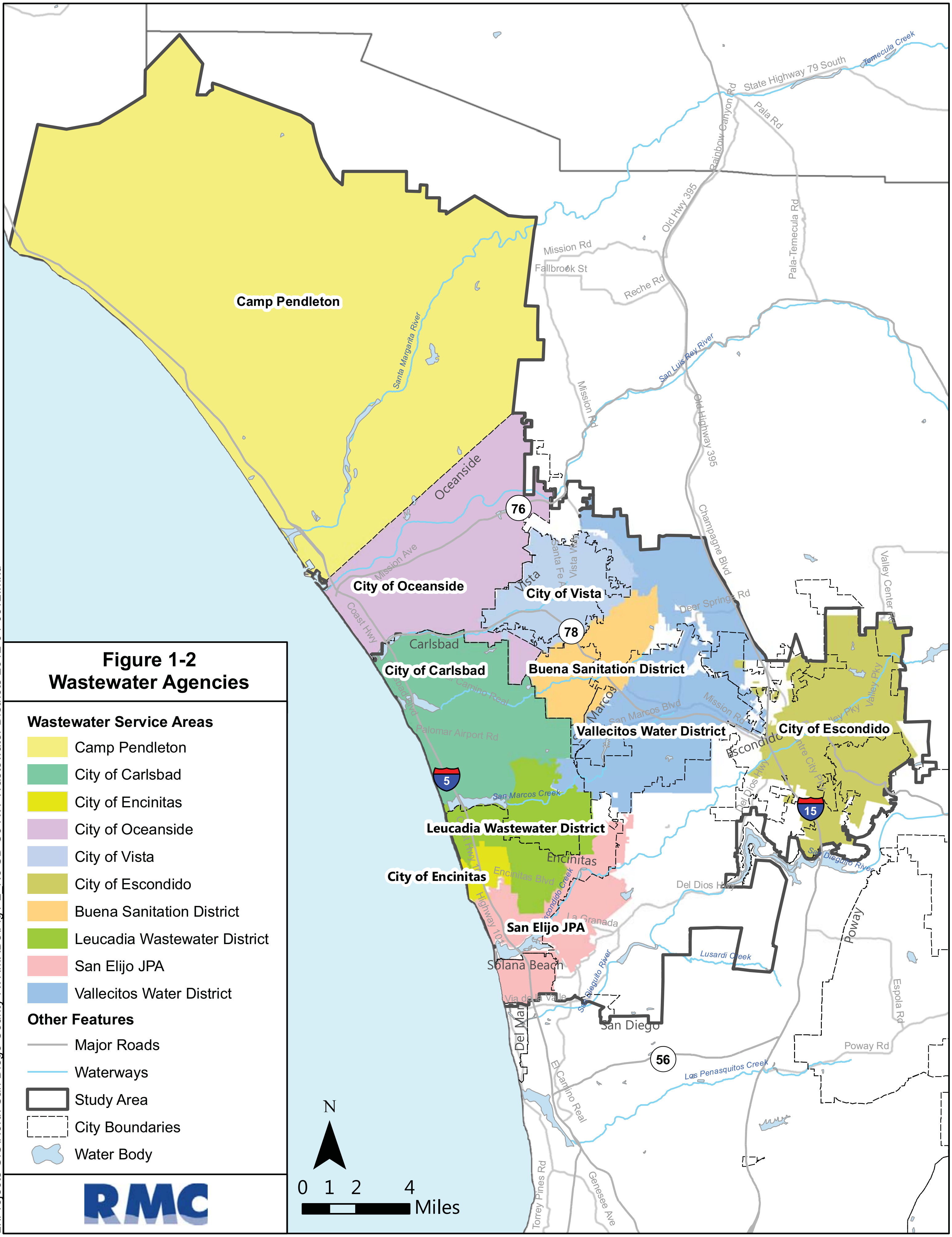

Figure 1-2
Wastewater Agencies

L:\Projects GIS\North San Diego County RWMMXDs\Fig1-2_No SD Co RW Wastewater Districts 2012-04-06v2.mxd

The following is a brief listing of the water and wastewater agencies located within the study area. These agencies can be categorized as water and wastewater agencies, although some agencies provide both services.

1.4.1 Water Agencies

Water agencies are institutional bodies whose functions include providing potable water for various uses. Water agencies also develop and maintain the recycled water systems to supply non-potable demands that help offset potable water needs. The following agencies, shown in **Figure 1-1**, provide water service within the overall study area:

- Camp Pendleton
- Carlsbad Municipal Water District
- City of Escondido
- City of Oceanside
- Olivenhain Municipal Water District
- Rincon del Diablo Municipal Water District
- San Dieguito Water District (represented by San Elijo JPA in the study)
- Santa Fe Irrigation District
- Vallecitos Water District
- Vista Irrigation District

1.4.2 Wastewater Agencies

Wastewater agencies are institutional bodies whose functions include providing and maintaining wastewater collection, treatment, and recycling or disposal of treated effluent. The following agencies, shown in **Figure 1-2**, provide wastewater management services within the overall study area:

- City of Vista / Buena Sanitation District
- Camp Pendleton
- City of Carlsbad
- City of Encinitas (represented by San Elijo JPA in the study)
- City of Escondido
- Leucadia Wastewater District
- City of Oceanside
- San Elijo Joint Powers Authority
- Vallecitos Water District

Chapter 2 Regulatory Considerations

2.1 Introduction

Recycled water quality must meet the standards set by the regulatory agencies as well as the requirements of the potential users. The State agencies with primary responsibility for regulating recycled water are the CDPH and the Regional Water Quality Control Boards (RWCQBs). CDPH requirements are focused on protecting public health, while the RWCQBs' requirements are to prevent degradation of surface waters and ground waters and protect their beneficial uses.

2.2 Basin Plans

The San Diego RWQCB (Region 9) has jurisdiction of water use within the study area. This RWQCB has adopted a Basin Plan that contains water quality objectives and designated beneficial uses for individual ground and surface water bodies. The Basin Plan reflects regional differences in existing water quality, the beneficial uses of the region's ground and surface waters and local water quality conditions and problems. The water quality objectives in the Basin Plans are implemented in the permits issued by the RWQCB for water reclamation and water reuse projects.

2.3 Reclamation and Discharge Permits

Permits containing water recycling requirements are issued by the RWQCB in consultation with CDPH for specific reuse projects. In some cases the water recycling permits are appended by the RWQCB to the waste discharge requirements of the facility's National Pollutant Discharge Elimination System (NPDES) permit. In the past, the RWQCB has issued permits with water recycling requirements to individual recycling facilities as well as individual users of recycled water. Now, the RWQCBs are issuing so-called "producer/user requirements" that regulate a single recycling facility and all of its users. Furthermore, in some cases a "master reclamation permit" is issued that applies to several reclamation facilities that are part of an interconnected regional system along with all of the users of that system.

Recycled water and discharge permits for treatment plants that serve this region are listed below in **Table 2-1**. **Table 2-2** summarizes the recycled water permit requirements for each of the water reclamation plants being considered in the study area.

Table 2-1: Discharge Permits in the Region

Agency	Treatment Plant	Waste Discharge Permit No.	Master Recycled Water Permit No.
Camp Pendleton	South Regional Tertiary Treatment Plant	R9-2008-0096	R9-2009-0021
Carlsbad MWD	Carlsbad Water Recycling Facility	2001-352	2001-352
City of Escondido	Hale Avenue Resource Recovery Facility	R9-2010-0032	R9-2010-0032
Leucadia Wastewater District	Gafner Water Reclamation Plant	R9-2004-0223	N/A
San Elijo JPA	San Elijo Water Reclamation Facility	R9-2010-0087	2000-10

Table 2-1: Discharge Permits in the Region

Agency	Treatment Plant	Waste Discharge Permit No.	Master Recycled Water Permit No.
City of Oceanside	San Luis Rey Wastewater Treatment Plant	93-07	N/A
City of Oceanside	La Salina Wastewater Treatment Plant	R9-2011-0016	N/A
Vallecitos Water District	Meadowlark Water Reclamation Plant	R9-2007-0018	N/A
Buena Sanitation District	Shadowridge Water Reclamation Facility[1]	93-82	N/A
City of San Diego	North City Water Reclamation Plant	97-03	N/A
Fairbanks Ranch Community Services District (CSD)	Fairbanks Ranch Water Pollution Control Facility (WPCF)	93-05	N/A
Ranch Santa Fe CSD	Rancho Santa Fe WPCF	92-04	N/A
Whispering Palms CSD	Whispering Palms WPCF	94-80	N/A
Fallbrook Public Utility District	Plant No. 1 and 2	91-39	N/A

Note: [1] Plant has since been shut down and may require new permit if it is restarted.

2.4 Hydrologic Units and Subunits

The north San Diego County study area generally drains to the west toward the Pacific Ocean. This area is located within four major hydrologic units. These hydrologic units include portions of the Santa Margarita, San Luis Rey, Carlsbad and San Dieguito Hydrologic Units. All three hydrologic units are the responsibility of the San Diego RWQCB (Region 9) and are shown in **Figure 2-1**.

Camp Pendleton overlies the Santa Margarita Hydrologic and San Juan Units. The City of Oceanside, Vista Irrigation District and Vallecitos Water District overlie the San Luis Rey Hydrologic Unit. This unit is further divided into hydrologic areas, with the Lower San Luis Rey Hydrologic Area being overlain by the three agencies.

All the agencies, except Camp Pendleton, overlie the Carlsbad Hydrologic Unit (904.00). The unit is further subdivided into nine hydrologic areas, with each being overlain by at least one agency.

The Santa Fe Irrigation District, San Elijo JPA, Olivenhain MWD, City of Escondido and Rincon del Diablo MWD overlie the San Dieguito Hydrologic Unit (905.00). This unit is further divided into hydrologic areas, with the Solana Beach, Hodges and San Pasqual hydrologic areas being overlain by the five agencies.

Table 2-2: Summary of Permit Requirements

Agency	Treatment Plant	Daily Maximum (mg/l)								
		TDS	Cl	SO4	%Na	Fe	Mn	NO3	Boron	Fl.
Camp Pendleton	Southern Regional TTP	N/A	325	325		0.30	0.05	N/A	0.60	0.7
Carlsbad	Carlsbad WRF	1,200	400	400		0.40	0.06		0.75	
Escondido	Hale Avenue RRF				60					
Leucadia WWD	Gafner WRP	1,200	500			0.40	0.06		0.06	
San Elijo JPA	San Elijo WRF	1,300	450	450						
Oceanside	San Luis Rey WWTP	1,300	400	400				50		
Vallecitos MWD	Meadowlark WRP	1,500	500			0.40	0.06		0.60	
Buena Sanitation	Shadowridge WRP	1,200	350	400		0.40			0.60	
San Diego	North City WRP									
Community SD	Fairbanks Ranch WRP	1,500	600	600	65	1.00	0.20		0.60	1.2
Community SD	Rancho Santa Fe WRP	1,500	500	500	65	1.00	0.20		0.60	1.2
Community SD	Whispering Palms WRP	1,200	500	500		1.00	0.20	50	0.60	1.2
Fallbrook PUD	Fallbrook WRP	1,500	500	500	60	1.00	0.20		0.60	1.0

Agency	Treatment Plant	30-day Average (mg/l)								
		TDS	Cl	SO4	%Na	Fe	Mn	NO3	Boron	Fl.
Camp Pendleton	Southern Regional TTP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carlsbad	Carlsbad WRF		350			0.30			0.75	
Escondido	Hale Avenue RRF									
Leucadia WWD	Gafner WRP	1,200	500			0.40	0.06		0.06	
San Elijo JPA	San Elijo WRF									
Oceanside	San Luis Rey WWTP							45		
Vallecitos MWD	Meadowlark WRP									
Buena Sanitation	Shadowridge WRP									
San Diego	North City WRP									
Community SD	Fairbanks Ranch WRP	1,300	500	500	65	0.85	0.15		0.50	1.0
Community SD	Rancho Santa Fe WRP				65	0.85	0.15		0.50	1.0
Community SD	Whispering Palms WRP	1,100	350	350		0.85	0.15	45	0.50	1.0
Fallbrook PUD	Fallbrook WRP				60	0.85	0.15		0.60	1.2

Agency	Treatment Plant	12-Month Average (mg/l)								
		TDS	Cl	SO4	%Na	Fe	Mn	NO3	Boron	Fl.
Camp Pendleton	Southern Regional TTP	750	300	300		0.30	0.05	10.00	0.75	1.0
Carlsbad	Carlsbad WRF	1,100		350		0.30	0.05		0.75	1.0
Escondido	Hale Avenue RRF	1,000	300	350	60	0.50	0.20		0.75	2.0
Leucadia WWD	Gafner WRP	1,200	500			0.40	0.06		0.06	
San Elijo JPA	San Elijo WRF	1,200	400	400		0.30	0.15		0.75	1.0
Oceanside	San Luis Rey WWTP	1,200	350	350		0.30	0.15		0.50	1.0
Vallecitos MWD	Meadowlark WRP	1,100	400			0.30	0.05		0.50	
Buena Sanitation	Shadowridge WRP		300	350		0.30	0.07		0.50	1.0
San Diego	North City WRP	1,200	300	300		0.30	0.05		0.70	
Community SD	Fairbanks Ranch WRP									
Community SD	Rancho Santa Fe WRP									
Community SD	Whispering Palms WRP									
Fallbrook PUD	Fallbrook WRP									

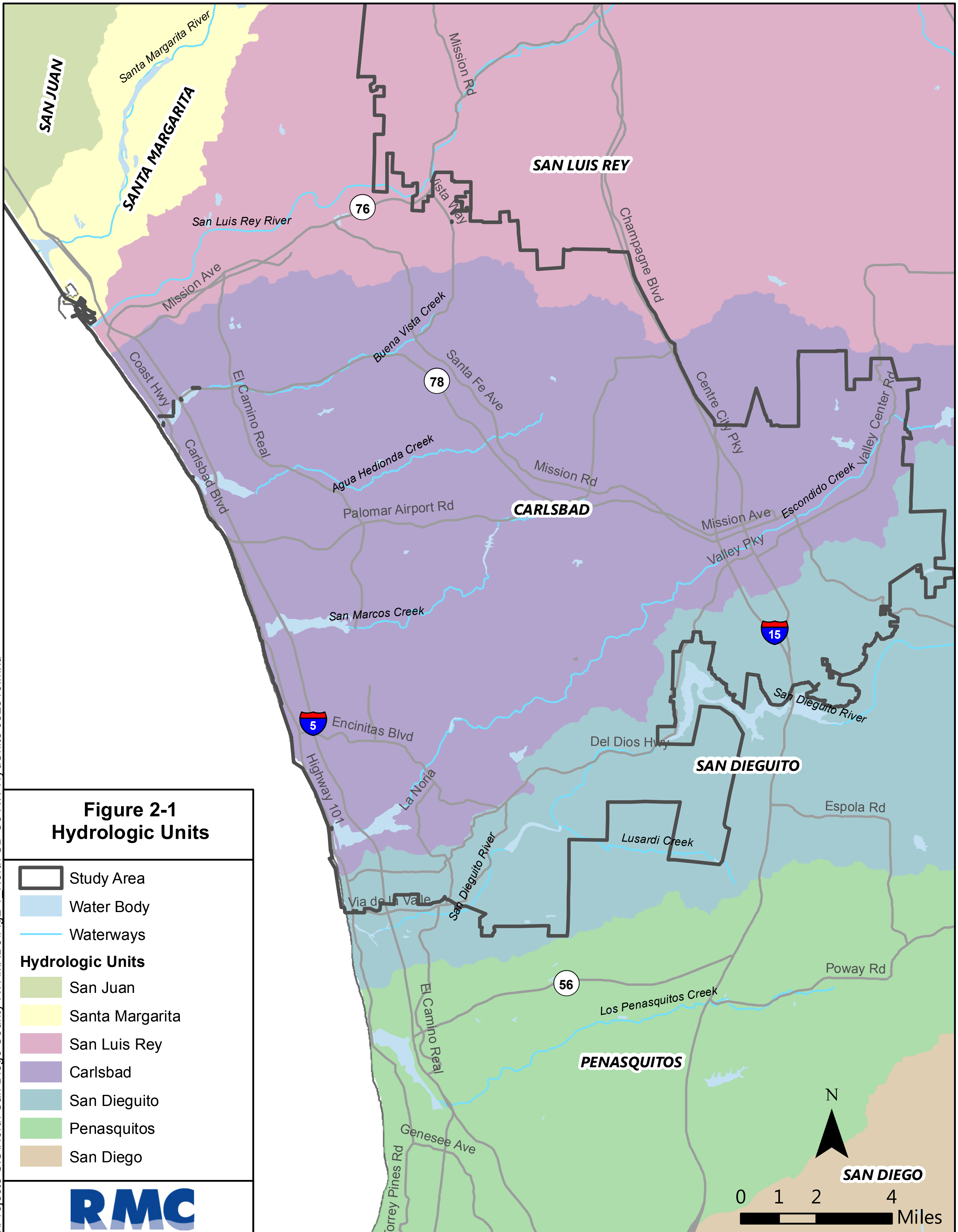

Figure 2-1
Hydrologic Units

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2.5 Groundwater Quality Objectives

Water quality objectives for surface and ground waters are adopted by the RWQCBs for specific drainage basins. The following discussion focuses on the objectives set to protect groundwater quality, since these objectives typically dictate recycled water quality requirements. Surface water was not addressed as part of this study as none of the wastewater plants currently discharge or serve recycled water to surface water bodies.

Each sub unit of each of the four hydrologic units has individual water quality objectives. **Table 2-3** lists the groundwater quality objectives from the basin plans for each of the subunits. The groundwater quality objective for total dissolved solids (TDS) is of primary concern with regard to reclamation because conventional treatment does not remove TDS. TDS levels in recycled water are most impacted by the TDS concentration of the potable water used in the area. For most irrigation uses, it is desirable to have a TDS concentration under 900 mg/l. However, concentration limits below 1,000 mg/l for TDS can be difficult to achieve for those agencies largely dependent on water imported from the Colorado River. **Figure 2-2** shows the hydrologic sub units and the TDS objectives of each of their underlying groundwater basins within the study area.

Table 2-3: Groundwater Quality Objectives

Hydrologic (Sub) Area	Basin Unit No.	Water Quality Objective (mg/l)								
		TDS	Cl	SO4	%Na	Fe	Mn	NO3	Boron	Fl.
Ysidora HA	**902.10**	**750**	**300**	**300**	**60**	**0.03**	**0.05**	**10**	**0.75**	**1.0**
Lower San Luis HA	**903.10**	**800**	**300**	**400**	**60**	**0.03**	**0.05**	**10**	**0.75**	**1.0**
Mission HSA	903.11	1,500	500	500	60	0.85	0.15	45	0.75	1.0
Bonsall HSA	903.12	1,500	500	500	60	0.85	0.15	45	0.75	1.0
Buena Vista Creek HA	**904.20**									
El Salto HSA	904.21	3,500	800	500	60	0.30	0.05	45	2.00	1.0
Vista HSA	904.22	1,000	400	500	60	0.30	0.05	10	0.75	1.0
Agua Hedionda HA	**904.30**	**1,200**	**500**	**500**	**60**	**0.30**	**0.05**	**10**	**0.75**	**1.0**
Los Monos HSA	904.31	3,500	800	500	60	0.30	0.05	45	2.00	1.0
Buena HAS	904.32	1,200	500	500	60	0.30	0.05	10	0.75	1.0
San Marcos HA	**904.50**	**1,000**	**400**	**500**	**60**	**0.30**	**0.05**	**10**	**0.75**	**1.0**
Batiquitos HSA	904.51	3,500	800	500	60	0.30	0.05	45	2.00	1.0
Richland HSA	904.52	1,000	400	500	60	0.30	0.05	10	0.75	1.0
Twin Oaks HSA	904.53	1,000	400	500	60	0.30	0.05	10	0.75	1.0
Escondido Creek HA	**904.60**	**750**	**300**	**300**	**60**	**0.30**	**0.05**	**10**	**0.75**	**1.0**
San Elijo HSA	904.61	2,800	700	600	60	0.30	0.05	45	1.00	1.0
Escondido HSA	904.62	1,000	300	400	60	0.30	0.05	10	0.75	1.0
Solana Beach HA	**905.10**	**1,500**	**500**	**500**	**60**	**0.85**	**0.15**	**45**	**0.75**	**1.0**
San Marcos HA	**904.50**	**1,000**	**400**	**500**	**60**	**0.30**	**0.05**	**10**	**0.75**	**1.0**

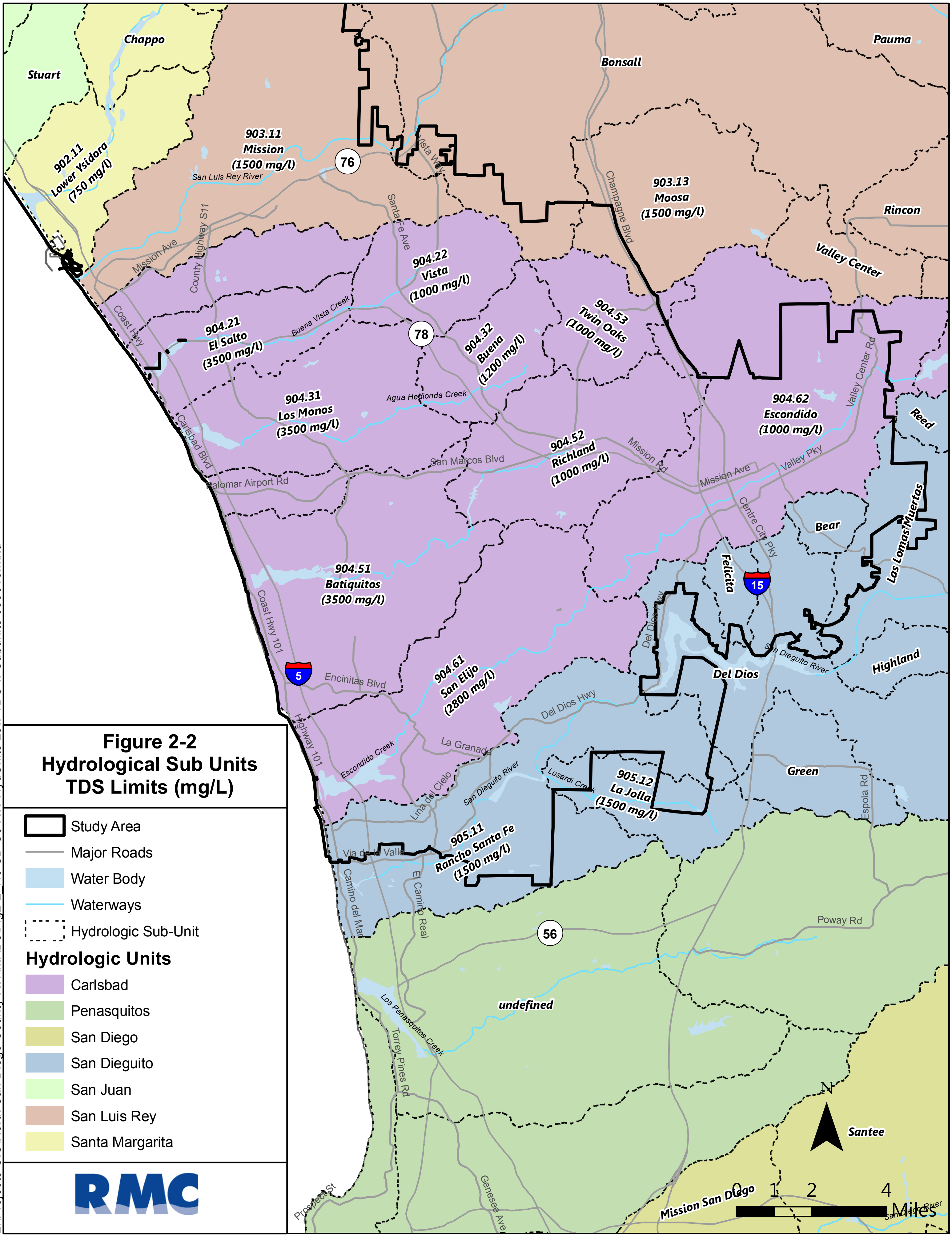

Figure 2-2
Hydrological Sub Units
TDS Limits (mg/L)

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2.6 Comparison of Groundwater Objectives, Permit Conditions and Water Quality

Table 2-4 shows a comparison of the current recycled water permits, recycled water quality, and groundwater objectives for each sub-basin by treatment plant within the study area. Only the 12-month average permit requirement is shown for each treatment plant as it is typically the most restrictive water quality requirement and is typically the basis for treatment process considerations. This table will be used during the development of alternatives as the basis for examining any potential water quality concerns of inter-agency or regional projects. Where differences in plant effluent or recycled water permit qualities differ from basin plan objectives, potential additional treatment or permit adjustments will be considered.

As reflected in this table, distribution of recycled water from some sources to agency or sub-basin areas may exceed the basin plan objectives for TDS and manganese. For example, the current TDS levels of the recycled water from the Gafner WRP (1,076 mg/l), San Elijo WRF (1,132 mg/l), and San Luis Rey WWTP (1,009 mg/l) exceed the basin plan objectives of 1,000 mg/l for the Vista and San Marcos sub-basins. The Carlsbad WRP currently serves recycled water in both of these sub-basins. Similarly, the manganese levels of the recycled water from the Gafner WRP and San Elijo WRF exceed those for sub-basins currently being served recycled water by Carlsbad, Vallecitos and Buena Sanitation. If recycled water is to be distributed regionally to sub-basins with basin plan objectives below current recycled water qualities, then permit adjustments, additional treatment, or blending options would need to be considered.

Table 2-4: Comparison of Recycled Water Quality, Permit Requirements, and Groundwater Quality Objectives

Agency	Treatment Plant	Current Water Quality Vs. Permit and Basin Limits	Water Quality Parameter TDS	Cl	SO4	%Na	NO3	Fe	Mn	Boron	Fl.
			Average Annual Water Quality								
			Permit: 12-Month Average (mg/l)								
Camp Pendleton[1]	**Southern Regional TTP**	**Average Annual Water Quality**	**808**	**165**	**210**	**115**	**2**	**< 0.1**	**< 0.02**	**-**	**0.36**
		Permit (Ysidora listed)	**750**	**300**	**300**	**60**	**10**	**0.30**	**0.05**	**0.75**	**1.0**
		Ysidora HAS (902.10)	750	300	300	60	10	0.30	0.05	0.75	1.0
		Mission HSA (903.11)	1,500	500	500	60	45	0.85	0.15	0.75	1.0
Carlsbad	**Carlsbad WRP**	**Average Annual Water Quality**	**965**	**265**	**-**	**-**	**-**	**-**	**-**	**0.40**	**-**
		Permit	**1,100**		**350**			**0.30**	**0.05**	**0.75**	**1.0**
		El Salto HSA (904.21)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Los Monos HSA (904.31)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Encinas HA (904.40)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		San Marcos HA (904.50)	1,000	400	500	60	10	0.30	0.05	0.75	1.0
		Batiquitos HSA (904.51)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
Escondido	**Hale Avenue RRF**	**Average Annual Water Quality**	**933**	**206**	**245**	**-**	**-**	**0.08**	**0.06**	**0.36**	**0.73**
		Permit	**1,000**	**300**	**350**	**60**		**0.50**	**0.20**	**0.75**	**2.0**
		Richland HSA (904.52)	1,000	400	500	60	10	0.03	0.05	0.75	1.0
		Escondido HSA (904.62)	1,000	300	400	60	10	0.03	0.05	0.75	1.0
		Del Dios HSA (905.21)	1,000	400	500	60	10	0.30	0.05	0.75	1.0
		Felicita HSA (905.23)	1,000	400	500	60	10	0.30	0.05	0.75	1.0
Leucadia WWD	**Gafner WRP**	**Average Annual Water Quality**	**1,076**	**278**	**233**	**-**	**-**	**0.10**	**0.07**	**0.41**	**0.69**
		Permit	**1,200**	**500**				**0.40**	**0.06**	**0.06**	
		El Salto HSA (904.21)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Los Monos HSA (904.31)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Encinas HA (904.40)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Batiquitos HSA (904.51)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Richland HSA (904.52)	1,000	400	500	60	10	0.03	0.05	0.75	1.0
San Elijo JPA	**San Elijo WRF**	**Average Annual Water Quality**	**1,132**	**324**	**278**	**-**	**-**	**0.17**	**0.09**	**0.44**	**0.32**
		Permit	**1,200**	**400**	**400**			**0.30**	**0.15**	**0.75**	**1.0**
		Batiquitos HSA (904.51)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		San Elijo HSA (904.61)	2,800	700	600	60	45	0.30	0.05	1.00	1.0
		Solana Beach HA (905.10)	1,500	500	500	60	45	0.85	0.15	0.75	1.0
Oceanside	**San Luis Rey WWTP**	**Average Annual Water Quality**	**1,009**	**256**	**344**	**-**	**-**	**0.10**	**0.05**	**0.42**	**0.05**
		Permit	**1,200**	**350**	**350**			**0.30**	**0.15**	**0.50**	**1.0**
		Mission HSA (903.11)	1,500	500	500	60	45	0.85	0.15	0.75	1.0

Table 2-4: Comparison of Recycled Water Quality, Permit Requirements, and Groundwater Quality Objectives

Agency	Treatment Plant	Current Water Quality Vs. Permit and Basin Limits	Water Quality Parameter								
			TDS	Cl	SO4	%Na	NO3	Fe	Mn	Boron	Fl.
			Average Annual Water Quality								
			Permit: 12-Month Average (mg/l)								
Vallecitos WD	**Meadowlark WRP**	**Average Annual Water Quality**	**991**	**236**		**-**	**-**			**0.37**	
		Permit	**1,100**	**400**				**0.30**	**0.05**	**0.50**	
		El Salto HSA (904.21)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Los Monos HSA (904.31)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Encinas HA (904.40)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Batiquitos HSA (904.51)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Richland HSA (904.52)	1,000	400	500	60	10	0.03	0.05	0.75	1.0
		San Elijo HSA (904.61)	2,800	700	600	60	45	0.30	0.05	1.00	1.0
Buena Sanitation	**Shadowridge WRP**	**Average Annual Water Quality**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
		Permit		**300**	**350**			**0.30**	**0.07**	**0.50**	**1.0**
		El Salto HSA (904.21)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Los Monos HSA (904.31)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Buena HSA (904.32)	1,200	500	500	60	10	0.30	0.05	0.75	1.0
		Encinas HA (904.40)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Batiquitos HSA (904.51)	3,500	800	500	60	45	0.30	0.05	2.00	1.0
		Richland HSA (904.52)	1,000	400	500	60	10	0.03	0.05	0.75	1.0
San Diego	**North City WRP**	**Average Annual Water Quality**	**914**	**239**	**226**	**-**	**-**	**0.09**	**0.07**	**0.36**	**0.40**
		Permit	**1,200**	**300**	**300**			**0.30**	**0.05**	**0.70**	
		San Elijo HAS (904.61)	2,800	700	600	60	45	0.30	0.05	1.00	1.0
		Solana Beach HA (905.10)	1,500	500	500	60	45	0.85	0.15	0.75	1.0
Community SD	**Fairbanks Ranch WPCF**	**Average Annual Water Quality**	**944**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		Permit									
		Solana Beach HA (905.10)	1,500	500	500	60	45	0.85	0.15	0.75	1.0
Community SD	**Rancho Santa Fe WRP**	**Average Annual Water Quality**	**1,295**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		Permit									
		San Elijo HSA (904.61)	2,800	700	600	60	45	0.30	0.05	1.00	1.0
		Solana Beach HA (905.10)	1,500	500	500	60	45	0.85	0.15	0.75	1.0
Community SD	**Whispering Palms WPCF**	**Average Annual Water Quality**	**1,083**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		Permit									
		Solana Beach HA (905.10)	1,500	500	500	60	45	0.85	0.15	0.75	1.0
Fallbrook PUD	**Fallbrook WRP**	**Average Annual Water Quality**	**775**	**-**	**-**	**-**	**-**	**-**	**-**	**0.30**	**-**
		Permit									
		Upper Ysidora HSA (902.13)	750	300	300	60	10	0.30	0.05	0.75	1.0
		Mission HSA (903.11)	1,500	500	500	60	45	0.85	0.15	0.75	1.0
		Bonsall HSA (903.12)	1,500	500	500	60	45	0.85	0.15	0.75	1.0

[1] Camp Pendleton's Master Reclamation Permit includes separate permit limits for both the Ysidora and Mission Basins. Only Ysidora listed here.
Average annual water quality data is average of four recorded monthly data from 2011.

Chapter 3 Current Recycled Water Setting

3.1 Introduction

This chapter presents the current recycled water setting for the study area, including the existing recycled water systems, sources of recycled water and existing recycled water demands. Additionally, this chapter includes a discussion of currently planned reuse system expansions by the agencies participating in this study.

3.2 Recycled Water Systems

There are ten water agencies participating in this study, eight of which currently serve recycled water customers in their service areas. Vallecitos Water District (Vallecitos WD) and Vista Irrigation District (VID) currently do not retail recycled water to their customers. Vallecitos WD owns and operates the Meadowlark WRP and wholesales recycled water to other agencies for retail distribution. VID is collaborating with Buena Sanitation District to investigate the possibility of renovating the mothballed Shadowridge WRP. This section provides a brief overview of the existing recycled water systems in North San Diego by water agency. Subsequent sections provide more detailed information on supply and demand.

Camp Pendleton: Recycled water is produced at the Southern Regional Tertiary Treatment Plant (SRTTP) and is supplied through a recycled water distribution system to irrigate four sites in the southern part of the Base. Excess treated effluent that is not recycled is disposed to the Pacific Ocean via the City of Oceanside's ocean outfall. Camp Pendleton is also adding Title 22 treatment in the San Mateo and San Onofre watersheds in the 2012-2014 timeframe.

Carlsbad Municipal Water District: Carlsbad MWD has the most extensive recycled water system in the region. They distribute recycled water from their own Carlsbad WRP, as well as recycled water purchased from the Leucadia Wastewater District (Gafner WRP) and the Vallecitos WD (Meadowlark WRP). The majority of the recycled water is delivered to local customers for irrigation within their service area. The District also serves some recycled water to customers in Vallecitos WD that are within the City of Carlsbad city limits.

City of Escondido: The City of Escondido owns and operates the Hale Avenue Resource Recovery Facility (HARRF) that produces recycled water for local distribution. The City retails recycled water to City customers primarily for irrigation and wholesales to the Rincon Del Diablo Municipal Water District.

City of Oceanside: The City of Oceanside owns and operates two Wastewater Treatment Plants (WWTP): La Salina WWTP and the San Luis Rey WWTP. Currently only a small amount of recycled water from the San Luis Rey WWTP is recycled at a local golf course. There are some previously constructed recycled water pipelines that will ultimately serve existing users and future development.

Olivenhain Municipal Water District: The majority of the recycled water use in the OMWD service area is in the northwestern quadrant of their service area. Recycled water served in this area is produced at the Meadowlark WRP and is used primarily for irrigation.

Rincon Del Diablo Municipal Water District: Rincon Del Diablo MWD distributes recycled water produced at the City of Escondido's HARRF to local customers for irrigation and industrial uses. The largest customer is the Palomar Energy Center that uses 2 to 3 MGD for cooling.

San Dieguito Water District: San Dieguito WD purchases water from the San Elijo WRF and retails to its local customers for irrigation.

Santa Fe Irrigation District: Santa Fe ID receives their recycled water from the San Elijo WRF. SFID distributes recycled water to customers within Solana Beach in the western portion of the District.

Currently the District does not serve any customers in the eastern part of its service area but is currently investigating options to do so. Service to the eastern service area may involve use of recycled water from one or more of the small WWTPs owned by local community service districts located in the area and/or from the San Elijo WRF.

The existing recycled water systems operated by the local agencies in the study area are shown in **Figure 3-1**. The pressure zones for these existing recycled water systems are shown on **Figure 3-2**.

3.3 Supplies

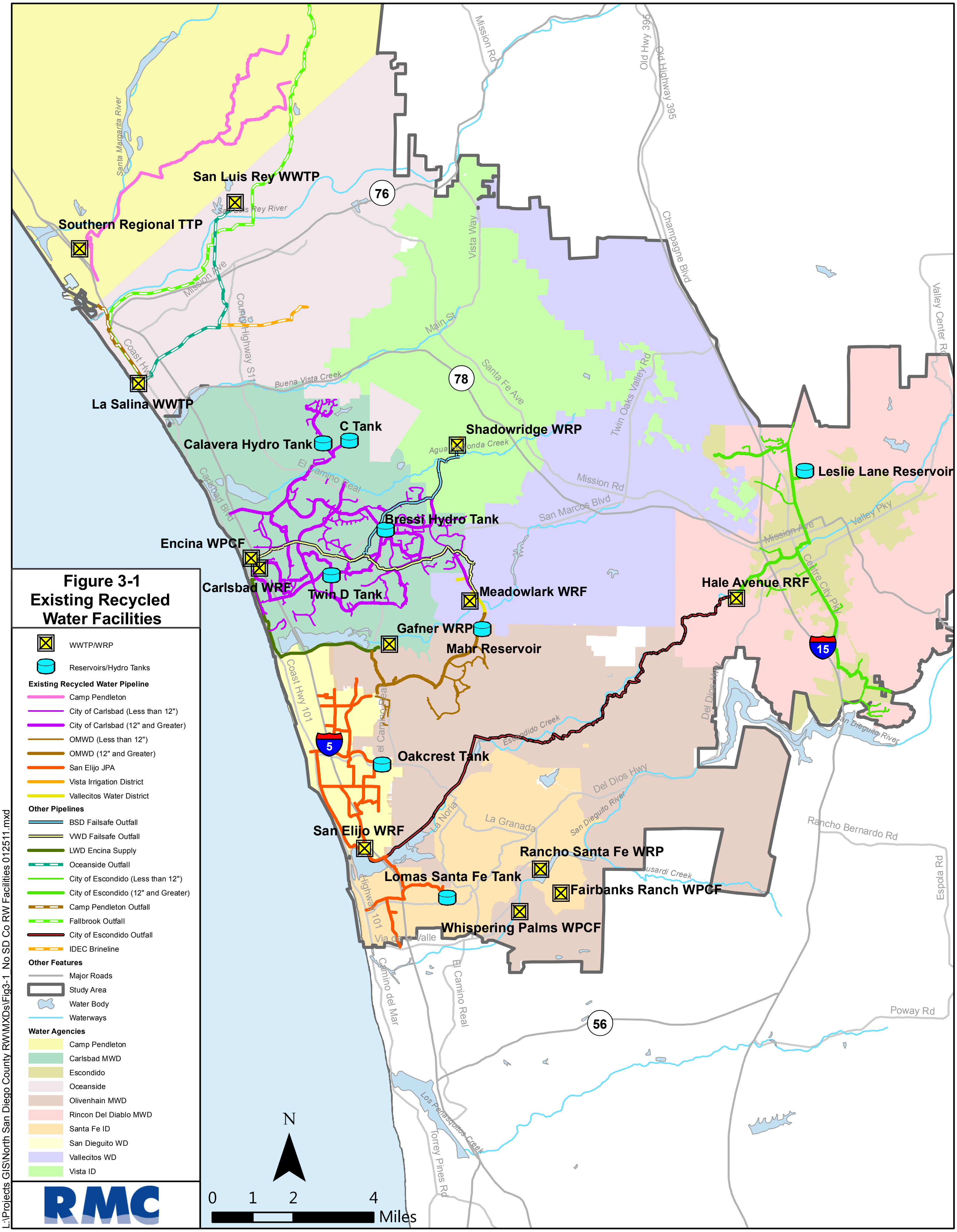
This section provides an overview of the existing and potential recycled water supplies available to the region that are owned and operated by the agencies participating in this study. **Table 3-1** provides a summary of the existing and potential future secondary and tertiary capacities, along with average daily flows for each treatment plant. Each plant is discussed individually, with information on the cost to expand if provided by the participating agency. The existing capacities and projected flows were provided by each agency.

South Regional TTP (Camp Pendleton): The SRTTP currently treats an annual average flow of about 2.4 mgd to a level suitable for non-potable reuse. The SRTTP came on line in August 2006 and at that time only from STP 13 was diverted to it. Flows from STP 1, 2, and 3 were diverted to the SRTTP in late 2088 to early 2009. The design capacity of the SRTTP is 5 mgd. However, the permitted capacity is limited to Camp Pendleton's capacity in the Oceanside Ocean Outfall, which is 3.6 mgd. Based on the potential expansion plans for the Base, the SRTTP is projected to expand to a capacity of 7.5 mgd and an average annual flow of 5.0 mgd. There is no current timetable for when the Base, and therefore the plant, would be expanded.

Carlsbad WRP: The Carlsbad WRP has a current tertiary capacity of 4.0 MGD. The plant receives secondary effluent flow from the adjacent Encina WPCF. Carlsbad MWD is currently completing its recycled water master plan and the draft plan is projecting a total plant size of 9 MGD being needed by 2020 and 16 MGD by 2030. The City of Carlsbad's capacity ownership at the Encina WPCF is 10.26 MGD, so it is likely that some institutional arrangement might be needed to expand the Carlsbad WRP beyond that flow. Per Carlsbad's draft master plan, the estimated capital cost to expand the Carlsbad WRP by 12 MGD to a total capacity of 16 MGD is approximately $51.2M.

Community CSDs: The Fairbanks Ranch WPCF, Rancho Santa Fe WRP, and Whispering Palms WPCF are privately owned facilities built by developers as part of the development of these communities. These are small plants that together have 0.95 MGD of secondary treatment capacity. All three plants currently discharge to percolation ponds. The Santa Fe ID is currently studying the feasibility of routing the effluent from all three plants to a new tertiary treatment facility that would be located adjacent to one of the CSD plants.

Encina WPCF: The Encina WPCF only treats wastewater to secondary levels, except for some in-plant uses. The secondary effluent is currently pumped to both the Carlsbad WRP and the Gafner WRP for further treatment. Remaining secondary effluent flows are discharged through an ocean outfall. There are currently no plans to upgrade the treatment levels at the WPCF beyond secondary.



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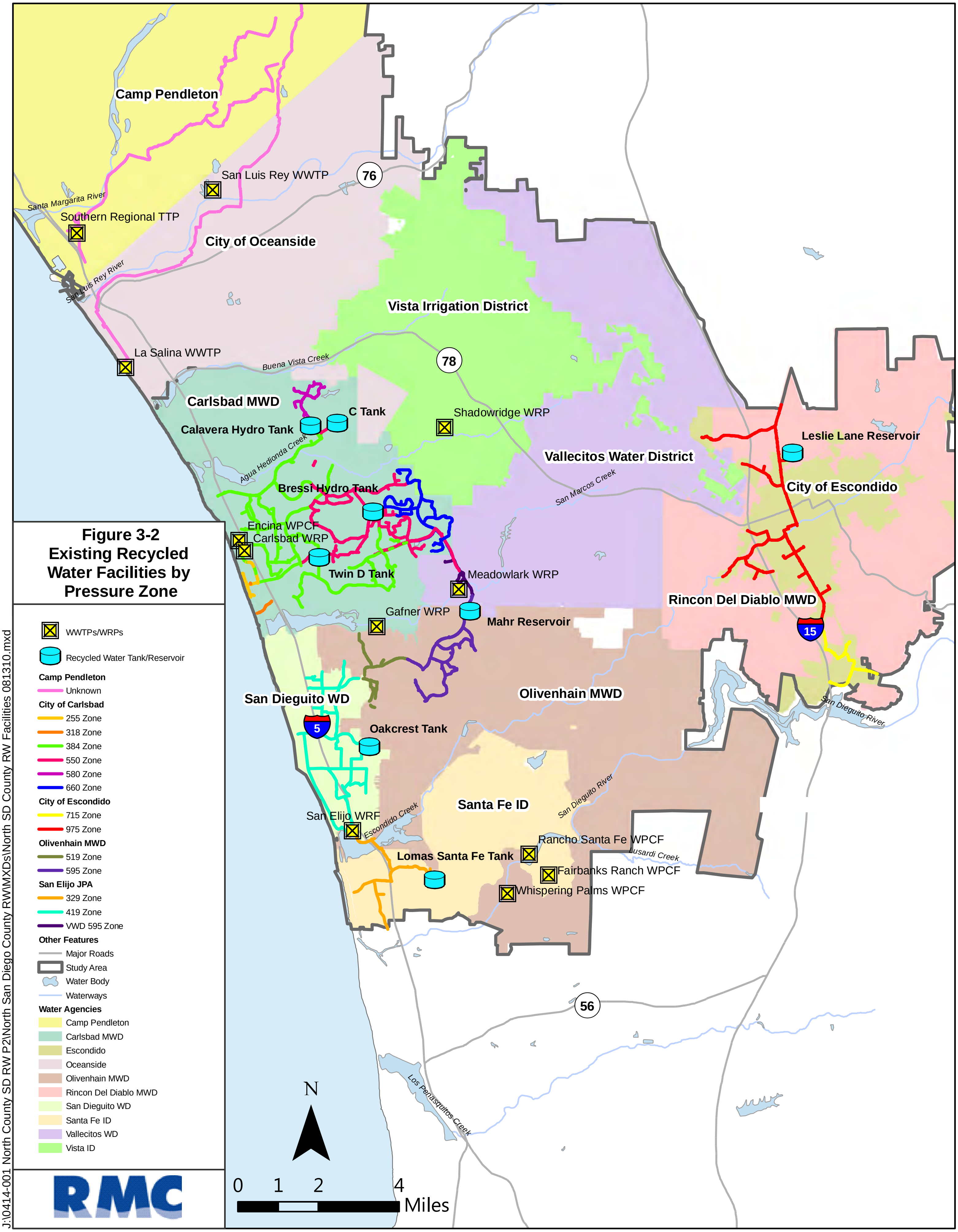

Figure 3-2
Existing Recycled Water Facilities by Pressure Zone

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Table 3-1: Existing and Future Recycled Water Supplies

Wastewater Treatment Plant	Planning Year 2010 (Existing Condition)				Planning Year 2020 (Short Term)				Planning Year 2030 (Long Term)			
	Treatment Capacity (MGD)		Average Daily Flow (MGD)		Treatment Capacity (MGD)		Average Daily Flow (MGD)		Treatment Capacity (MGD)		Average Daily Flow (MGD)	
	Secondary	Tertiary	Secondary	Tertiary	Secondary	Tertiary	Secondary	Tertiary	Secondary	Tertiary	Secondary	Tertiary
South Regional TTP (Camp Pendleton)	3.6	3.6	2.4	2.4	7.5	7.5	5.0	5.0	7.5	7.5	5.0	5.0
Carlsbad WRP	--	4.0	--	3.0	--	9.0	--	8.4	--	12.0	--	11.0
Encina WPCF	40.5	--	25.0	--	40.5	--	34.0	--	43.0	--	40.0	--
Gafner WRP	--	1.0	--	0.23	--	2.0	--	1.1	--	3.7	--	2.0
Hale Avenue RRF	18.0	9.0	13.0	4.26	21.0	18.0	21.0	15.0	27.5	20.0	25.0	18.0
Harmony Grove WRP	--	--	--	--	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
La Salina WWTP	5.5	--	3.0	--	5.5	--	3.0	--	5.5	--	3.0	--
Meadowlark WRP	5.0	5.0	3.74	3.74	5.0	5.0	4.5	4.5	5.0	5.0	4.5	4.5
San Elijo WRF	5.5	2.5	3.1	2.0	5.5	3.0	3.5	2.4	5.5	3.5	4.5	3.5
San Luis Rey WWTP	13.5	0.7	9.7	0.35	13.5	3.15	9.7	1.58	17.4	7.5	12.5	5.0
Shadowridge WRP	--	--	--	--	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Sub-Totals	**91.6**	**25.8**	**59.9**	**16.0**	**100.7**	**49.9**	**82.9**	**40.2**	**113.6**	**61.4**	**96.7**	**51.2**
Community CSDs[1]	0.95	--	0.95	--	0.95	--	0.95	--	0.95	--	0.95	--
Totals	92.6	25.8	60.9	16.0	101.7	49.9	83.9	40.2	114.6	61.4	97.7	51.2

[1] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants. The plants are not operated by any of the participating agencies but are being considered as potential supply sources for the eastern portion of Santa Fe ID's service area.

Gafner WRP: The Gafner WRP is owned and operated by the Leucadia Wastewater District and has an existing tertiary capacity of 1.0 MGD. Secondary effluent is pumped from the Encina WPCF to the Gafner WRP for further treatment. The La Costa Golf Course is the only existing customer and due to seasonal irrigation demands, the WRP only operates at capacity a few months a year. A Technical Memorandum (TM) was provided by the Leucadia Water District in October 2010 that provided a phasing plan for the WRP and estimates of capital costs. The TM indicates a five (5) phase approach to expanding the WRP to an ultimate tertiary capacity of 3.7 MGD at a total capital cost of approximately $35.8M. This includes improvements at the WRP as well as replacement of the existing secondary effluent return pipeline from the Encina WPCF.

Hale Avenue Resource Recovery Facility: The Hale Avenue RRF currently produces up to 9.0 MGD of recycled water for use in the City of Escondido and Rincon Del Diablo MWD. Currently, the HARRF discharges secondary effluent to the ocean via a land and ocean outfall. Due to capacity limitations in the land outfall the City has identified a significant avoided wastewater disposal cost of nearly $300M if they develop year-round uses for recycled water from HARRF. The City would prefer to invest in expanded treatment capacity at HARRF and increase the use of recycled water rather than increase the capacity of the land outfall. For the long term, the City is planning to expand the tertiary treatment facilities at the HARRF by 11.0 MGD, to bring the total tertiary capacity of the plant to 20.0 MGD.

Harmony Grove WRP: The Harmony Grove WRP is a new 0.2 MGD plant proposed to provide wastewater service for 750 new homes planned as part of the Harmony Grove Village development project within the Rincon Del Diablo MWD service area. The WRP will consist of two components. The first component will be owned and operated by the County of San Diego to treat wastewater and produce recycled water for irrigation and possibly industrial uses as part of the development project. The second component includes advanced treatment for a groundwater IPR project in the Harmony Grove area and would be supplied with recycled water from either HARRF or Vallecitos Water District. Rincon Del Diablo MWD will own and operate the advanced treatment component.

La Salina WWTP: The City of Oceanside's La Salina WWTP currently has a secondary capacity of 5.5 MGD. Due to limited space at the WWTP there is limited ability to add tertiary treatment facilities. The City has estimated about 1.0 MGD of tertiary treatment capacity could be constructed at the site. However, this has not yet been incorporated into the City's plans for this facility.

Meadowlark WRP: The Meadowlark WRP is owned and operated by the Vallecitos WD and was recently expanded to a capacity of 5.0 MGD. However, wastewater flows currently limit production of recycled water to just under 4 MGD on an average daily basis. The Vallecitos Water District projects that the average daily flow will increase to approximately 4.5 MGD in the future.

San Elijo WRF: The San Elijo Joint Powers Authority (SEJPA) owns and operates the San Elijo WRF and approximately 19 miles of recycled water distribution pipelines and two covered reservoirs. The WRF has a design capacity of 5.5 MGD through secondary treatment and a tertiary treatment capacity of 2.48 MGD. SEJPA is currently constructing an Advanced Water Treatment (AWT) facility that will provide highly treated recycled water using microfiltration and reverse osmosis processes. The AWT facility is designed to operate in parallel to the existing sand filtration system thus providing operational flexibility and treatment redundancy. Upon completion of the AWT facility, the San Elijo WRF will have new rated capacity of 3.03 MGD of tertiary treated water and the expected annual average TDS concentration will be 900 mg/l or less.

San Luis Rey WWTP: The San Luis Rey WWTP provides secondary treatment for most of the wastewater generated within the City's service area. The rated secondary treatment capacity of the existing WWTP is 13.5 MGD, while the tertiary capacity is only 0.7 MGD. Secondary effluent is discharged through a land and ocean outfall. By agreement, the Fallbrook Public Utility District can discharge up to 2.4 MGD through Oceanside's outfall. The City's 2005 Recycled Water Master Plan identified an expansion of the tertiary facilities to a capacity of 7.5 MGD to produce recycled water to serve the northern portion of the City as well as other development projects. It was estimated that an initial tertiary expansion of 3.5 MGD would cost approximately $7.6M (adjusted to 2010 dollars). The ultimate secondary treatment capacity of the WWTP is 17.4 MGD.

Shadowridge WRP: The Shadowridge WRP is owned by the Buena Sanitation District and is currently mothballed. A study prepared by PBS&J in August 2010 estimated that the capital cost to renovate, expand to 2.0 MGD and make the plant operational is approximately $17.9 M.

3.4 Existing Recycled Water Demands

A survey of the agency participants in this study was performed to identify current recycled water levels as well as the potential for future recycled water use in the study area. Chapter 4 discusses the potential future demands projected by the agencies. For purposes of this study, a baseline of existing reuse levels was established and includes both existing reuse level as well as near-term planned or committed recycled water projects. Committed plans are considered to be those projects that agencies are currently implementing and are expected to be completed within the next few years. A summary of the average annual existing demands and commitments for recycled water use by agency is presented in **Table 3-2**. Total existing recycled water usage in the planning area is approximately 10,600 afy currently with another 740 afy in near-term committed projects.

3.5 Previously Identified Reuse System Expansions

Already planned expansions of existing recycled water systems within the study area were identified based on previous studies and participating agency input. The major system expansions include recycled water distribution lines located in the Carlsbad MWD, City of Oceanside, the City of Escondido, the Santa Fe Irrigation District, and Camp Pendleton. Carlsbad MWD is considering use of the two failsafe outfalls as potential recycled water conveyance options. These two failsafe outfalls are for the Shadowridge WRP and the Meadowlark WRP. Carlsbad MWD's Recycled Water Master Plan Update is expected to be completed in late 2011 and will identify additional expansion areas and alignments for serving recycled water to irrigation and industrial customers.

The City of Oceanside is considering diverting tertiary flow from Fallbrook PUD's land outfall to irrigate the Morro Hills area of Oceanside during certain times of the year. The Fallbrook PUD land outfall currently serves recycled water to Arrowwood Golf Course and Caltrans in Oceanside's service area. The City is also considering obtaining up to 1 MGD of recycled water from Camp Pendleton to serve users in the Morro Hills area as well.

Camp Pendleton recently completed its recycled water master plan, which includes several options for expanding its existing recycled water system. Camp Pendleton is currently pursuing funding for one of the master plan's option, which would expand Camp Pendleton's system to the San Luis Rey Gate area. The City of Oceanside and Camp Pendleton are currently exploring this option which would allow the City to serve recycled water from Camp Pendleton to the downtown Oceanside area.

In February, 2012, Camp Pendleton completed a pilot test for providing recycled water via injection to control against salt water intrusion in the Lower Ysidora Sub-basin. While not providing indirect potable recycled water to the potable groundwater supplies, this project will help to protect the basin from a loss of its beneficial uses. Camp Pendleton is currently seeking funding to implement this project in the near future.

Where practical, these local distribution system expansions have been incorporated into the regional system planning.

Table 3-2: Recycled Water Demand Summary by Agency

Agency	Average Annual Non-Potable Demand (afy)		
	Existing	Committed Plans	Total
Camp Pendleton	385	--	**385**
Carlsbad MWD	4,350	587	**4,937**
City of Escondido	771	--	**771**
City of Oceanside	119	--	**119**
Olivenhain MWD	1,000	--	**1,000**
Rincon Del Diablo MWD	3,279	--	**3,279**
San Dieguito Water District	548	152	**700**
Santa Fe Irrigation District	510	--	**510**
Vallecitos Water District	--	--	--
Vista Irrigation District	--	--	--
Totals	**10,962**	**739**	**11,701**

Chapter 4 Long-Term Project Options

4.1 Introduction

This chapter presents the development and analysis of the long-term project options for a regional recycled project. Options developed included conventional Title 22 reuse sites as well as examining the potential locations for seasonal storage and indirect potable reuse sites. The project options were developed at a regional level only.

4.2 Project Options Formation Methodology

As part of this regional planning effort, the participating agencies want to formulate a short-term regional project that could be implemented over the next ten years by 2020. However, they also want to build a system that had the flexibility to be expanded in the future. Hence, two timeframes, short-term and long-term, were developed as part of this planning effort. The long-term planning year of 2030 was selected based on the agencies' best projections and represents nearly build-out conditions.

The approach used to develop the regional project was to first identify the long-term regional project and then to scale the system back to meet only the short-term demands. Necessary treatment plant upgrades or expansions along with pump station needs were scaled down to satisfy only the short-term demands. However, identified pipelines needed to meet short-term demands were sized adequately to meet the projected long-term demands. Pipelines only needed for the long-term were not included in the short-term. This approach helped to minimize the cost for the short-term project, while still providing for the long-term.

4.2.1 Projected Recycled Water Demands

Recycled water demand projections were developed based on previous agency studies as well as updates provided by the participating agencies. Potential recycled water demands were projected for both the short- and long-term periods. The amount of demand projected between the short- and long-terms was determined by each agency and was based on the potential to convert current potable users to recycled water, future developments, and each agency's forecast as to how much and how soon their recycled water systems could be expanded or implemented.

Table 4-1 provides a summary of the existing demands discussed in Chapter 3 along with the projected demands for the short- and long-term planning periods. As shown in the table, the Carlsbad MWD, Olivenhain MWD, and Santa Fe ID are all planning to complete or nearly complete build-out of their recycled water systems within the next ten years. Most of the other agencies are planning to fully build-out or expand their recycled water systems in either the short- or long-term planning horizons. It should be noted that two agencies, Rincon Del Diablo MWD and the City of Escondido, are both planning Indirect Potable Reuse (IPR) projects in addition to expansion of their non-potable recycled water systems. These planned IPR projects are being included in the long-term scenario as part of this regional project because each agency is currently pursuing an IPR project. The Rincon Del Diablo MWD IPR projects is also included in the short-term scenario as this project could be implemented within the next ten years as part of a proposed development. Other opportunities for IPR projects are only considered for the long-term and are discussed later in this chapter.

For the short-term (2020), an estimated average annual demand of 17,054 afy of new recycled water use is projected by the agencies. Another 14,994 afy of new demand is being projected to be implemented between the short- and long-term planning periods. Overall, along with the existing/committed projects the total estimated annual recycled water use in the region could be 43,749 afy by around 2030.

Table 4-1: Summary of Demands by Retail Water Agency

Agency	Average Annual Recycled Water Demand (afy)						
	Existing/ Committed	Additional Short Term		Total (Existing + Short Term)	Additional Long Term		Total (Existing + Short + Long Term)
		Non-Potable	Indirect Potable		Non-Potable	Indirect Potable	
Camp Pendleton[1]	385	870	--	1,255	545	--	1,800
Carlsbad MWD	4,937	3,040	--	7,977	760	--	8,737
City of Escondido	771	3,250	--	4,021	--	8,000	12,021
City of Oceanside	119	2,080	--	2,199	1,557	--	3,756
Olivenhain MWD	1,000	600	--	1,600	--	--	1,600
Rincon Del Diablo MWD	3,279	2,000	2,000	7,279	--	2,000	9,279
San Dieguito WD	700	--	--	700	--	--	700
Santa Fe ID	510	800	--	1,310	--	--	1,310
Vallecitos WD	--	1,444	--	1,444	922	--	2,366
Vista ID	--	1,840	--	1,840	1,210	--	3,050
Total	**11,701**	**15,924**	**2,000**	**29,625**	**4,994**	**10,000**	**44,619**

[1] In the short-term, the non-potable demand for Camp Pendleton includes the Lower Ysidora Salt Water Intrusion project, which will indirectly help to increase the yield of the groundwater basin.

Figure 4-1 shows the locations of the projected long-term recycled water demands. Potential future demands are represented by red dots that are scaled in size to the projected average annual recycled water demand. To simplify the analysis of options for the regional study, many of the smaller projected demands were grouped to represent a number of potential users. By grouping potential recycled water users based on their geographic locations, regional options were more easily developed and analyzed. Serving several users who are in close proximity to one another is typically more cost effective as recycled water transmission lines can be aligned to maximize the number of users that can be connected by the regional system. A smaller local distribution system will also need to be constructed to connect to individual users.

Grouping of potential users was done for several agencies, including Camp Pendleton, Carlsbad MWD, Vista ID, Vallecitos WD, Rincon Del Diablo, and Rancho Santa Fe ID. In such cases, the names for these grouped users were based on either the largest demand in the cluster, the geographic area, or a simple agency-numeric ID number. A listing of the demands shown in **Figure 4-1** is provided in **Table 4-2** below. The table also shows the amount of recycled water projected for the short- and long-term periods for each demand grouping.

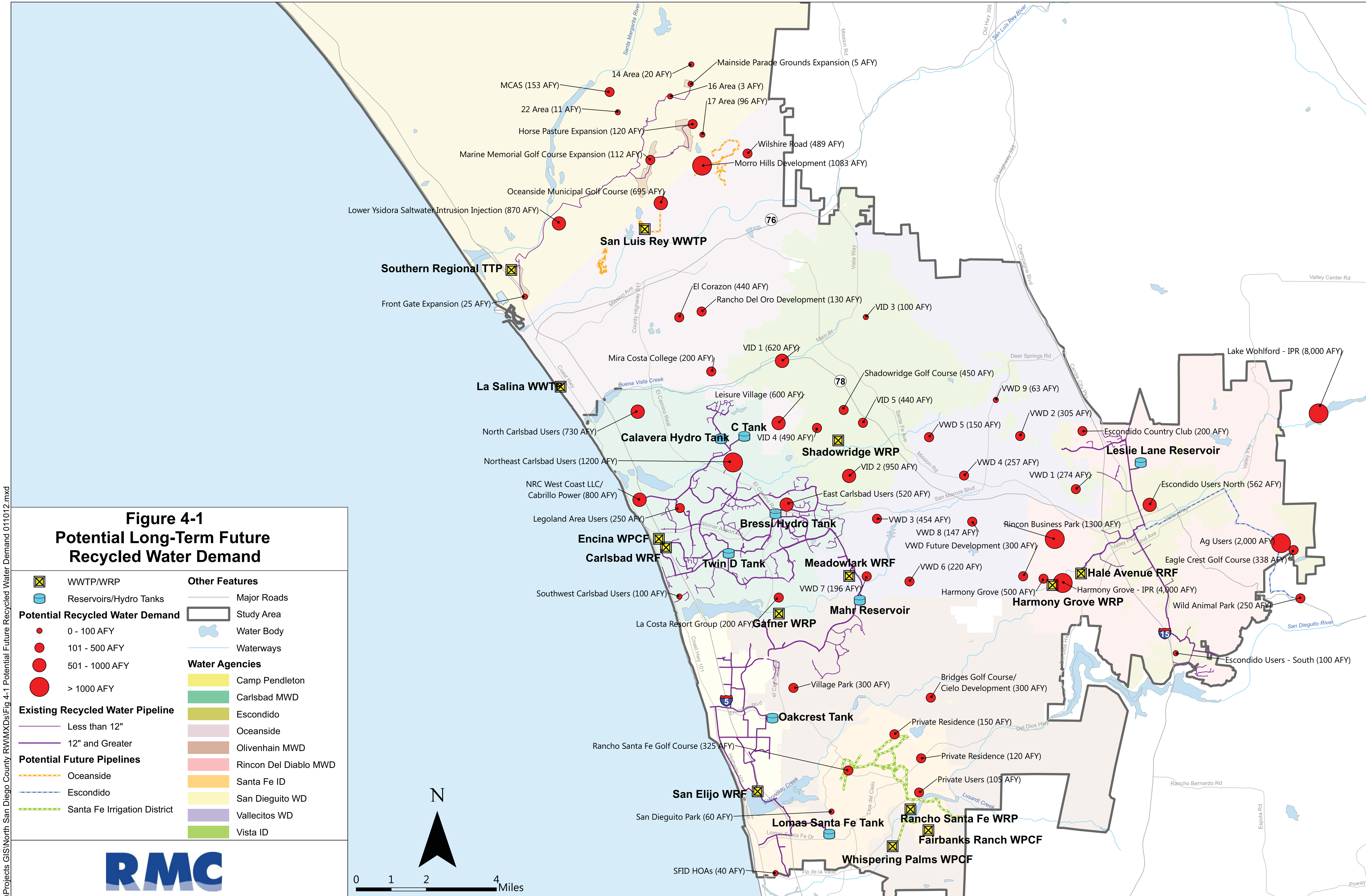

Figure 4-1
Potential Long-Term Future Recycled Water Demand

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Table 4-2: Grouped Projected Demands by Retail Water Agency

Demand or Demand Group Name	Agency	Total Annual Demand (afy)	
		Short-Term	Long-Term
14 Area	Camp Pendleton	0	20
16 Area		0	3
17 Area		0	96
22 Area		0	11
Front Gate Expansion		0	25
Horse Pasture Expansion		0	120
Lower Ysidora Salt Water Barrier		870	870
MCAS		0	153
Mainside Parade Grounds Expansion		0	5
Marine Memorial Golf Course Expansion		0	112
Subtotal for Camp Pendleton		870	1,415
East Carlsbad Users	Carlsbad MWD	400	520
La Costa Resort Group		180	200
Legoland Area Users		220	250
North Carlsbad Users		560	730
Northeast Carlsbad Users		900	1,200
NRC West Coast LLC/Cabrillo Power		700	800
Southwest Carlsbad Users		80	100
Subtotal for Carlsbad MWD		3,040	3,800
Ag Users	City of Escondido	2,000	2,000
Eagle Crest Golf Course		338	338
Escondido Users - South		100	100
Escondido Users North		562	562
Lake Wohlford – IPR		0	8,000
Wild Animal Park		250	250
Subtotal for City of Escondido		3,250	11,250
El Corazon	City of Oceanside	285	440
Leisure Village		600	600
Mira Costa College		0	200
Morro Hills Development		500	1,083
Oceanside Municipal Golf Course		695	695
Rancho Del Oro Development		0	130
Wilshire Road		0	489
Subtotal for City of Oceanside		2,080	3,637
Bridges Golf Course	Olivenhain MWD	300	300
Village Park		300	300
Subtotal for Olivenhain MWD		600	600
Escondido Country Club	Rincon Del Diablo MWD	200	200
Harmony Grove		500	500
Harmony Grove – IPR		2,000	4,000
Rincon Business Park		1,300	1,300
Subtotal for Rincon Del Diablo MWD		4,000	6,000

Table 4-2: Grouped Projected Demands by Retail Water Agency

Demand or Demand Group Name	Agency	Total Annual Demand (afy) Short-Term	Total Annual Demand (afy) Long-Term
Private Residence (N)	Santa Fe ID	150	150
Private Residence (S)		120	120
Private Users		105	105
Rancho Santa Fe Golf Course		325	325
San Dieguito Park		60	60
SFID HOAs		40	40
Subtotal for Santa Fe ID		800	800
Shadowridge Golf Course	Vista ID	450	450
VID 1		0	620
VID 2		950	950
VID 3		0	100
VID 4		0	490
VID 5		440	440
Subtotal for Vista ID		1,840	3,050
VWD 1	Vallecitos WD	274	274
VWD 2		0	305
VWD 3		454	454
VWD 4		0	257
VWD 5		0	150
VWD 6		220	220
VWD 7		196	196
VWD 8		0	147
VWD 9		0	63
VWD Future Development		300	300
Subtotal for Vallecitos WD		1,444	2,366
Total (Projected Demand)		**17,924**	**32,918**

4.2.2 Projected Recycled Water Supplies

As discussed in Chapter 3, each agency provided background information and updates on the existing and planned capacities of each of the wastewater and water recycled plants in the study area. In addition, the projected available average daily flow to each plant by 2030 was identified. For planning purposes the projected flow was reduced by 10 percent to account for miscellaneous losses through the treatment process to determine the available supply. This potential future available supply represents the maximum supply to either the short- or long-term planning periods based on agency projections. In addition, existing recycled water demands satisfied from each plant were accounted for in development of the potential available future supply. **Table 4-3** summarizes the projected available supplies for new recycled water projects.

Since none of the existing recycled water systems have a significant amount of seasonal storage, it is necessary to account for seasonal peaking of irrigation demands. Development of maximum day to average annual demand peaking factors for each supply source assisted with determining the available supply. As the supplies vary greatly in size and amount of reuse, a range of peaking factors were developed for purposes of this study. These peaking factors were based on observed peaking factors from historical use patterns for the plants that currently serve recycled water. The assumed maximum day to average annual peaking factors used in this planning effort are:

- Max Day to Avg. Annual Peaking Factor = 2.0 if demand < 1,000 afy
- Max Day to Avg. Annual Peaking Factor = 1.8 if demand 1,000 - 5,000 afy
- Max Day to Avg. Annual Peaking Factor = 1.6 if demand > 5,000 afy

Table 4-3: Maximum Potential Recycled Water Supplies

Plant	Projected Average Daily Wastewater Flow (MGD)	Maximum Potentially Available New Recycled Water Supply (MGD) [1]
South Regional TTP (Camp Pendleton)	5.0	3.5
Carlsbad WRP (includes Encina WPCF)	40.0	32.00
Community CSDs[2]	0.95	0.95
Gafner WRP	NA	2.70
Hale Avenue RRF	25	18.00
Harmony Grove WRP	0.2	0.20
La Salina WWTP	3.0	1.00
Meadowlark WRP	4.5	2.00
San Elijo WRF	4.5	3.5
San Luis Rey WWTP	12.5	11.00
Shadowridge WRP	2.0	2.00
Total	**97.65**	**76.85**

[1] Maximum potentially available supply is based on the projected wastewater flow minus existing recycled water demands and the estimated peaking factor for each plant.

[2] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants. The plants are not operated by any of the participating agencies but are being considered as potential supply sources for the eastern portion of Santa Fe ID's service area.

4.2.3 Long-Term Regional Options

For the long-term planning period, two basic options were considered by the participating agencies. Since the North San Diego County region contains several smaller potential recycled water plants and eight water agencies, the first long-term option was based on the concept of serving recycled from all of the potential identified supply sources in a decentralized approach. This Option A could potentially result in smaller local distribution systems and shorter pipelines. It would also likely result in reduced pumping and lower energy costs since wastewater would be treated at higher elevations and at locations closer to the identified demands. Finally, this option might be an advantage to some agencies that have already invested in distributions systems based on an existing treatment plant's anticipated expansion.

The second long-term option considered focused on serving recycled water primarily from the larger treatment plants in a centralized approach. The advantage of this Option B would be to focus on the larger or more regional supply sources and to obtain some economy of scale compared to some of the smaller plants. However, this option would require longer regional pipelines and additional pumping to serve identified demands located farther from these regional supply sources.

In addition to these two base options, two other factors were considered for the long-term recycled water potential in the region. The first consideration was the use of seasonal storage of recycled water to reduce or eliminate the need to construct tertiary treatment capacity to satisfy summer peak irrigation demands. Several potential sites were identified and considered by the participating agencies. These storage opportunities are not exclusive to either Option A or B and are thus examined separately. Another add-on option is the inclusion of additional Indirect Potable Reuse (IPR) sites that had not yet been considered in the plans of the participating agencies for the short- or long-term planning periods. Several potential groundwater and surface storage sites have been considered by the agencies but have not yet resulted in detailed planning. As discussed below, most of these sites would require a more extensive examination as to their potential implementation and feasibility than allowed for in this study.

4.3 Long-Term Project Option A

As discussed above, Option A is based on a decentralized supply source approach. To allocate available supply to the potential demands, a matrix was developed showing the demand by retail water agency and the available supply by wastewater treatment plant. Recycled water supplies were then allocated based on projected peak demands. **Tables 4-4** and **4-5** show a summary of the allocated supplies and recycled to each water agency from each wastewater treatment plant. Note that in several cases, multiple treatment plants were necessary to satisfy the identified demand. **Figure 4-2** shows the resulting Regional System for Option A. A few project specific aspects of Option A are noted here:

- In addition to the construction of new regional pipelines, Option A also includes the conversion of a portion of the existing Buena Sanitation District failsafe outfall from the Shadowridge WRP. Carlsbad MWD is already in discussions with BSD regarding the conversion of a portion of this line. Under Option A, this would allow for additional flow from the Carlsbad WRP to serve several demands in the Vista ID service area, which is needed since the demand exceeds the identified capacity of the Shadowridge WRP.
- As noted in Chapter 3, Camp Pendleton and the City of Oceanside have discussed the potential for Camp Pendleton to deliver recycled water to the City for service to customers in the Morro Hills area of the City. The City of Oceanside is also considering diverting tertiary flow from the Fallbrook PUD land outfall to irrigate the Morro Hills area of Oceanside during certain times of the year. This can be accomplished via a tie-in to the recycled water line serving the Morro Hills area.
- As shown in **Figure 4-2**, the Wanket Tank in the Olivenhain MWD's service area is an existing potable water tank that could be converted to recycled water. Olivenhain MWD is currently discussing conversion of this tank with the San Dieguito Water District. There may be additional opportunities within the study area to convert potable facilities to regional or local recycled water distribution systems.
- As shown in **Figure 4-2**, two Indirect Potable Reuse (IPR) lines are proposed to serve the Lake Wohlford IPR and the groundwater recharge IPR near Harmony Grove. These lines would be separate from the non-potable reuse (NPR) or tertiary treated lines as the water qualities would differ.

This study did not develop more detailed local distribution systems that will be required to connect every individual user. For several agencies, such plans will require integration with the agencies' existing systems. For the regional pipelines identified in Option A, new pipelines were connected to the existing system where larger pipelines (typically 12 inch or greater) were identified, such that available capacity to serve future demand was assumed. The existing hydraulic grade lines (see Chapter 3) were used to establish a pressure basis for the new pipelines such that new pump stations could be sized accordingly. Agencies where existing lines were utilized include Camp Pendleton, Carlsbad MWD, City of Escondido, Rincon Del Diablo MWD, and Olivenhain MWD. Hence, **Figure 4-2**, shows several locations where new pipelines are proposed that originate from existing systems.

Table 4-4: Long-Term Option A: Supply Capacity Needs

Agency	Treatment Capacity Needed to Meet Demand[1] (MGD)	Peak Flow Capacity Needed by Plant (MGD)										
		SRTTP	San Luis Rey	La Salina	Shadowridge	Carlsbad	HARRF	Gafner	Meadowlark	San Elijo	Harmony Grove	CSDs[2]
Camp Pendleton	1.3	1.3										
Carlsbad MWD	5.4					4.0		0.9	0.5			
City of Escondido	12.1						12.1					
City of Oceanside	5.8	1.6	3.2			1.0						
Olivenhain MWD	1.0							0.3		0.2		0.5
Rincon Del Diablo MWD	6.4						6.2				0.2	
San Dieguito WD	0.0											
Santa Fe ID	1.3									0.8		0.5
Vallecitos WD	3.9						2.4		1.5			
Vista ID	5.0		1.2		2.0	1.8						
Total Treatment Capacity Needed	**42.2**	**2.9**	**4.4**	**0.0**	**2.0**	**6.8**	**20.7**	**1.2**	**2.0**	**1.0**	**0.2**	**1.0**

[1] Treatment capacity needed is based on peaking factors specific to each system/plant. For some plants, this additional flow or peak capacity need may already be available within the plant's current capacity and available flows. For other pants, this additional capacity need may require expansion or addition of tertiary and other processes to meet the additional demand needs.

[2] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants.

Table 4-5: Long-Term Option A: Additional Recycled Water Demand by Plant

Agency	Recycled Water Demand (afy)	Avg. Annual Recycled Water Demand by Supply (afy)										
		SRTTP	San Luis Rey	La Salina	Shadowridge	Carlsbad	HARRF	Gafner	Meadowlark	San Elijo	Harmony Grove	CSDs[1]
Camp Pendleton	1,400	1,400										
Carlsbad MWD	3,800					2,800		600	400			
City of Escondido	11,300						11,300					
City of Oceanside	3,600	1,000	2,000			600						
Olivenhain MWD	600							200		100		300
Rincon Del Diablo MWD	6,000						5,800				200	
San Dieguito WD	0											
Santa Fe ID	800									500		300
Vallecitos WD	2,400						1,500		900			
Vista ID	3,100		800		1,200	1,100						
Total Recycled Water Demand	**33,000**	**2,400**	**2,800**	**0**	**1,200**	**4,500**	**18,600**	**800**	**1,300**	**600**	**200**	**600**

[1] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants.

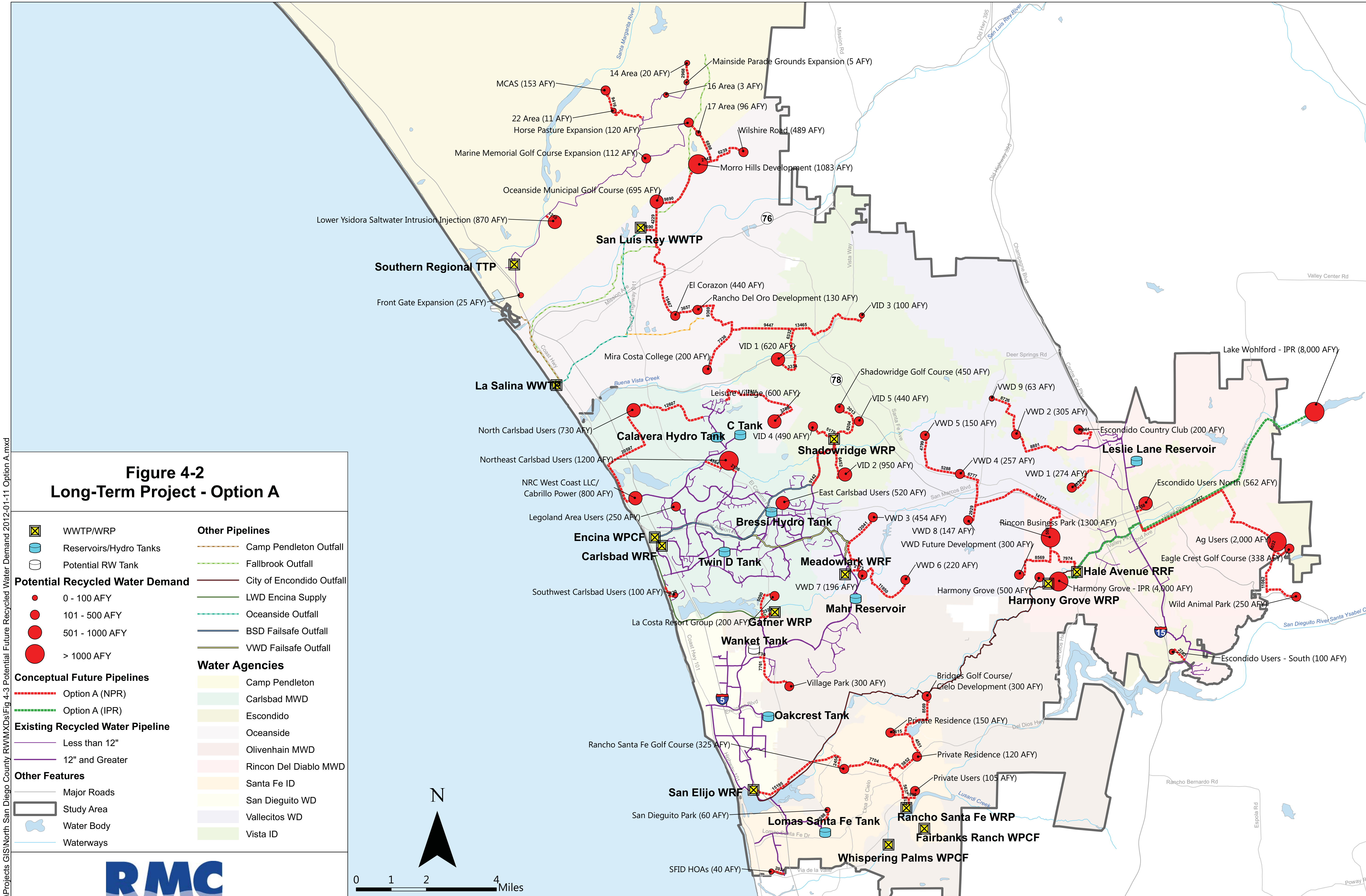

Figure 4-2
Long-Term Project - Option A

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4.4 Long-Term Project Option B

Tables 4-6 and **4-7** show a summary of the allocated supplies and recycled water demands to each agency from each wastewater treatment plant for Option B. As in Option A, multiple plants were necessary to satisfy the demand of some agencies whose demand exceeds the nearest treatment plant's available supply. **Figure 4-3** shows the resulting Option B Regional System.

Option B also includes the use and conversion of a portion of the Buena Sanitation District's failsafe outfall from the Shadowridge WRP so that the Carlsbad WRP can serve some of the Vista ID users. As shown in **Figure 4-3**, two Indirect Potable Reuse (IPR) lines are also proposed to serve the Lake Wohlford IPR and the groundwater recharge IPR near Harmony Grove. Existing recycled water lines are also utilized under this Option. However, because there are less treatment plants being used, in several locations more recycled water is being conveyed through these existing lines, especially within the Carlsbad MWD system. Therefore, it is more likely the existing systems may not have the available capacity to convey these additional flows under Option B than under Option A. A hydraulic analysis of the existing systems was not within the scope of this study to confirm these capacity needs.

4.5 Evaluation of Options A and B

To evaluate the regional systems developed under Options A and B, several qualitative criteria were developed:

- **Maximize Reuse**: Ability of option to serve all identified future demands
- **System Reliability**: Ability to provide recycled water from multiple supply sources, pumping stations, or pipelines if there was a disruption of service
- **Adaptability**: Proposed option provides flexibility for adjustments in the future as it is anticipated that each agency will have an independent implementation schedule
- **Institutional Complexity**: Option minimizes the number of institutional arrangements needed between water and wastewater agencies for both supply and sharing of distribution systems for conveying flow through existing systems
- **Proximity of Supplies and Demands:** Demands are located closer to supply sources such that pipelines are reduced in size and length and less pumping is required

Table 4-8 summarizes the results of a comparison of Options A and B under these criteria. Under both options, there is enough supply to serve all the identified long-term demands. Because Option A will have more treatment plant supplies for the same demands, it scores higher in the System Reliability criteria. Under Option B, the majority of the demand is met from only three treatment plants: San Luis Rey WWTP, Carlsbad WRP, and Hale Avenue RRF (HARRF). As such, Option B is not seen as providing much adaptability to be able to adjust plans over time based on the varying levels and speed of implementation that might result. Therefore, Option A is scored much higher than Option B as it provides several agencies with the ability to adjust the long-term plan and to meet demands from different supply sources while building out their systems. Option B has less Institutional Complexity than Option A as three treatment plants are not proposed for future expansion/implementation. Lastly, Option A scores higher than Option B in the Proximity of Supplies and Demands criteria because there are more treatment plants being used to serve local demands.

Table 4-6: Long-Term Option B: Supply Capacity Needs

Agency	Treatment Capacity Needed to Meet Demand[1] (MGD)	Peak Flow Capacity Needed by Plant (MGD)										
		SRTTP	San Luis Rey	La Salina	Shadowridge	Carlsbad	HARRF	Gafner	Meadowlark	San Elijo	Harmony Grove	CSDs[2]
Camp Pendleton	1.3	1.3										
Carlsbad MWD	5.4					5.4						
City of Escondido	12.1						12.1					
City of Oceanside	5.8	1.6	4.2									
Olivenhain MWD	1.0					0.8				0.2		
Rincon Del Diablo MWD	6.4						6.2				0.2	
San Dieguito WD	0.0											
Santa Fe ID	1.3									1.3		
Vallecitos WD	3.9						3.9					
Vista ID	5.0		1.2			3.8						
Total Treatment Capacity Needed	**42.2**	**2.9**	**5.4**	**0.0**	**0.0**	**10.0**	**22.2**	**0.0**	**0.0**	**1.5**	**0.2**	**0.0**

[1] Treatment capacity needed is based on peaking factors specific to each system/plant. For some plants, this additional flow or peak capacity need may already be available within the plant's current capacity and available flows. For other pants, this additional capacity need may require expansion or addition of tertiary and other processes to meet the additional demand needs.

[2] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants.

Table 4-7: Long-Term Option B: Additional Recycled Water Demand by Plant

Agency	Recycled Water Demand (afy)	Avg. Annual Recycled Water Demand by Supply (afy)										
		SRTTP	San Luis Rey	La Salina	Shadowridge	Carlsbad	HARRF	Gafner	Meadowlark	San Elijo	Harmony Grove	CSDs[1]
Camp Pendleton	1,400	1,400										
Carlsbad MWD	3,800					3,800						
City of Escondido	11,300						11,300					
City of Oceanside	3,600	1,000	2,600									
Olivenhain MWD	600					500				100		
Rincon Del Diablo MWD	6,000						5,800				200	
San Dieguito WD	0											
Santa Fe ID	800									800		
Vallecitos WD	2,400						2,400					
Vista ID	3,100		700			2,400						
Total Recycled Water Demand	**33,000**	**2,400**	**3,300**	**0**	**0**	**6,700**	**19,500**	**0**	**0**	**900**	**200**	**0**

[1] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants.

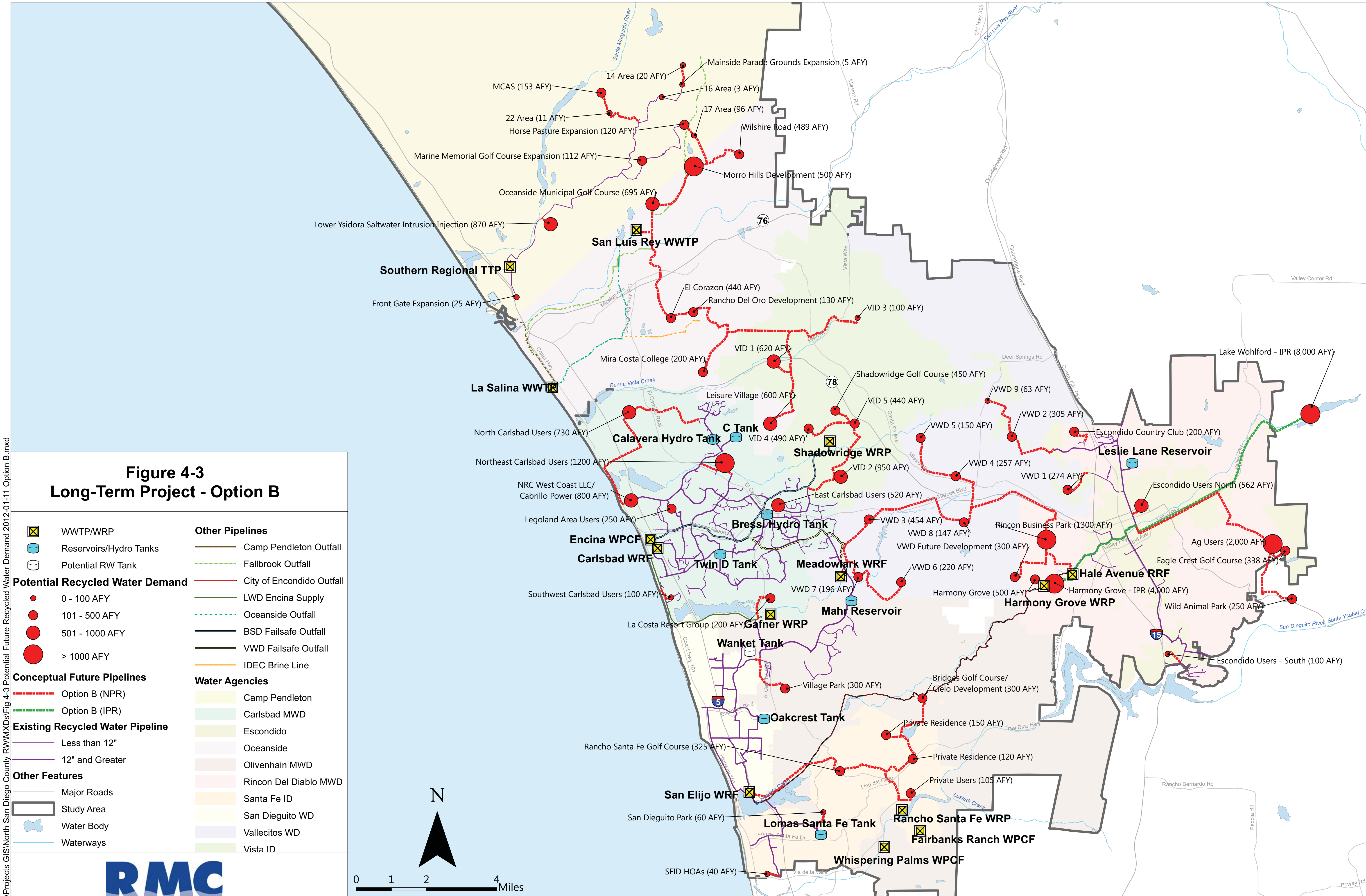

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Table 4-8: Long-Term Option Evaluation Criteria

Criteria	Option A	Option B
Maximize Reuse	●	●
System Reliability	●	◉
Adaptability	●	❍
Institutional Complexity	◉	●
Proximity of Supplies and Demands	●	◉

Legend:

● = Meets criteria
◉ = Partially meets criteria
❍ = Does not meet criteria

Overall, Option A is preferred because of the flexibility and adaptability that the decentralized system provides to the water agencies. The greater number of treatment plants will allow for greater flexibility in implementing the long-term system over time. This Option allows for extensions of recycled water systems based on each treatment plants' available supply and ability to serve recycled water over time. Option A also allows for systems to be developed as the different agencies are able to secure funding and financial arrangements to implement these projects. Overall, Option A provides agencies with more choices of supply and hence, the flexibility to expand systems under varying future conditions.

The estimated regional distribution and treatment costs for Option A are shown in **Table 4-9**. Nearly all the treatment plants will require some level of expansion and/or process upgrades, the treatment costs are greater than the regional distribution costs. However, as noted previously, local distribution costs were not estimated in this study and would require local pipelines to connect users, local distribution storage, and possibly additional pumping or pressure regulating stations. Also, pumping costs are based on the ground elevations and the existing system's HGLs as discussed in Chapter 3. **Appendix B** contains a list of the unit cost assumptions for both capital and O&M used to develop the regional cost estimate.

Note that these costs do not include any avoided costs that could be realized through implementation of the long-term project. These avoided costs can include operational and maintenance costs for ocean disposal, deferred expansion or rehabilitation of ocean disposal systems, reduction of imported water supply purchases, costs or benefits to comply with meeting the 20x2020 conservation requirements, avoided potable water distribution costs (treatment, storage, pumping, etc.), and avoided environmental costs due to reduced discharges. The City of Escondido is projecting that their potential avoided cost to implement a regional recycled water project could be as high as $300,000,000.

4.6 Long-Term Seasonal Storage Options

During the study, the participating agencies developed a list of potential sites (See **Figure 4-4**) that could be used for seasonal storage of non-potable recycled water. While implementation of seasonal storage recycled water sites can be difficult, there are several advantages, including:

- Reducing treatment capacity needs by storing off-peak supplies for use during peak summer demand periods
- Avoiding wastewater discharge capacity improvements by reducing winter time discharges
- Providing water for environmental habitat
- If developed in conjunction with a development project, such features can enhance the proposed development

Table 4-9: Estimated Costs for Long-Term Option A

Item		Cost[1]
Capital Costs (Total)[2]		
Distribution	**$223,000,000**	
Regional Pipelines[3]		$175,200,000
Local Distribution		TBD
Pumping Stations/Storage		$47,800,000
Treatment	**$429,200,000**	
South Regional TTP		$-
San Luis Rey WWTP		$31,700,000
Shadowridge WRP		$23,300,000
Carlsbad WRP		$66,600,000
Hale Avenue RRF		$220,900,000
Gafner WRP		$24,800,000
Meadowlark WRP		$19,600,000
San Elijo WRF		$5,900,000
Harmony Grove WRP[4]		$26,000,000
CSDs		$10,400,000
Total Capital Costs	**$652,200,000**	
O&M Costs (Annual)[5]		
Distribution	**$ 7,187,000**	
Regional Pipelines		$1,528,000
Local Distribution		TBD
Pumping Stations		$5,659,000
Treatment Plants	**$ 7,281,000**	
South Regional TTP		$169,000
San Luis Rey WWTP		$676,000
Shadowridge WRP		$260,000
Carlsbad WRP		$884,000
Hale Avenue RRF		$4,306,000
Gafner WRP		$435,000
Meadowlark WRP		$260,000
San Elijo WRF		$130,000
Harmony Grove WRP		$31,000
CSDs		$130,000
Total O&M Costs	**$ 14,468,000**	
Yield (afy)	**32,918**	
Unit Cost ($/AF)	**$1,450**	

Notes
[1] Costs are based on Year 2011.
[2] Capital costs include an implementation factor of 25% for engineering, environmental, etc. and an overall project contingency factor of 30%.
[3] Includes facility costs for the Lower Ysidora Salt Water Intrusion project.
[4] Assumes secondary treated wastewater will be available for advanced treatment.
[5] O&M costs include a project contingency factor of 30%.

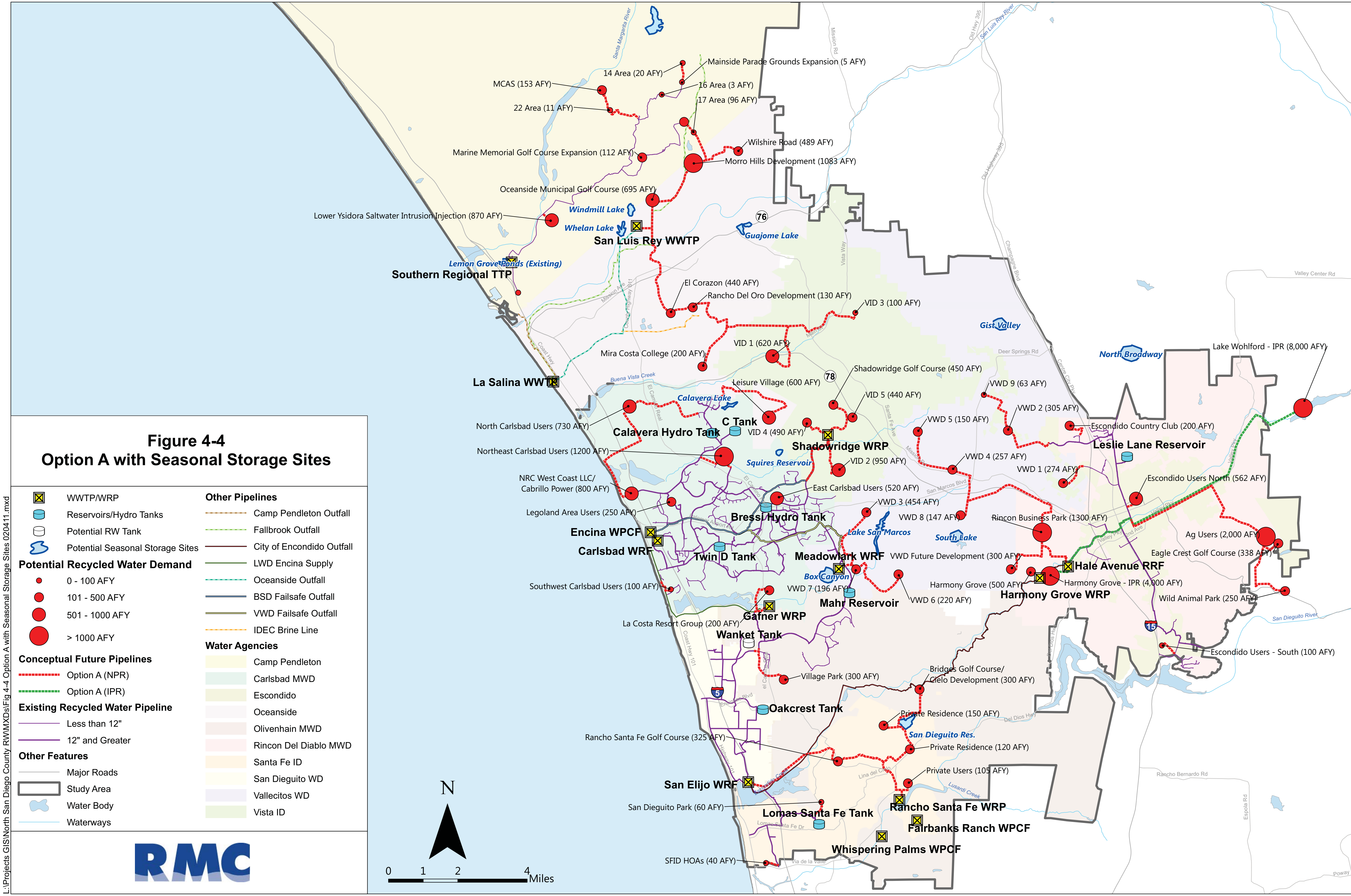

Figure 4-4
Option A with Seasonal Storage Sites

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Figure 4-4 shows the identified potential seasonal storage sites. An estimated 70 MGD of tertiary treatment capacity is needed to supply 44,619 afy of total recycled water demand (existing plus new users) without seasonal storage. To completely balance supply and demand, and eliminate the need for peak tertiary treatment capacity, roughly 9,500 acre-feet of seasonal storage would be required. **Figure** 4-5 shows the total regional non-potable reuse demand of 32,600 afy on an estimated monthly basis and the approximate 9,5000 acre-foot of seasonal storage that would be necessary to balance supply and demand over an annual timeframe. Note that this seasonal storage demands includes Camp Pendleton, which already has some seasonal storage capacity at its Lemon Grove Ponds.

With seasonal storage offsetting the peak seasonal demands on the treatment plants, the total tertiary capacity needs, including both the NPR and IPR demands, could be reduced to about 42 MGD. Thus the 9,500 acre-feet of seasonal storage would offset nearly 28 mgd (70.0 - 42.0) of tertiary treatment upgrades or expansions. The benefits and cost trade-offs of these two approaches should be further explored in subsequent studies.

A limited amount of information was available for many of the identified potential seasonal storage sites. **Table 4-10** summarizes the potential seasonal storage sites, key information collected, and a quick assessment of the potential for these sites to be used for seasonal storage of recycled water.

These sites and their potential advantages and treatment plant cost offsets should be examined more thoroughly in future studies. Most sites could easily be incorporated into the Long-Term Option A plan by adding some additional pipeline and in most cases, an intake pumping station at the site to convey water back into the recycled water system. Preferred sites will have the ability to serve the multiple agencies such that their benefits can be realized by several agencies in the region.

Figure 4-5: Seasonal Non-Potable Recycled Water Demand Balanced with Wastewater Supply

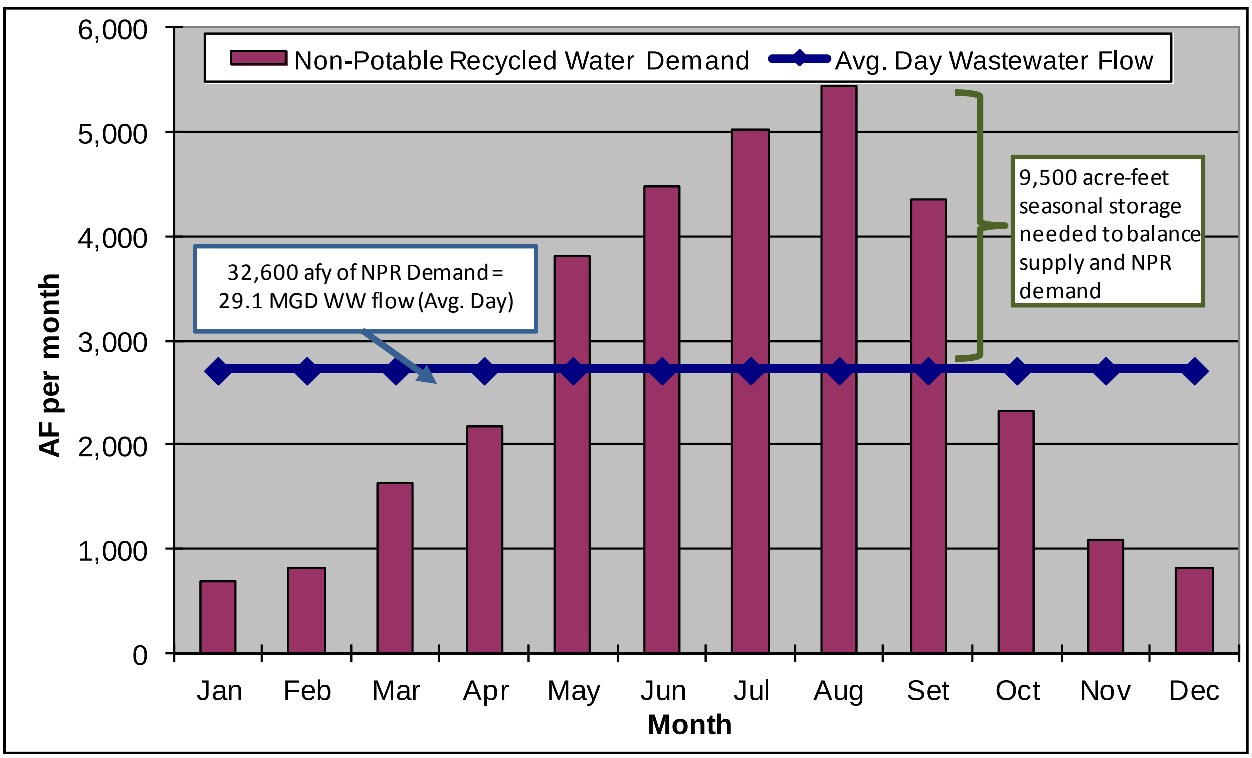

Table 4-10: Potential Long-Term Seasonal Storage Sites

Site	Estimated Storage Capacity	Implementation Challenges
Whelan Lake	500 acre-feet	• Currently within Bird Sanctuary • Served recycled water from the City of Oceanside • Could be environmentally sensitive.
Windmill Lake	500 acre-feet	• Owned by Camp Pendleton • Portion of the lake within City of Oceanside • Overflows spill into Whelan Lake • Inability to meet Basin Plan with tertiary flows
Lemon Grove Ponds	200 acre-feet	• Existing ponds (100 MG over 30 acres) • Owned/operated by Camp Pendleton for wet weather storage • Provides 30 days of storage • Space constrained, so no ability to expand
Guajome Lake	500 acre-feet	• Currently used by County for flood control
Gist Valley	Unknown	• Far from regional system • Previous study by Vallecitos WD for potable storage • Area identified for future development
North Broadway	2,200 acre-feet	• Far from regional system • Just outside City of Escondido, property owned by County of San Diego • Few residential properties around site
Calavera Lake	500 acre-feet	• Primarily used for flood protection • Need to balance flood protection use versus winter time storage
Squires Reservoir	1,100 acre-feet	• Area previously identified by City for potable water storage • Property owned by City
Lake San Marcos	Unknown	• Limited water level variation possible due to residential area • Water quality issues
South Lake	500 acre-feet	• Site owned by Vallecitos Water District • Previously identified for recycled water storage
Box Canyon	Unknown	• Little known about site
San Dieguito Reservoir	Unknown	• Currently used by SFID for potable water storage • Capacity is 800 acre-feet

4.7 Long-Term Indirect Potable Reuse (IPR) Options

In addition to the two planned IPR projects by the City of Escondido and Rincon Del Diablo MWD, several other potential IPR sites were identified by the participating agencies. These sites include both groundwater recharge and surface reservoir augmentation opportunities as shown in **Figure 4-6**. IPR options can also provide the same benefits and the same avoided costs as discussed for seasonal storage projects. In addition, IPR sites can provide direct water supply benefits by augmenting the groundwater or surface reservoir supplies. This can further reduce imported water supplies for the region and will improve water supply reliability to the entire County by providing a local water supply source. IPR options provide the ability to use the remaining 60,000 afy of wastewater still available after the identified 42,800 afy of non-potable demands have been satisfied.

Based on current California regulations, IPR projects in this North San Diego region would likely require some or all of the recycled water to be treated through an RO membrane type process. While producing high quality water, such processes also produce a brine-concentrate flow that must be disposed. The most common and cost-effective disposal option for brine-concentrate flows in southern California is via ocean discharge. Other options such as evaporation ponds, deep well injection, and zero liquid discharge tend to be much higher in cost, more complex, or environmentally unsuitable. The appropriate disposal options for each IPR project will need to be assessed individually due to the complexities and high costs.

Table 4-11 summarizes the potential IPR sites identified in the region, their type, and a quick assessment of their potential for implementation. Implementation of the most suitable sites and their potential advantages and avoided costs should be examined more thoroughly in future studies. Sites with regional or multi-agency benefits and with feasible brine-concentrate disposal options available will often have the highest benefits.

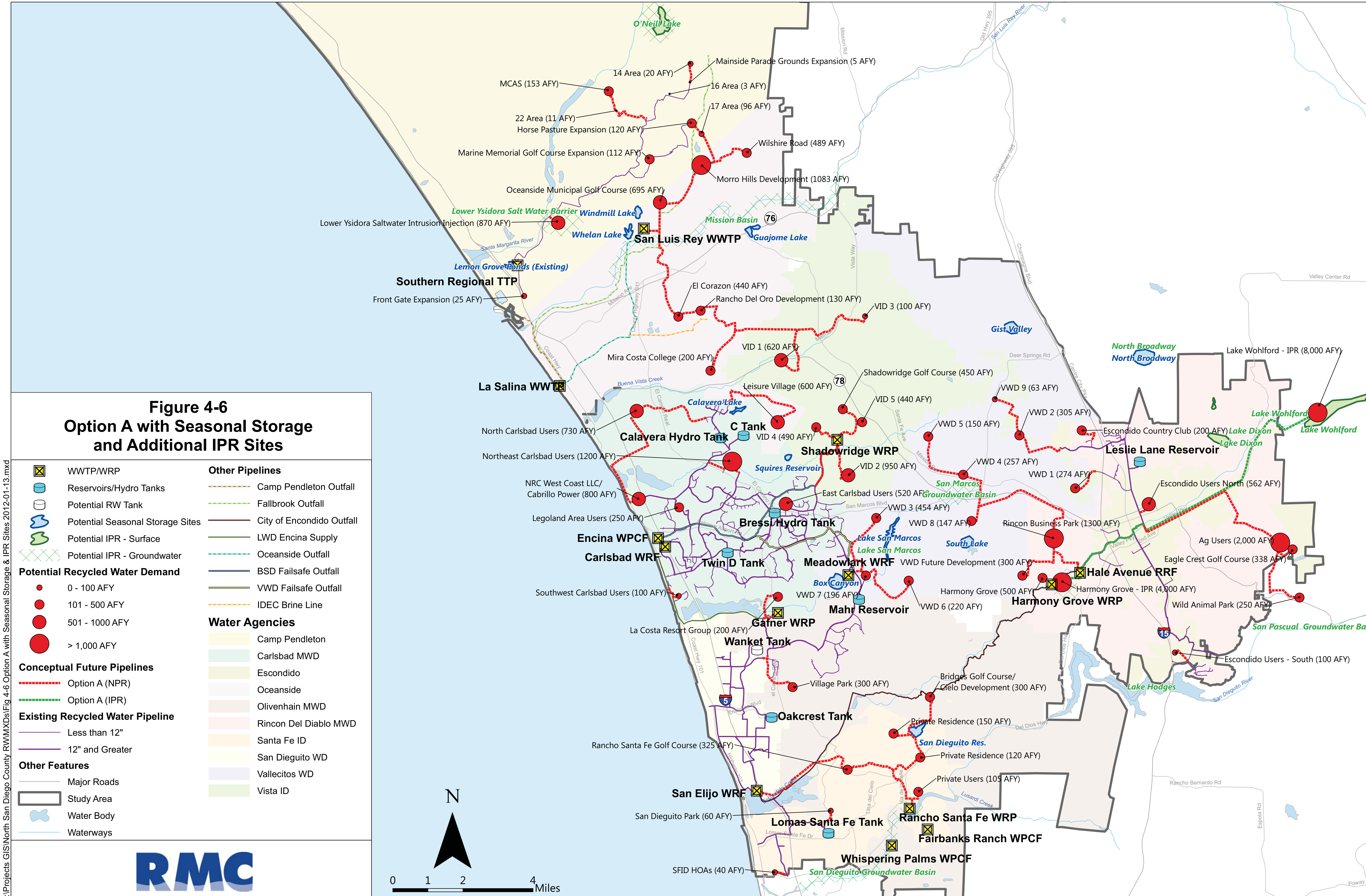

Figure 4-6
Option A with Seasonal Storage and Additional IPR Sites

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Table 4-11: Potential Long-Term Indirect Potable Reuse Sites

Site	Type	Notes/Implementation Challenges
Lower Ysidora Saltwater Barrier	Salt water barrier	• Site located within Camp Pendleton • Concept plans include 12 injection wells to contain potential salt barrier and allow for increased groundwater production • Project is beginning implementation in 2012/2013 • Maximum recycled water storage/production is 870 afy, assuming same quantity is extracted upgradient for treatment and potable use • If there is no offsetting extraction of GW upgradient, the injected amount would be reduced to 435 afy
Lake O'Neill	Groundwater recharge	• Lake is currently used to divert streamflows and releases water to nearby groundwater infiltration area • Fallbrook PUD and Camp Pendleton are currently exploring increasing recharge and yield of basin using recycled water flows • Capacity of aquifer accepting recycled water may be limited during winter months of very wet seasons due to groundwater mounding
Mission Basin	Groundwater recharge	• Total storage capacity of 90,000 acre-feet • Groundwater TDS concentrations up to 2,000 mg/l • Existing City of Oceanside groundwater desalter limited in production to about 6,000 afy • Recharge with recycled water would allow increased use of the basin
Daley Ranch	Surface reservoir augmentation	• Over 3,000-acre site owned and managed by the City of Escondido. • Home to variety of sensitive, threatened, and endangered plant and animal species • Study by City indicates potential storage capacity of 17,000 acre-feet • Could be mixed with imported water and local water at Lake Wohlford and Lake Dixon
Lake Wohlford	Surface reservoir augmentation	• Storage for local runoff with a volume of 6,940 acre-feet • Difficulty in satisfying minimum retention time currently required by California Department of Public Health
Lake Dixon	Surface reservoir augmentation	• Storage for imported water with a volume of 2,610 acre-feet • Difficulty in satisfying minimum retention time currently required by California Department of Public Health
San Marcos Basin	Groundwater recharge	• Total storage capacity between 39,000 and 78,000 acre-feet • Groundwater quality in the area generally poor with high levels of TDS and nitrates • Estimated groundwater recharge capacity of 4,600 afy • Vallecitos Water District considering implementation of AB 3030 groundwater management plan

Table 4-11: Potential Long-Term Indirect Potable Reuse Sites

Site	Type	Notes/Implementation Challenges
Harmony Grove IPR	Groundwater recharge	• Rincon Del Diablo MWD has developed concept for IPR project • Estimated initial production of 2,000 afy and ultimate production of 4,000 afy • Involves cleanup of existing groundwater basin with elevated nitrates
San Dieguito Basin	Groundwater recharge	• Total storage capacity 50,000 acre-feet • TDS concentration in the upper and middle portions of the basin up to 3,000 mg/l • TDS concentrations in the lower portion of the basin are as high as 10,000 mg/l. • Estimated production of the groundwater basin with recharge of recycled water is 4,500 afy

Chapter 5 Short-Term Project

5.1 Introduction

This chapter presents the development and implementation considerations for the proposed short-term regional project that could be implemented by 2020, which was developed from the preferred long-term project Option A. Implementation issues discussed below include technical, institutional, and phasing considerations. A rough cost estimate developed for the regional project and recommendations regarding future efforts are summarized at the end of this chapter.

5.2 Short-Term Project Components

The approach used to develop the short-term regional project was to identify the long-term (2030) regional project (Option A) and scale the system back to meet only the short-term demands. Necessary treatment plant upgrades or expansions along with pump station needs were reduced in capacity to satisfy only the short-term demands. However, identified pipelines needed to meet short-term demands were sized adequately to meet the projected long-term demands. Pipelines only needed for the long-term were not included in the short-term. This approach helped to minimize the cost for the short-term project, while still providing capacity for the long-term.

The short-term regional project is shown on **Figure 5-1**, and includes the locations of the projected short-term recycled water demands (red dots). Demands projected to be served only in the long term are shown in grey. As discussed in Chapter 4, many of the smaller projected demands were grouped to represent a number of potential uses. A smaller local distribution system will also need to be constructed to connect to individual users.

Grouping of potential users was done for several agencies, including Carlsbad MWD, Vista ID, Vallecitos WD, Rincon Del Diablo, and Rancho Santa Fe ID. In such cases, the names for these grouped users were based on either the largest demand in the cluster, the geographic area, or a simple agency-numeric ID number. A listing of the demands shown in **Figure 5-1** is provided in **Table 5-1** below.

This study did not develop more detailed local distribution systems that will be required to connect every individual user. For several agencies, such plans will require integration with the agencies' existing systems. For the regional pipelines identified in the short-term project, new pipelines were connected to the existing system where larger pipelines (typically 12-inch or greater) were identified, such that available capacity to serve future demand was assumed. The existing hydraulic grade lines (see Chapter 3) were used to establish a pressure basis for the new pipelines such that new pump stations could be sized accordingly. Agencies where existing lines were utilized include the Camp Pendleton, Carlsbad MWD, City of Escondido, Rincon Del Diablo MWD, and Olivenhain MWD. Hence, **Figure 5-1**, shows several locations where new pipelines are proposed that originate from existing systems.

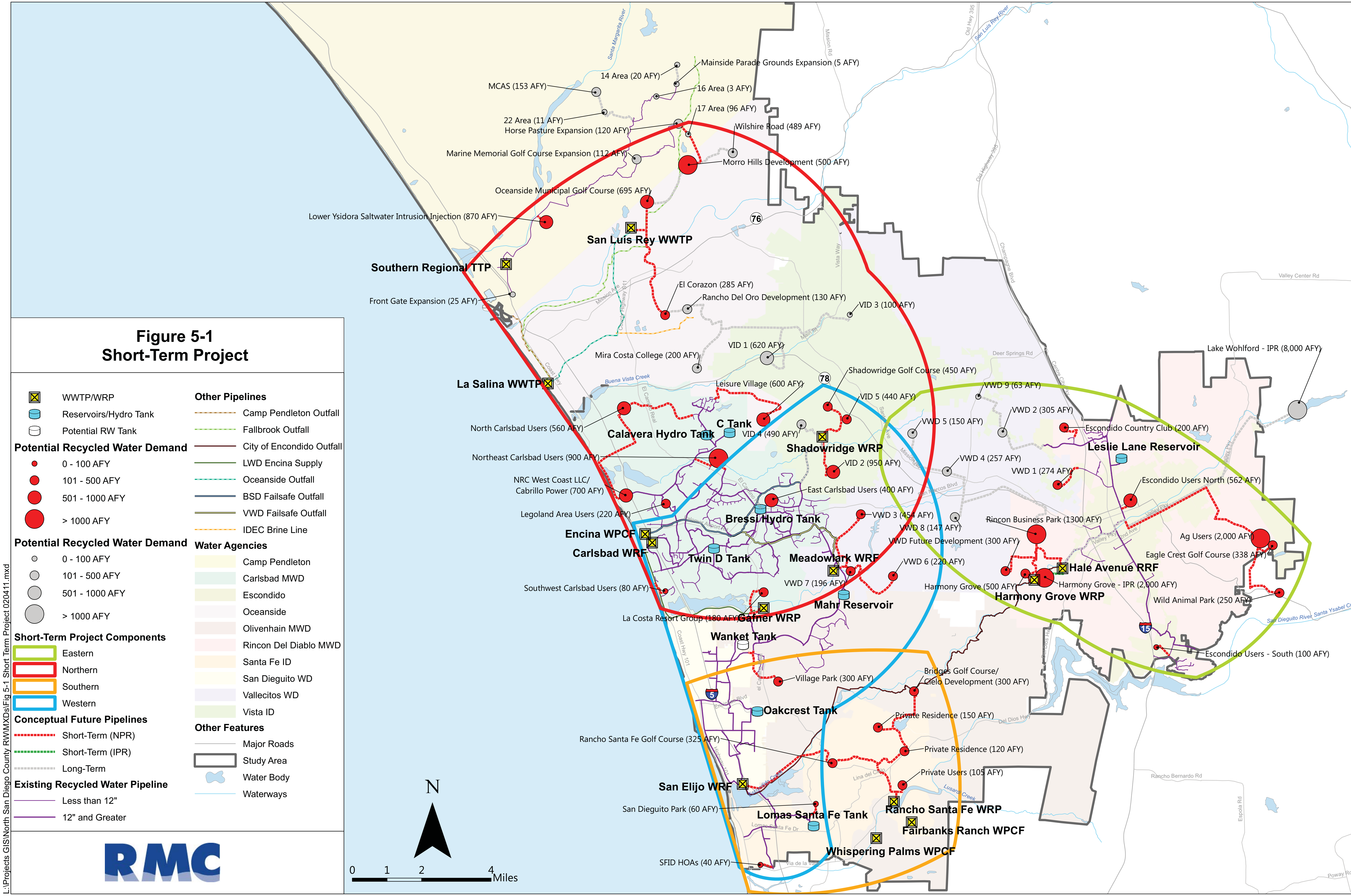

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Table 5-1: Grouped Projected Short-Term Demands by Retail Water Agency

Demand or Demand Group Name	Agency	Total Annual Short-Term Demand (afy)
Lower Ysidora Salt Water Barrier	Camp Pendleton	870
Subtotal for Camp Pendleton		870
East Carlsbad Users	Carlsbad MWD	400
La Costa Resort Group		180
Legoland Area Users		220
North Carlsbad Users		560
Northeast Carlsbad Users		900
NRC West Coast LLC/Cabrillo Power		700
Southwest Carlsbad Users		80
Subtotal for Carlsbad MWD		3,040
Ag Users	City of Escondido	2,000
Eagle Crest Golf Course		338
Escondido Users - South		100
Escondido Users - North		562
Wild Animal Park		250
Subtotal for City of Escondido		3,250
El Corazon	City of Oceanside	285
Leisure Village		600
Morro Hills Development		500
Oceanside Municipal Golf Course		695
Subtotal for City of Oceanside		2,080
Bridges Golf Course	Olivenhain MWD	300
Village Park		300
Subtotal for Olivenhain MWD		600
Escondido Country Club	Rincon Del Diablo MWD	200
Harmony Grove		500
Harmony Grove – IPR		2,000
Rincon Business Park		1,300
Subtotal for Rincon Del Diablo MWD		4,000
Private Residence (N)	Santa Fe ID	150
Private Residence (S)		120
Private Users		105
Rancho Santa Fe Golf Course		325
San Dieguito Park		60
SFID HOAs		40
Subtotal for Santa Fe ID		800
Shadowridge Golf Course	Vista ID	450
VID 2		950
VID 5		440
Subtotal for Vista ID		1,840

Table 5-1: Grouped Projected Short-Term Demands by Retail Water Agency

Demand or Demand Group Name	Agency	Total Annual Short-Term Demand (afy)
VWD 1	Vallecitos WD	274
VWD 3		454
VWD 6		220
VWD 7		196
VWD Future Development		300
Subtotal for Vallecitos WD		1,444
Total (Additional Projected Demand)		**17,924**

Also shown in **Figure 5-1** are four overlapping project component areas entitled: Northern, Western, Eastern, and Southern. These project component areas were created to reflect the inter-agency linkages that are likely to be necessary to develop the regional project. The project component areas overlap in several areas due to the sharing of the treatment and transmission facilities in both the short-term and/or the long-term. The project component areas also build upon many of the existing and on-going inter-agency agreements and planned expansions of several agencies' recycled water systems. In addition, they represent what is considered to be the most feasible and cost-effective approach for expanding the existing systems to meet the short-term projected demands. **Table 5-2** shows the water and wastewater agencies that would likely be involved in a regional project for each area.

As in Option A, to allocate available supply to the potential demands, a matrix was developed showing the demand by retail water agency and the anticipated supply by wastewater treatment plant. Recycled water supplies were allocated based on satisfying projected peak demands without any additional seasonal storage. **Tables 5-3** and **5-4** show a summary of the allocated supplies and demand to each water agency from each wastewater treatment plant. Note that in several cases, multiple treatment plants were necessary to satisfy the identified regional demand.

Table 5-2: Potential Agencies by Project Component

Project Component	Water Agency	Wastewater Agency (Treatment Plant)
Northern	Camp Pendleton Carlsbad MWD City of Oceanside Vista ID Vallecitos WD	South Regional Tertiary Treatment Plant (SRTTP) Buena Sanitation District (Shadowridge WRP) Carlsbad MWD (Carlsbad WRP) City of Oceanside (San Luis Rey WWTP) Leucadia Wastewater District (Gafner WRP) Vallecitos WD (Meadowlark WRP)
Western	Carlsbad MWD Olivenhain WD San Dieguito WD Santa Fe ID Vista ID Vallecitos WD	Buena Sanitation District (Shadowridge WRP) Carlsbad MWD (Carlsbad WRP) Leucadia Wastewater District (Gafner WRP) San Elijo Joint Powers Authority (San Elijo WRF) Vallecitos WD (Meadowlark WRP)
Eastern	City of Escondido Rincon Del Diablo MWD Vallecitos WD	City of Escondido (Hale Avenue RRF) Rincon Del Diablo MWD (Harmony Grove WRP) Vallecitos WD

Table 5-2: Potential Agencies by Project Component

Project Component	Water Agency	Wastewater Agency (Treatment Plant)
Southern	Olivenhain WD San Dieguito WD Santa Fe ID	Community Services Districts (Fairbanks Ranch WPCF, Rancho Santa Fe WRP, Whispering Palms WPCF) San Elijo Joint Powers Authority (San Elijo WRF)

Table 5-3: Short-Term Project: Supply Capacity Needs

Agency	Treatment Capacity Needed to Meet Demand[1] (MGD)	Peak Flow Capacity Needed by Plant (MGD)										
		SRTTP	San Luis Rey	La Salina	Shadowridge	Carlsbad	HARRF	Gafner	Meadowlark	San Elijo	Har. Grove	CSDs[2]
Camp Pendleton	0.8	0.8										
Carlsbad MWD	4.3					4.0		0.3				
City of Escondido	5.3						5.3					
City of Oceanside	3.4	0.8	1.6			1.0						
Olivenhain MWD	1.0							0.3		0.2		0.5
Rincon Del Diablo MWD	4.4						4.2				0.2	
San Dieguito WD	0.0											
Santa Fe ID	1.3									0.8		0.5
Vallecitos WD	2.2						0.9		1.3			
Vista ID	2.9				1.1	1.8						
Total Treatment Capacity Needed	**25.6**	**1.6**	**1.6**	**0.0**	**1.1**	**6.8**	**10.4**	**0.6**	**1.3**	**1.0**	**0.2**	**1.0**

[1] Additional capacity needed is based on peaking factors specific to each system/plant.
[2] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants.

Table 5-4: Short-Term Project: Additional Recycled Water Demand by Plant

Agency	Recycled Water Demand (afy)	Avg. Annual Recycled Water Demand by Supply (afy)										
		SRTTP	San Luis Rey	La Salina	Shadowridge	Carlsbad	HARRF	Gafner	Meadowlark	San Elijo	Har. Grove	CSDs[1]
Camp Pendleton	900	900										
Carlsbad MWD	3,000					2,800		200				
City of Escondido	3,300						3,300					
City of Oceanside	2,100	500	1,000			600						
Olivenhain MWD	600							200		100		300
Rincon Del Diablo MWD	4,000						3,800				200	
San Dieguito WD	0											
Santa Fe ID	800									500		300
Vallecitos WD	1,400						600		800			
Vista ID	1,800				700	1,100						
Total Treatment Capacity Needed	**17,900**	**1,400**	**1,000**	**0**	**700**	**4,500**	**7,700**	**400**	**800**	**600**	**200**	**600**

[1] Community CSDs include the Fairbanks Ranch, Rancho Santa Fe, and Whispering Palms plants.

5.3 Technical Considerations

Development of the short-term project requires consideration of several technical issues identified during the study. Several of these issues are also relevant to the long-term project. Specific technical considerations include the following:

- In addition to the construction of new regional pipelines, the short-term project also includes the conversion of a portion of the existing Buena Sanitation District failsafe outfall from the currently decommissioned Shadowridge WRP. Carlsbad MWD is in discussions with BSD regarding the conversion of a portion of this line. This would allow for additional flow in both the short- and long-term planning periods from the Carlsbad WRP to serve several demands in the Vista ID service area, which is needed since the demand exceeds the identified capacity of the Shadowridge WRP.

- As shown in **Figure 5-1**, the Wanket Tank in the Olivenhain MWD's service area is an existing potable water tank that could be converted to recycled water. Olivenhain MWD is currently discussing conversion of this tank with the San Dieguito Water District. There may be additional opportunities to convert potable facilities to regional or local recycled water distribution systems.
- It is assumed that new or upgraded pumping stations will be required at all the plants supplying recycled water to the regional system. In addition, due to topography as well as the several longer regional pipelines, booster pumping stations are also assumed along the system in several locations. Existing local system pressures (see **Figure 3-2**) were also taken into account wherever new recycled water lines were proposed for connection to the existing systems. Based on this information and the estimated flows in the proposed pipelines, the following locations along the regional transmission system were identified for potential pumping stations:
  - Pipeline leading to the El Corazon Development in Oceanside
  - Pipeline from the existing Carlsbad MWD system up to the Leisure Village area in Oceanside
  - Pipeline from the existing Carlsbad MWD system (or converted BSD Failsafe outfall) up to VID2 user area in Vista ID
  - Pipeline from the existing Escondido/Rincon Del Diablo system to the Escondido County Club
  - Pipeline from the VWD7 user to the VWD6 user in the Vallecitos WD area
  - Pipeline up to the Bridges Golf Course/Cielo Development Area in Olivenhain WD
  - Pumping station improvements to Camp Pendleton's system at Gooseneck RWPS No.1 and at a proposed storage tank near Whelan Lake as identified in their Recycled Water Master Plan
- As shown in **Tables 5-3** and **5-4**, nine treatment plants are being proposed to serve the regional short-term project. At each plant, upgrades or expansions of tertiary treatment facilities will be required. For some plants, additional work, such as sewer diversions or other facility improvements, may be necessary as well to ensure sufficient wastewater flow. See Chapter 3 for more detailed discussion regarding each treatment plant.
- As discussed in Chapter 2, there is a wide range of regulatory basin objectives, permitted water qualities for each treatment plant, and the average and maximum water qualities of each plant. Supply of recycled water from existing treatment plants to areas outside of the currently permitted service areas will require an in-depth review to determine potential water quality issues. Such issues may need to be addressed with the San Diego Regional Water Quality Control Board (RWQCB). In some cases, the RWQCB may be willing to grant waivers or permit water qualities above current basin objectives to help foster the expansion of the regional recycled water project. However, in other cases, agencies may need to address the water quality concerns through additional treatment, operational changes, blending, or other strategies. In reviewing the current recycled water qualities, permit limits, and basin objectives from Chapter 2, the following water quality challenges were identified based on the proposed short-term regional project:
  - **Manganese Limits**: The Hale Avenue RRF (0.06 mg/l), Gafner WRP (0.07 mg/l), and the San Elijo WRF (0.09 mg/l) all produce recycled water with 12-month average manganese levels that exceed the basin objectives (0.05 mg/l) of most sub-basins in the region. Although average levels for the Carlsbad WRP were not reported, Carlsbad MWD has expressed concern over this issue as well.
  - **Total Dissolved Solids (TDS) Limits**: Most of the WRPs in the region produce recycled water with TDS levels that are below 1,000 mg/l and meet the basin objectives of their current or potential expanded service areas. San Elijo WRF's current annual average TDS is 1,132 mg/l, but the San Elijo JPA is currently looking to implement a project that will produce recycled water with a TDS below 1,000 mg/l. The City of Oceanside's San

Luis Rey WWTP average annual TDS is 1,009 mg/l, which is well below the plant's permit limit of 1,200 mg/l. However, in the proposed short-term project, the San Luis Rey WWTP would serve recycled water to Vista ID users in the Vista sub-basin area, which has a basin objective of 1,000 mg/l. This difference could easily be addressed in several ways, including blending with some potable water or recycled water from the Fallbrook PUD's plant. However, if the TDS level in Oceanside's recycled water were to rise, meeting the 1,000 mg/l limit could be more difficult. Santa Fe ID is currently looking at using the three Community Service Districts' plants in its eastern service area. These plants average more than 1,000 mg/l in TDS, so this may need to be addressed with additional treatment.

5.4 Institutional Agreements

Several inter-agency agreements will be necessary to complete the short-term regional project components as identified. These include agreements between the wastewater providers and the water agencies, as well as between water agencies where recycled water may be conveyed through one local system to another agency's local system.

Many similar agreements were established as the existing recycled water systems were developed. In some cases, these existing agreements already have provisions for future expansion. Where new agreements are necessary, agencies should address not only the short-term project, but where practical, address the long-term regional project as well.

Agreements may be necessary for a variety of infrastructure sharing and cost/pricing situations. Cost considerations can include both capital improvement and operation and maintenance costs. Potential infrastructure that may need to be included in such agreements include:

- Wastewater supplies
- Shared pipelines and pump stations
- Wheeling of recycled water through existing local systems
- Shared recycled water storage facilities
- Conversion of potable water facilities to recycled water systems
- Water quality controls

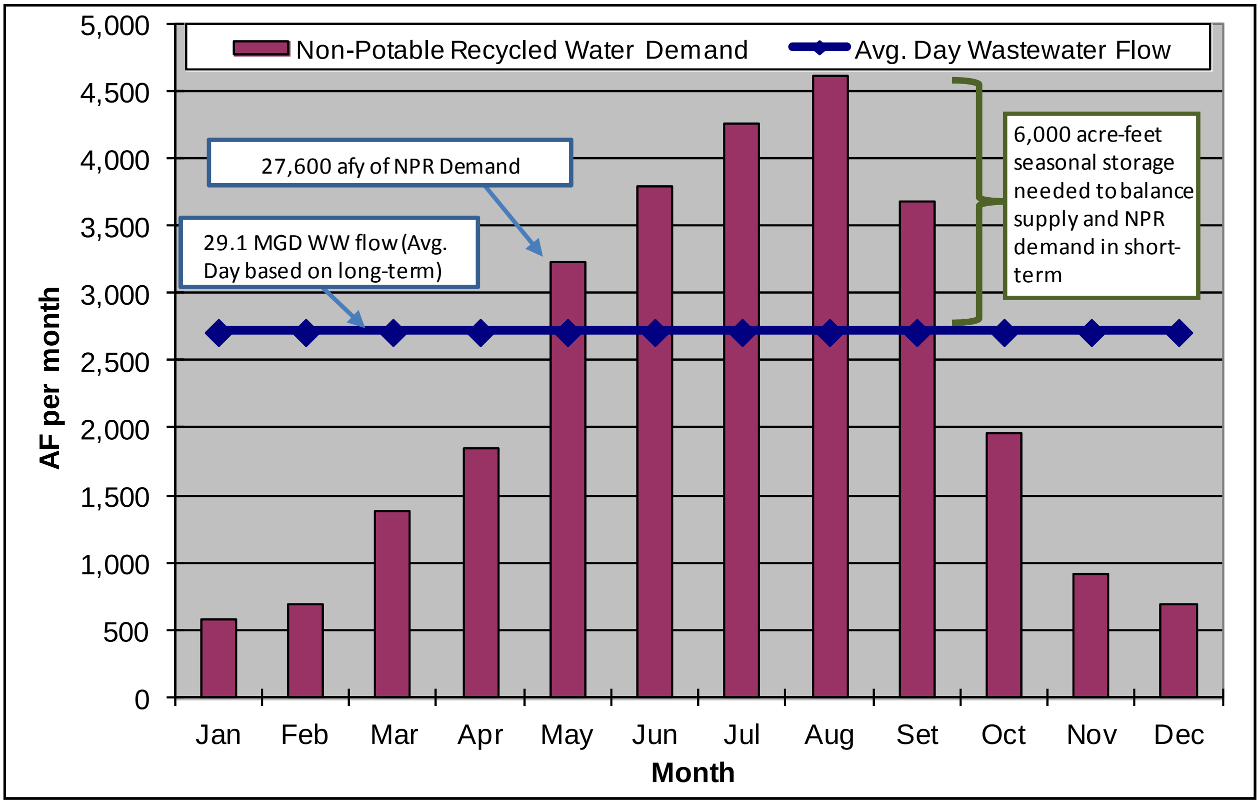
5.5 Phasing

As noted previously, the short-term project was derived from the preferred long-term project, Option A. Within in each time period, there is flexibility for agencies in how and when they implement the expansion of their specific systems. However, there are several factors that will need to be considered at a regional level as they can have impacts to an individual agency's needs and timing of system expansions. These include factors such as:

- **Timing or priority of project components**: In several cases, the timing of a treatment plant's expansion or upgrade will need to be coordinated with a water agency's distribution expansion. In addition, some agencies may rely on another agency to develop their distribution system prior to constructing their own. Identification of these critical predecessor projects, timing, and coordination amongst impacted agencies will be important to the success of the regional projects.
- **Seasonal storage sites**: As discussed in Chapter 4, several potential seasonal storage sites were identified, each of which could benefit multiple agencies, if not the entire region. The timing of commitment and implementation to such projects is important as they will likely reduce the expansion or upgrades necessary at one or more wastewater treatment plants. As shown in **Figure 5-2**, approximately 6,000 acre-feet of seasonal storage would be needed to balance supply

and demand while keeping the total tertiary treatment capacity needs for existing and short-term recycled water demands at 29.1 mgd, which is the projected treatment capacity needed for the long-term project. As noted above, the total seasonal storage need for the long-term is 9,500 acre-feet to achieve a complete balance of supply and storage on an average annual basis. Seasonal storage projects are likely to take several years to develop and implement, so it is important for agencies to consider these early in their planning process for the short-term regional project. In addition, several potential sites may be part of future development plans, so agencies will need to consider and commit to any such projects early in the process to avoid losing a potential site to a City or developer's zoning or development plans.

Figure 5-2: Seasonal Non-Potable Recycled Water Demand Balanced with Wastewater Supply



- **Indirect Potable Reuse (IPR) sites:** As noted in Chapter 4, several long-term IPR groundwater and surface water augmentation sites were identified as suitable. Many of these sites can accommodate a significant amount of recycled water, which provides a greater opportunity than NPR alone as they use a higher percentage of available wastewater for beneficial purposes, thus further reducing the region's need for imported water. IPR projects can often be very cost effective because of their size and reduced need for facilities compared to a non-potable system that can have dozen or even hundreds of users spread out over a vast area.

The estimated regional distribution and treatment costs the short-term project are shown in **Table 5-5**. As in the long-term project, nearly all the treatment plants will require some level of expansion and/or process upgrades, the treatment costs are greater than the regional distribution costs. However, as noted previously, local distribution costs were not estimated in this study and would require local pipelines to connect users, local distribution storage, and possibly additional pumping or pressure regulating stations.

Note that these costs do not include any avoided costs that could be realized through implementation of the long-term project. **Appendix B** contains a list of the unit cost assumptions for both capital and O&M used to develop the regional cost estimate.

Table 5-5: Estimated Costs for Short-Term Regional Project

Item	Cost[1]	
Capital Costs (Total)[2]		
Distribution	**$123,200,000**	
Regional Pipelines[3]		$107,900,000
Local Distribution		TBD
Pumping Stations/Storage		$15,300,000
Treatment	**$235,100,000**	
South Regional TTP		$-
San Luis Rey WWTP		$9,800,000
Shadowridge WRP		$23,300,000
Carlsbad WRP		$66,600,000
Hale Avenue RRF		$71,400,000
Gafner WRP		$11,800,000
Meadowlark WRP		$19,600,000
San Elijo WRF		$5,900,000
Harmony Grove WRP[4]		$16,300,000
CSDs		$10,400,000
Total Capital Costs	**$358,300,000**	
O&M Costs (Annual)[5]		
Distribution	**$2,491,000**	
Regional Pipelines		$1,019,000
Local Distribution		TBD
Pumping Stations		$1,472,000
Treatment Plants	**$3,390,000**	
South Regional TTP		$104,000
San Luis Rey WWTP		$208,000
Shadowridge WRP		$143,000
Carlsbad WRP		$884,000
Hale Avenue RRF		$1,352,000
Gafner WRP		$239,000
Meadowlark WRP		$169,000
San Elijo WRF		$130,000
Harmony Grove WRP		$31,000
CSDs		$130,000
Total O&M Costs	**$5,881,000**	
Yield (afy)	**17,924**	
Unit Cost ($/AF)	**$1,350**	

Notes

[1] Costs are based on Year 2011.

[2] Capital costs include an implementation factor of 25% for engineering, environmental, etc. and an overall project contingency factor of 30%.

[3] Includes facility costs for the Lower Ysidora Salt Water Intrusion project.

[4] Assumes secondary treated wastewater will be available for advanced treatment.

[5] O&M costs include a project contingency factor of 30%.

5.6 Recommendations

This study is intended to assist the North San Diego County water and wastewater agencies in identifying the benefits of regionalization of existing and planned recycled water systems. To fully implement the short-term project, more detailed studies and planning will be necessary. As noted previously, several agencies have already begun conducting detailed system studies or master plans that will integrate into this regional study. In addition to the follow-on planning efforts, implementation of the regional project will require institutional arrangements, environmental documentation, and the design and construction of necessary infrastructure. The following is a list of preliminary recommendations for the participating agencies to consider in the near-term (next 1 to 3 years) for implementation of the short-term project by 2020:

- **Seasonal storage sites**: Evaluate in more depth the top potential sites for consideration to incorporate into the short- and/or long-term project.
- **Indirect Potable Reuse (IPR) sites**: As previously discussed, the potential demand size and benefits of utilizing IPR sites should be considered early in the planning process as such projects could more fully utilize available wastewater flow versus non-potable systems. Such sites should be considered carefully by agencies and realize that such projects typically take several years to implement. If deemed feasible, the timing of such a project will need to be considered in context to the short-term and long-term regional project.
- **Update agency specific recycled water plans**: Agencies considering participating in the short-term regional project should ensure that their current plans are up to date and integrated with the regional short-term and long-term projects. Agencies without current plans should consider updating previous plans to ensure compatibility with this regional approach.
- **Hydraulic analysis**: More detailed hydraulic analyses should be conducted by agencies as part of their recycled water master plans or other follow-on planning studies. These analyses should consider both the agency's individual system needs as well as the short- and long-term regional projects. In some cases, agencies may need to work in collaboration to analyze the regional components. Such hydraulic analyses should better define the pipeline sizes, available capacities of existing recycled water systems that are proposed to be extended, diurnal storage needs, pump station locations and sizing, and seasonal storage impacts.
- **Public information campaign**: Participating agencies in the regional project may want to create a unified message and/or plan that can be used throughout the implementation of the short-term and even long-term project. This can be important if the long-term project involves major regional pipelines, regional seasonal storage projects, or regional or multiple IPR elements.
- **Develop or refine inter-agency agreements**: Agencies looking to implement their systems in the next few years may need to create new institutional agreements to implement their projects. In addition, several agencies have different options as to how they can obtain their future wastewater supplies. In these cases, the water and wastewater agencies may need to more fully develop their concept plans so that they can consider in more detail the actual projects costs, cost-benefit trade-offs, and financial arrangements.
- **Environmental documentation**: Some components of the regional systems may require significant environmental documentation in the next few years as part of their project implementation schedule. A more regional programmatic type of environmental document may help to streamline the process for environmental clearance on future regional components.

Appendix A

Document/Data Summary

North San Diego County Recycled Water Project

Report/Data Summary

Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
Buena SD	Shadowridge WRF Cost-Benefit Analysis (DRAFT)	Report	Aug-2010	PBS&J	rev Shadowridge Cost Benefit Analysis_Draft 08-30-10	pdf
Camp Pendleton	Existing Recycled Water System	GIS Data		N/A	All_RW_Pipes	dbf, prj, sbn, sbx, shp, shx
Camp Pendleton	Camp Pendleton Boundary	GIS Data	Mar-2012	N/A	CPEN_Boundary	dbf, prj, sbn, sbx, shp, shx
Camp Pendleton	Recycled Water Master Plan (Draft)	Master Plan	Sep-2011	Brown & Caldwell	Recycled Water Master Plan	pdf
Camp Pendleton	P-1046 Distribution of Reclaimed Water	Tech Memo/Figures	Oct-2011	Public Works Department	P-1046 Distribution of Reclaimed Water	pdf
Camp Pendleton	Camp Pendleton Water Resource Plan	Report	Apr-2011	Stetson Engineers, Inc.	Water Resources Plan-April 2011	PDF
Camp Pendleton	Urban Water Management Plan (Draft)	Report	Aug-2010	Stetson Engineers, Inc.	Draft UWMP 08 04 2010	PDF
Camp Pendleton	Pilot Test – Recycled Water Injection to Control Against Salt Water Intrusion Lower Ysidora Sub-basin	Report	Feb-2012	Stetson Engineers, Inc.	FINAL Pilot Test LY Injection Study Report.pdf	pdf
Camp Pendleton	Pilot Test -Recycled Water Injenction to Control Against Salt Water Intrusion Lower Ysidora Sub-basin	Report	Feb-2012	Stetson Engineers, Inc.	FINAL Pilot Test LY Injection Study Report	pdf
Carlsbad	Billing Data-2004 to 2009	Data	2004-2009	N/A	Billing_Data-2004_to2009	xlsx
Carlsbad	Billing Data-Monthly-2004 to 2009-Non/Residential	Data	2004-2009	N/A	Billing_Data-Monthly-2004_to_2009-NoN/Residential	xls
Carlsbad	Carlsbad Mains Carollo 9 15 09	GIS Data		N/A	Carlsbad_Mains_Carollo_9_15_09.sbn	dbf, prj, sbn, sbx, shp, shx
Carlsbad	Gafner - Reclaimed Water Pipelines			N/A	Gafner - Reclaimed Water Pipelines	pdf
Carlsbad	Boundary-City	GIS Data		N/A	Boundary-City	dbf, prj, sbn, sbx, shp, shp.xml, shx
Carlsbad	Boundary-Sewer Districts	GIS Data		N/A	Boundary-Sewer_Districts	dbf, prj, sbn, sbx, shp, shp.xml, shx
Carlsbad	Boundary-Water Districts	GIS Data		N/A	Boundary-Water_Districts.dbf	dbf, prj, sbn, sbx, shp, shp.xml, shx
Carlsbad	Carlsbad Meters carollo 9 1 09	GIS Data	Sep-2009	N/A	Carlsbad_Meters_carollo_9_1_09	dbf, shp, shp.xml, shx

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Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
Carlsbad	Elev-Contour-2 ft-2005	GIS Data	2005	N/A	Elev-Contour-2_ft-2005.dbf	dbf, prj, sbn, sbx, shp, shp.xml, shx
Carlsbad	treatment plant and storage reservoir locations	GIS Data		N/A	TREATMENT PLANT AND STORAGE RESERVOIR LOCATIONS.DBF	dbf
Carlsbad	treatment plant and storage reservoir locations	GIS Data		N/A	treatment plant and storage reservoir locations	shp, shx
Carlsbad	Draft 2010 RWMP-Figure 2.4-Abandoned Pipelines Ver B	Figure	2010	N/A	Draft_2010_RWMP-Figure_2_4-Abandoned_Pipelines_Ver_B	pdf
Carlsbad	CMWD Draft 2010 RWMP Report (Aggregate)	Master Plan	2010	Carollo	Pages from Draft 2010 RWMP Chapter 2	pdf
Carlsbad	Carlsbad WRF - Operating Costs	Data		N/A	Carlsbad WRF - Operating Costs	pdf
Carlsbad	Cost info for Gafner WRP	Data		N/A	Cost info for Gafner WRP	pdf
Carlsbad	San Diego Basin Plan	Amendment		N/A	San Diego Basin Plan	pdf
Carlsbad	Carlsbad WRF - Supply Report for Feb 2009	Quarterly Report	Feb-2009	N/A	Carlsbad WRF - Supply Report for Feb 2009 (Manganese Issue)	pdf
Carlsbad	Corrosion Study Final Report	Study Report	May-2006	N/A	Corrosion Study Final Report 050206.pdf	pdf
Carlsbad	CWRF - Secondary Nitrogen for CMWD 2009	Data		N/A	CWRF - Secondary_Nitrogen_for_CMWD_2009	xls
Carlsbad	CWRF- NARATIO	Data		N/A	CWRF- NARATIO	xls
Carlsbad	CWRF	Data		N/A	CWRF	xls
Carlsbad	CWRF August 2009	Data		N/A	CWRF_August_2009	pdf
Carlsbad	Gafner Data	Data		N/A	Gafner_Data	xls
Carlsbad	CWRF- NARATIO	Data		N/A	CWRF- NARATIO	xls
Carlsbad	Garner-Meadowlark-NARATIO	Data		N/A	Garner-Meadowlark-NARATIO	xls
Carlsbad	Relevant RWQCB Correspondence (MEAD)	Data		N/A	MEAD	xls
Carlsbad	Waste Discharge Permits, 1993 0023	Permit	1993	N/A	1993_0023	pdf
Carlsbad	Waste Discharge Permits, 1993 0041	Permit	1993	N/A	1993_0041	pdf
Carlsbad	Waste Discharge Permits, 2000 0036	Permit	2000	N/A	2000_0036	pdf
Carlsbad	Waste Discharge Permits, 2001 0352	Permit	2001	N/A	2001_0352	pdf
Carlsbad	Waste Discharge Permits, 2004 0223	Permit	2004	N/A	2004_0223	pdf
Carlsbad	Waste Discharge Permits, 2007 0018	Permit	2007	N/A	2007_0018	pdf
Carlsbad	Annual Supply Report - 2002 to 2003	Supply Data	2002-2003	MWD	Annual Supply Report - 2002 to 2003	pdf
Carlsbad	Annual Supply Report - 2005 to 2006	Supply Data	2005-2006	MWD	Annual Supply Report - 2005 to 2006	pdf

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Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
Carlsbad	Annual Supply Report - 2006 to 2007	Supply Data	2006-2007	MWD	Annual Supply Report - 2006 to 2007	pdf
Carlsbad	Annual Supply Report - 2007 to 2008	Supply Data	2007-2008	MWD	Annual Supply Report - 2007 to 2008	pdf
Carlsbad	Annual Supply Report - 2008 to 2009	Supply Data	2008-2009	MWD	Annual Supply Report - 2008 to 2009	pdf
Carlsbad	Recycled Water Historical Seasonal Use	Data		N/A	Recycled Water Historical Seasonal Use	xlsx
Carlsbad	Carlsbad WRF - Phase II Improvement Plans	Plans		N/A	Carlsbad WRF - Phase II Improvement Plans	pdf
Carlsbad	City of Carlsbad Preliminary Pumping and Equalization Design Report	PDR	Sep-2001	N/A	City of Carlsbad Preliminary Pumping and Equalization Design Report	pdf
Carlsbad	Encina Equalization Basin and Carlsbad WRF Joint Facilities	Plans	2003	N/A	Encino Equalization Basin and Carlsbad WRF Joint Facilities	pdf
Carlsbad	Meadowlark WRF 2005 Expansion Final Design Drawings	Plans	2005	N/A	Meadowlark WRF - 2005 Expansion - Final Design Drawings	pdf
Carlsbad	Draft 2010 Recycled Water Master Plan	Master Plan	2010	Carollo	CMWD Draft 2010 RWMP Report (Aggregate)	pdf
Carlsbad	Existing and Potential Recycled Water Treatment Facilities	Figure		Carollo	Draft 2010 RWMP Figure_4_07-Existing_System_Treatment_Facilities	pdf
Carlsbad	2003 SMP maps	Figure		Dudek & Associates, Inc	2003 SMP maps	pdf
Carlsbad	2003 SMP maps	Figure		Dudek & Associates, Inc	2003 SMP maps	pdf
Carlsbad	2003 Water Master Plan Update	Master Plan	Mar-2003	Dudek & Associates, Inc	Water Master Plan Update	pdf
Carlsbad	1997 Reclaimed Water Master Plan Update	Master Plan	Oct-1997	Carollo	Carlsbad_ReclaimedWaterMPUpdate_Oct1997	pdf
Carlsbad	2003 Sewer Master Plan Update	Master Plan	Mar-2003	Dudek & Associates, Inc	2003 Carlsbad_Sewer_Master_Plan_Update_FinalRpt	pdf
Carlsbad	2009 Sewer Master Plan Update	Master Plan	Oct-2009	Dudek & Associates, Inc	2009 City of Carlsbad Draft Sewer Master Plan Update	pdf
Carlsbad	PhaseII Recycled Water Project Implementation Plan	Implementation Plan	2004	City of Carlsbad	PhaseII Recycled Water Project Implementation Plan	pdf

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Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
Carlsbad	2000 Encina Basin Recycled Water Distribution System Study	Study Report	May-2000	John Powell, Cathcard Garcia von Langen Engineers	2000 Encina Basin Recycled Water Distribution System Study	pdf
Carlsbad	Bressi Ranch Master Plan	Master Plan	May-2002	Hofman Planning Calthorpe Associates	Bressi Ranch MP	pdf
Carlsbad	Carlsbad Oaks North Specific Plan 211	Specific Plan	Aug-2002	City of Carlsbad	Carlsbad Oaks North SP211	pdf
Carlsbad	Carlsbad Ranch Specific Plan 207E	Specific Plan	1995-1999	Hofman Planning Associates	Carlsbad Ranch SP 207E	pdf
Carlsbad	Robertson Ranch Master Plan - Part 1	Master Plan	Nov-2006	City of Carlsbad	Robertson Ranch 1 MP	pdf
Carlsbad	Robertson Ranch Master Plan - Part 2	Master Plan	Nov-2006	City of Carlsbad	Robertson Ranch 2 MP	pdf
Carlsbad	Robertson Ranch Master Plan - Part 3	Master Plan	Nov-2006	City of Carlsbad	Robertson Ranch 3 MP	pdf
Carlsbad	Robertson Ranch Master Plan - Part 4	Master Plan	Nov-2006	City of Carlsbad	Robertson Ranch 4 MP	pdf
Carlsbad	Villages of La Costa Master Plan	Master Plan	Dec-2000	MORROW DEVELOPMENT	Villages of La Costa MP	pdf
Carlsbad	Boron Study Final Report, Evaluation of Proposed Irrigation Water Quality on Carlsbad Landscapes, Poseidon Resources/Carlsbad Desalination Project	Study Report	Dec-2005	Poseidon Resources Corp.	Boron Study Final Report	pdf
Carlsbad	CMWD 2005 Urban Water Master Plan	Master Plan	Dec-2005	Carlsbad Municipal Water District	CMWD 2005 UWMP	pdf
Carlsbad	Squires Reservoir Needs Study	Study Report	Nov-1987	Costa Real MWD/ Luke-Dudek Civil Engs.	Squires Reservoir 1987	pdf
City of Oceanside	City of Oceanside - Recycled Water Master Plan 2005	Master Plan	Oct-2005	Carollo	City of Oceanside - Recycled Water Master Plan 2005	pdf
City of Oceanside	Background Info	Data		N/A	Background Info.	doc
City of Oceanside	NPDES Oceanside R9-2005-0136 Final	Permit		N/A	NPDES Oceanside R9-2005-0136 Final	pdf
City of Oceanside	Recycled Water Quality	Data		N/A	Recycled Water Quality	xls
City of Oceanside	SLR Waste Discharge Permit	Permit		N/A	SLR Waste Discharge Permit	pdf

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Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
City of Oceanside	Disclaimer and Limited Use Agreement	Data		N/A	Disclaimer and Limited Use Agreement CD	doc
City of Oceanside	Database, Oceanside	GIS Data		N/A	Oceanside	mdb
City of Oceanside	Database, Oceanside Topo	GIS Data		N/A	Oceanside_Topo	mdb
City of Oceanside	Database, Source Countour2009	Data		N/A	Source_Countour2009	doc
City of Oceanside	GIS Data, Oceanside	GIS Data		N/A	Oceanside	ldb, mdb
City of San Diego	North City WRP 2009 annual monitoring report	Data		City of San Diego	2009annual monitoring report	pdf
City of San Diego	2005 Urban Water Management Plan	Management Plan		City of San Diego	2005 Urban Water Management Plan	pdf
Escondido	R9-2010-0032	Permit		N/A	R9-2010-0032	pdf
Escondido	12 month avg-10	Data		N/A	12 month avg-10	xls
Escondido	Escondido Map & more	Permit		N/A	Escondido Map & more	pdf
Escondido	HARRF- Order R9-2010-0032	Permit		N/A	HARRF- Order R9-2010-0032	pdf
Escondido	NSDRWP	Data		N/A	NSDRWP	xls
Escondido	Production 2009-10	Data		N/A	Production 2009-10	xls
Escondido	Recycle Production & Distribution	Data		N/A	Recycle Production & Distribution	xls
Escondido	Facility Info	Data		N/A	Facility Info	xls
Escondido	Summary Discharge Report 2009	Data		N/A	Summary Discharge Report 2009	xls
Escondido	Recycled Water Self-Monitoring Report 2009	Data		City of Escondido	Dec09Annual	pdf
Leucadia	Gafner RW Summary (2010 update)	Data		N/A	Gafner RW Summary (2010 update)	xls
Leucadia	Preliminary Recycled Water Production Evaluation	Study Report	Aug-2010	Dexter Wilson Engineering, Inc	Recycled Water Production Eval - Draft (JUL10)	pdf
Leucadia	Initial Study for the North County Water Reclamation Project Phase II, Stage 2	Study Report	Jun-1997	CDM	Initial Study for the N. County Water Reclamation Proj.	pdf
Leucadia	North County Water Reclamation Project Phase II Master Plan	Master Plan	Apr-1997	CDM, San Diego County Water Authority	LCWD N. County Water Reclamation Proj. Phase II Master Plan	pdf
Leucadia	Reclaimed Water Facilities Plan	Facility Plan	May-1999	Dudek & Associates, Inc	Reclaimed Water Facilities Plan	pdf
Leucadia	Recycled Water Facilities Improvement Project Preliminary Design Report	PDR	Dec-1999	Dudek & Associates, Inc	LCWD Preliminary Design Report	pdf
Leucadia	Gafner Permit	Permit	N/A	N/A	Gafner Permit 1993_0041	pdf
Leucadia	NSDCRRWP Recycled Water Planning Technical Memorandum	Tech Memo	Oct-2010	Steve Deering	102710 LWD Gafner Phases	pdf
Leucadia	NSDCRRWP Recycled Water Planning Technical Memorandum	Tech Memo	Nov-2010	Steve Deering	102710 LWD Memo Update 102710 LWD Gafner Phases Update	docx pdf

North San Diego County Recycled Water Project
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Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
Olivenhain MWD	Northwest Quadrant Recycled Water Study	Study Report	Jun-2010	Boyle		
Olivenhain MWD	Village Park water account log	Data		OMWD	Village Park water account log	xls
Olivenhain MWD	RW Lines	GIS Data		OMWD	RWLines	dbf, prj, sbn, sbx, shp, shp.xml, shx
Olivenhain MWD	NWQ usage FYE 2009 & 2010	Data	N/A	OMWD	NWQ usage FYE 2009 NWQ usage FYE 2010	xlsx
Rincon	District Boundary	GIS Data	N/A	N/A	Boundary Data	dbf, prj, sbn, sbx, shp, shp.xml, shx
Rincon	Recycled Agreements, 1999	Agreements	N/A	N/A	02091999 Recycled Agreement.pdf	pdf
Rincon	Recycled Agreements, 2005	Agreements	N/A	N/A	09132005 Recycled Agreement.pdf	pdf
Rincon	Recycled Agreements, 2004	Agreements	N/A	N/A	10062004 Recycled Agreement.pdf	pdf
Rincon	Recycled Agreements, 2001	Agreements	N/A	N/A	10152001 Recycled Agreement.pdf	pdf
Rincon	Recycled Agreements, 2001	Agreements	N/A	N/A	11162001 Recycled Agreement.pdf	pdf
Rincon	Palomar-Escondido-Rincon Recycled Letter	Agreements	N/A	N/A	Palomar-Escondido-Rincon Recycled Letter.pdf	pdf
Rincon	Recycled Rules-Regulations	Permit	N/A	N/A	Recycled Rules-Regulations.pdf	pdf
Rincon	Waste Discharge Requirements	Permit	N/A	N/A	Waste Discharge Requirements.pdf	pdf
Rincon	Water Discharge Requirements ADD	Permit	N/A	N/A	Water Discharge Requirements ADD 1.pdf	pdf
Rincon	5 Year consumption (Meter Records)	Data	N/A	N/A	5 Year consumption (Meter Records).xls	xls
Rincon	CADD Drawings, ID1	CADD	N/A	N/A	ID1-2-14-07.dwg	dwg
Rincon	CADD Drawings, IDA	CADD	N/A	N/A	IDA 2-14-07.dwg	dwg
Rincon	Site Specifics and Misc. Info Feb 2005	Data	N/A	N/A	Site Specifics and Misc. Info Feb 2005.xls	xls
Rincon	Site Specifics and Misc. Information 2	Data	N/A	N/A	Site Specifics and Misc. Information 2.xls	xls
Rincon	Site Specifics Update May 2006	Data	N/A	N/A	Site Specifics Update May 20062.xls	xls
Rincon	Harmony Grove Village Vesting Tentative Map - North	Figure	N/A	N/A	01 VTM 5365 North.pdf	pdf
Rincon	2006 Harmony Grove Village Environmental Impact Report (Draft)	Report	Aug-2006	N/A	02 CH 0-S Summary.pdf	pdf
Rincon	Harmony Grove Village Vesting Tentative Map - South	Figure	N/A	N/A	02 VTM 5365 South.pdf	pdf

North San Diego County Recycled Water Project

Report/Data Summary

Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
Rincon	Project Location - USGS Quadrangle Map	Figure	N/A	N/A	03 Project Location - USGS Quad.pdf	pdf
Rincon	Location Map, Photo Map, Water System Map	Figures	N/A	N/A	Harmony Grove Maps.pdf	pdf
Rincon	Escondido GW basin rough outline - Google Map	Google Image	N/A	N/A	Escondido GW basin rough outline.jpg	jpg
Rincon	Water Factory Basic Plan	Summary	N/A	N/A	Main components outline.doc	doc
Rincon	Rincon del Diablo MWD Groundwater Restoration Plan	Flow Diagram	N/A	N/A	Program Schematic 040910.pptx	ppt
Rincon	2009 Water Factory Conceptual Overview	Presentation	N/A	N/A	Water Factory 12 May09.ppt	ppt
Rincon	2009 Roadmap to Water Factory	Presentation	N/A	N/A	Water Factory Roadmap.ppt	ppt
SDCWA	2010 UWMP, San Diego Wastewater Treatment and Water Recycling Facilities Plant Capacity	Data	N/A	N/A	Revised Appendix F-3 Wastewater 2010	xlsx
SEJPA	Modeling Files	Data		N/A	Modeling Files	Various
SEJPA	Engineering Certification Report	Report	Sep-1999	HY A, A Dames & Moore Company	1999_09_00 SEWRF Engineering Report	pdf
SEJPA	2009 Financial Assessment Study	Study Report		Winzler & Kelly	2009 Financial Assessment Study	pdf
SEJPA	2009 RW Demineralization Final Preliminary Design Report	PDR	Dec-2009	Kennedy/Jenks	2009 RW Demineralization Final Preliminary Design Report	pdf
SEJPA	2009 San Elijo Ocean Outfall Capacity Study	Study Report	Dec-2009	SEJPA, City of Escondido	2009 San Elijo Ocean Outfall Capacity Study	pdf
SEJPA	2009 Conceptual Design Report for Flow Equalization Recycled Water Storage Facility	Design Report	Mar-2009	Infrastructure Engineering	2009-Conceptual Design Report for Flow Equalization Recycled Water Storage Facility	pdf
SEJPA	SEJPA Recycled Water System Expansion Projects - Figure	Figure		N/A	2010_07 SEJPA RW SYSTEM EXPANSION PROJECTS-Figure	pdf
SEJPA	SEJPA RW Optimization and Expansion Study	Study Report	Jul-2006	PBS&J	SEJPA RW Optimization and Expansion Study	pdf
SEJPA	San Elijo Mitigated Negative Declaration	Study Report	Dec-2009	Dudek & Associates, Inc	San Elijo Mitigated Negative Declaration	pdf
SEJPA	Master Recycled Water Permit	Permit		N/A	Master Recycled Water Permit	pdf
SEJPA	May 2010 RW Program Status Report	Status Report		N/A	May 2010 RW Program Status Report	xlsx
SEJPA	Ocean Discharge NPDES Permit CA0107999 - R9 2005 100	Permit		N/A	Ocean Discharge NPDES Permit CA0107999 - R9_2005_100	pdf
SEJPA	2007 March, June, September, December Monthly Self-Monitoring Reports	Data	2007	SEJPA	March, June, September, December	xls

North San Diego County Recycled Water Project

Report/Data Summary

Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
SEJPA	2008 March, June, September, December Monthly Self-Monitoring Reports	Data	2008	SEJPA	March, June, September, December	xls
SEJPA	2009 March, June, September, December Monthly Self-Monitoring Reports	Data	2009	SEJPA	March, June, September, December	xls
SEJPA	2006 March, June, September, December Monthly Self-Monitoring Reports	Data	2006	SEJPA	March, June, September, December	xls
SFID	Asset Management Master Plan	Master Plan	Mar-2009	Dexter Wilson Engineering, Inc.	Asset Management Master Plan	pdf
SFID	CSD Treatment Info	Data	N/A	N/A	CSD Treatment Info	pdf
SFID	Existing and Proposed RW Alternatives	Figure	N/A	N/A	Existing and Proposed RW Alts	pdf
SFID	Figure7_03 Recycled Water Demand Option C	Figure	N/A	N/A	Figure7_03	pdf
SFID	FIGURE_9-1_RW Existing System and Service Area	Figure	N/A	N/A	FIGURE_9-1_No_TB	pdf
SFID	FIGURE_9-2_Existing and Potential RW User	Figure	N/A	N/A	FIGURE_9-2_No_TB	pdf
SFID	FIGURE_9-3_Western Service Area RW Improvements	Figure	N/A	N/A	FIGURE_9-3_No_TB	pdf
SFID	FIGURE_9-4_Eastern Service Area Potential RW Users	Figure	N/A	N/A	FIGURE_9-4_No_TB	pdf
SFID	SEJP SFID and Del Mar RW Master Permit	Permit	N/A	N/A	SEJP SFID and Del Mar RW Master Permit	pdf
SFID	SFID RW Master Plan	Master Plan	Aug-2005	Dudek & Associates, Inc	SFID RW Master Plan	pdf
SFID	RW_OPTIONS_300dpi	Figure	N/A	N/A	RW_OPTIONS_300dpi	pdf
Vallecitos	Meadowlark Permit Order	Permit		N/A	Meadowlark Permit Order	pdf
Vallecitos	Reclaimed Data, Lakes	GIS Data		N/A	Lakes	dbf, prj, sbn, sbx, shp, shp.xml, shx
Vallecitos	Reclaimed Data, Parcels	GIS Data		N/A	Parcels	dbf, prj, sbn, sbx, shp, shp.xml, shx
Vallecitos	Reclaimed Data, Reclaimed Water Lines	GIS Data		N/A	Reclaimed_Water_Lines	dbf, prj, sbn, sbx, shp, shp.xml, shx
Vallecitos	Reclaimed Data, Sewer Lines	GIS Data		N/A	Sewer_Lines	dbf, prj, sbn, sbx, shp, shp.xml, shx

North San Diego County Recycled Water Project

Report/Data Summary

Agency	Document Name/Description	Contents	Document Release Date	Author	File Name	Type of File
Vallecitos	Reclaimed Data, Topo	GIS Data		N/A	Topo	dbf, prj, sbn, sbx, shp, shp.xml, shx
Vallecitos	Reclaimed Data, VWD Boundary	GIS Data		N/A	VWD_Boundary	dbf, prj, sbn, sbx, shp, shp.xml, shx
Vallecitos	2002 Water, Wastewater, and Water Reclamation Master Plan Update	Master Plan	Aug-2005	Kennedy/Jenks	2002 Water, Wastewater, Water Rec. Master Plan Update-Aug05	pdf
Vallecitos	2005 Water, Wastewater, and Water Reclamation Master Plan Update, Final Supplemental Environmental Impact Report	Environmental Report	Jul-2005	Kennedy/Jenks	2005 Water,Wastewater,Water Rec. Master Plan Update Suppl. Envir. Impact Report	pdf
Vallecitos	Reclaimed Expansion	GIS Data			Reclaimed Expansion	mxd
Vallecitos	Initial Study-Mitigated Negative Declaration	Study Report	Aug-2004	Kennedy/Jenks	Initial Study-Mitigated Negative Declaration	pdf
Vallecitos	Tech Memo No. 3 Wastewater Chap. 7	Tech Memo	Aug-2009	PBS&J	Tech Memo No. 3 Wastewater Chap. 7	pdf
Vallecitos	VWD Reclamation Program Business Plan	Tech Memo	Dec-1992	CDM	Reclamation Program Business Plan	pdf
Vallecitos	Reclamation Facilities	Figure	Dec-1992	CDM	Reclamation Facilities	pdf
Vallecitos	South Lake GIS Files	GIS Data	Oct-2010	VWD	SouthLakeTopo	dbf, prj, sbn, sbx, shp, shx
VID	Water Reclamation Master Plan	Master Plan	Nov-1993	CDM	Water Reclamation Master Plan	pdf
VID	VID Reclaimed Study Area Map	Map	2008	VID	VID_Reclaimed_Study_Area_Map	pdf
VID	VID Reclaimed Study Area Meter Table	Data	2008	VID	VID_Reclaimed_Study_Area_Meter_Table	xls

Appendix B

Unit Cost Assumptions

North San Diego County
Regional Recycled Water Project
Planning Criteria and Unit Costs

Item			Unit Cost	Units/Notes
Capital Costs				
Pump Station			$6,500	HP (Based on peak flow)
Conveyance				
	Pipelines		$20	in-dia/LF
	High pressure pipelines		25%	Markup
	Peak flow velocity (for sizing)		5	feet per second
	Peaking Factors			
		All other Agencies	1.8	Mainly irrigation
		Carlsbad MWD	1.6	
		Rincon Del Diablo MWD	1.4	Includes large power plant user
Pressure Reducing Stations				
	PRV		$500,000	per station
O&M Annual Costs				
Pump Station			5.0%	of capital costs
Electrical			$0.18	per kWh (Q_{avg})
Pipelines			1.0%	of capital costs
Pressure Reducing Stations			1.0%	of capital costs
Contingencies				
Capital Implementation Costs			25%	for design, environmental, etc.
Capital Project Contingency			30%	for construction / O&M costs
O&M Cost Contingency			30%	of O&M Cost Subtotal
Financing Costs				
Interest Rate			3.0%	
Period			30	
Present Worth Factor (for annual O&M)			19.60	

North San Diego County Regional Recycled Water Project
Treatment Capital and O&M Unit Costs

Item	Capacity Increase (MGD) Short-Term	Capacity Increase (MGD) Long-Term	Capital Costs[1] Short-Term	Capital Costs[1] Long-Term	Source/Notes
South Regional TTP	0.8	1.3	$ -	$ -	Assume no capital costs for expanded reuse, but some O&M costs
San Luis Rey WWTP	1.6	5.2	$ 7,500,000	$ 24,400,000	2005 Oceanside MP through Phase 3, adjusted for ENR
Shadowridge WRP	1.1	2.0	$ 17,900,000	$ 17,900,000	PBSJ report for BS, cost for 2 mgd facility
Carlsbad WRP	6.8	6.8	$ 51,200,000	$ 51,200,000	Draft Carlsbad Master Plan, Chapter 4
Hale Avenue RRF	10.4	20.7	$ 54,900,000	$ 169,900,000	Based on unit cost of $6/gal, includes tertiary and MF-RO for long-term.
Gafner WRP	0.6	1.2	$ 9,076,923	$ 19,076,923	Leucadia study, through Phase 4, includes cost to rehab or replace SE pipeline
Meadowlark WRP	1.3	2.0	$ 15,090,000	$ 15,090,000	Based on unit cost of $11.60/gal
San Elijo WRP	1.0	1.0	$ 4,543,000	$ 4,543,000	SEJPA Prel Design report
Harmony Grove WRP	0.2	0.2	$ 12,500,000	$ 20,000,000	Based on $5M through tertiary treatment of 0.2 mgd and $7.5M for 2 MGD of AWT for GW Recharge. Assumes secondary treated wastewater will be available for advanced treatment.
CSDs	1.0	1.0	$ 8,000,000	$ 8,000,000	Based on unit cost of $8/gal
Total	**24.8**	**41.4**	**$ 180,709,923**	**$ 330,109,923**	

Notes:
1) All capital costs including 25% allowance for engineering/environmental, etc.
2) Costs shown do not include any contingency costs. These are added in total costs.

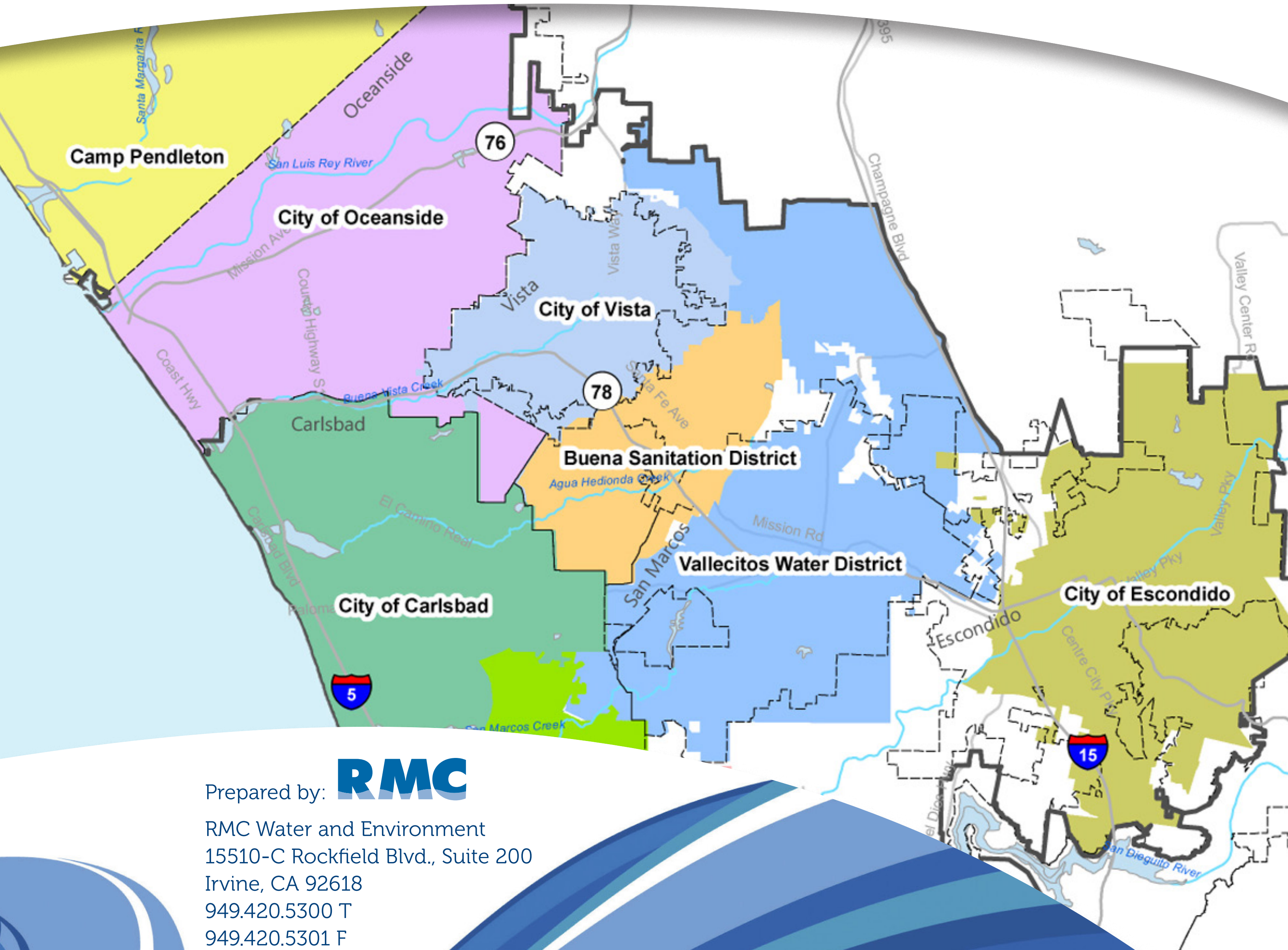
Annual O&M Costs

Plant	Unit Cost per MGD Short-Term	Unit Cost per MGD Long-Term	Notes
South Regional TTP	$ 100,000	$ 100,000	
San Luis Rey WWTP	$ 100,000	$ 100,000	
Shadowridge WRP	$ 100,000	$ 100,000	
Carlsbad WRP	$ 100,000	$ 100,000	
Hale Avenue	$ 100,000	$ 160,000	Long-term costs based on blended amounts of NPR and IPR flows.
Gafner WRP	$ 306,410	$ 278,846	
Meadowlark WRF	$ 100,000	$ 100,000	
San Elijo	$ 100,000	$ 100,000	
Harmony Grove	$ 120,000	$ 120,000	Costs based full MF-RO
CSDs	$ 100,000	$ 100,000	
Total	**$ 2,607,846**	**$ 5,600,615**	

Note: Costs shown do not include any contingency costs. These are added in total costs.

Unit Cost Assumptions by Process

Process	Unit Cost	Units	Notes
Tertiary	$ 100,000	per MGD	Based on chlorination cost of $161,000 per MGD, but reduces by 40% for peaking and rounded to $100,000
MF-RO	$ 120,000	per MGD	No peaking



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SAN DIEGO
Integrated Regional
Water Management

2013 San Diego Integrated Regional Water Management Plan

An Update of the 2007 IRWM Plan

Volume I: Plan




Prepared by the Regional Water Management Group in collaboration with the Regional Advisory Committee

The City of San Diego *County of San Diego* *San Diego County Water Authority*

Final - September 2013

Objective E: Develop and maintain a diverse mix of water resources, encouraging their efficient use and development of local water supplies.

Detailed Description of Objective E

Continue to develop diverse water resources to meet local supply and conservation goals, reduce dependence on imported water supplies, and increase water supply reliability. A diverse mix of water resources includes imported water, water transfers, recycled water, water conservation, desalination, local surface water, and groundwater.

The focus of this objective is to meet the requirements of Goal 1. The Region's population of approximately three million and the Region's economy are both dependent upon a reliable, cost-effective, and diverse water supply. Securing a variety of water supply sources will help the Region ensure that even in drought or emergency conditions, reliable water supply can be made available now and in the future. Ensuring that water supplies are available to meet future demands is essential given that the Region's population is projected to increase by approximately one third by 2030. This objective addresses the variety of water supply sources – both imported and local – that are necessary to sustain the Region's water demands.

Determination and Rationale for Objective E: As documented within the *California Water Plan Update 2009* (DWR 2009), water allocation, environmental, and hydrologic constraints present significant challenges to the sustainability of State Water Project and Colorado River supplies (imported water supplies), particularly during long-term droughts. Additionally, reliance on imported water supplies renders the Region potentially vulnerable to short-term reliability issues that may occur in the event of a catastrophic emergency such as an earthquake that cuts off imported water supplies for up to six months.

El Capitan Reservoir has a storage capacity of 112,800 acre-feet and holds both surface runoff and imported water.

Photo credit: Jeff Pasek, City of San Diego

Despite historic reliance on imported water supplies, the Region has made substantial progress in diversifying its water supply portfolio, a trend which will continue to occur in the future. Objective E aims to support the Region's water supply diversification efforts as well as the Region's water conservation efforts, which will both help to increase water supply reliability and reduce demands on imported water supplies.

Illegal dumping in creeks and watersheds is a common problem faced by Urban DACs.

Photo credit: Leslie Reynolds, Groundwork San Diego-Chollas Creek

Water quality concerns in urban creeks can result from illegal dumping, invasive species, and stormwater runoff.

Photo credit: Leslie Reynolds, Groundwork San Diego-Chollas Creek

opportunity to provide increased access to recreational areas, which is sorely lacking in most Urban DACs.

The high volume of stormwater runoff also contributes to the poor surface water quality in Urban DACs, as it is often polluted and drains directly into creeks. Although many of the residents of Urban DACs are aware of the pollution problems, and TMDLs have been developed for some streams that traverse Urban DACs, challenges remain.. For example, while TMDLs for metals and bacteria in Chollas Creek have been developed, illegal dumping (especially of large trash items such as mattresses) in creeks and watersheds is a common problem that causes water quality issues in Urban DACs. A large-trash collection program would help reduce these incidents and the public health and safety hazards they often represent. Watershed stakeholders have reported that homelessness presents water quality issues throughout the Region, especially in homeless encampments located alongside the Region's water bodies that are prone to becoming a place for trash and other illegally-dumped items to accumulate.

Pollution of San Diego Bay waters also substantially impacts Urban DACs, many of which are located adjacent to the Bay, near industrial areas. Bay pollution from industry, runoff, and other activities has negatively impacted subsistence fishermen, many of whom are residents of Urban DACs. Additionally, insufficient water quality monitoring has been completed in the San Diego Bay wetlands, again located near or in Urban DACs, to understand and address water quality issues. Low-lying Urban DACs near the Bay will also suffer disproportionately from the effects of sea level rise as a result of climate change. These areas will be more susceptible to floods and inundation from storm surges, which are anticipated to be larger and more frequent.

One of the biggest issues facing Urban DACs is food security. Food security is one of the highest priorities in these areas and must be addressed before full DAC involvement in other issues, including water quality. However, some urban DACs use community gardens to help offset food needs, and irrigation costs may impact their ability to care for such gardens.

Urban DACs, like their rural counterparts, frequently lack the financial and technological resources to design, implement, operate, and maintain water projects. Because of this, they require financial assistance for project implementation, particularly to support ongoing operation and maintenance (O&M) costs. Non-governmental organizations (NGOs) that propose projects in Urban DACs should consider the long-term stewardship of the projects in question, and determine post-project ownership of any acquired land at the outset of the projects, to ensure the resources necessary to achieve the long-term benefits associated with the projects. For creek restoration projects, or those projects that improve recreational or access opportunities, public safety should always be considered. In Urban DACs, there may be a need for additional park rangers or security officers to ensure public safety in recreation areas.

Effective water conservation, watershed, and stormwater management outreach and education is lacking in Urban DACs. In order to be most effective, outreach and education efforts should come from the community or peers, rather than top-down through an agency. Outreach efforts should also aim to raise awareness of the existence of surface waters in Urban DACs, which will assist in improving stewardship of these resources. These efforts should be tailored to the community and be multilingual.

Priority projects in Urban DACs include those with education, creek restoration, passive recreation, hydro-modification, stormwater management/pollution prevention, public safety, and those that address sea level rise adaptation components.

Rural DACs

Rural DACs are located outside of the jurisdictional boundaries of the Region's water and wastewater agencies, and are not provided municipal water supply or wastewater infrastructure. Of the communities in the Region that have been identified as DACs using both the 2010 and 2013 data, the following are Rural DACs:

- North Mountain County CPA
- Pala-Pauma CPA*
- Palomar Mountain CPA
- Pendleton-DeLuz CPA
- Pine Valley CPA
- Mountain Empire CPA**
- Alpine CPA*†
- Central Mountain CPA*
- Cuyamaca CPA*
- Descanso CPA*†
- Julian CPA
- Desert CPA

** Area meeting 2010 DAC criteria but not 2013 criteria*
***Area meeting 2013 DAC criteria but not 2010 criteria*
†CPA containing only a small pocket(s) of DAC

It should be noted that more rural communities may be designated as DACs following additional efforts that may be taken to characterize DACs in the Region.

Unlike Urban DACs, Rural DACs are not consistently supplied with a safe source of drinking water. Due to infrastructure, source water quality, and other issues, the primary water-related concern of Rural DACs is meeting drinking water needs with a safe, reliable source of drinking water. Rural DACs often lack access to much-needed infrastructure and financing, as well as the resources to adequately maintain existing system facilities. As a result, drinking water systems in Rural DACs often face significant challenges in complying with longstanding and new drinking water rules (EPA 2007).

3.5.1 Imported Water

The Water Authority purchases imported water from three main sources: the Metropolitan Water District of Southern California (Metropolitan), conserved agricultural water from the Imperial Irrigation District (IID), and conserved water from projects that lined the All-American and Coachella Canals. The Water Authority has also acquired spot water transfers to offset reductions in supplies from Metropolitan during water shortage years.

Metropolitan is Southern California's wholesale water agency, and the Water Authority is the largest customer among Metropolitan's 26 member agencies. Metropolitan derives its water supply from two sources: the Colorado River and the State Water Project (SWP). Metropolitan owns and operates the Colorado River Aqueduct to deliver Colorado River water to Southern California. Metropolitan is the largest of the State Water Contractors that receive supplies from the SWP. SWP water (originating from the Bay Delta) is delivered to Metropolitan via the California Aqueduct.

In 1998, the Water Authority entered into a transfer agreement with IID to purchase conserved agricultural water. Through the agreement, the Water Authority received 70,000 acre-feet (AF) in 2010 and will receive an annually-increasing volume up to 200,000 AF by 2021. The volume then remains fixed for the remainder of the 75-year agreement. Metropolitan conveys the IID transfer water to the Water Authority via an exchange agreement. Through the 2003 Quantification Settlement Agreement (QSA) on the Colorado River, the Water Authority also receives 77,700 AF per year of conserved water from lining of the All-American and Coachella Canals for 110 years (Water Authority, 2013).

Imported water provides approximately 80% of the Region's water supply.

Photo credit: San Diego County Water Authority

As shown in Table 3-12, imported water supplies provided through the Water Authority have comprised between 79 and 93% of the Region's water supply in recent years. Except during periods of extreme drought, Water Authority supplies typically comprise approximately 80% of the Region's water supply.

The Water Authority takes delivery of the Metropolitan/IID transfer and canal lining project supplies at a point located six miles south of the San Diego County-Riverside County border. The Water Authority conveys imported water to its member agencies through two aqueducts that consist of five large-diameter pipelines. Figure 3-5 shows the locations of the Water Authority aqueducts. The aqueducts follow general north-to-south alignments, and the water is delivered largely by gravity. The First Aqueduct includes Pipelines 1 and 2, which are located in a common right-of-way and are operated as a unit. These pipelines have a combined capacity of 180 cubic feet per second (CFS). Pipelines 3, 4, and 5 form the Second Aqueduct. These pipelines are operated independently and are located in separate rights-of-way from the First Aqueduct. Pipelines 3, 4, and 5 have respective capacities of 280 CFS, 470CFS, and 500CFS. Key appurtenant facilities to the aqueduct system include flow control facilities, pump stations, control valves, and air release mechanisms. The Water Authority delivers the imported supply to member agencies via 88 turnouts along the aqueduct system.

3.5.3 Surface Water Resources

There are over 200 streams and creeks in San Diego County, converging into five major rivers: the Santa Margarita, San Luis Rey, San Dieguito, San Diego, and Sweetwater Rivers.

Streamflow

A major element of the water cycle, streamflow refers to the flow of water in streams, rivers, and other channels. By volume, most of the surface flow in streams and rivers within the San Diego Region is from precipitation runoff (storm events). The amount of storm precipitation that becomes streamflow depends on (1) topography, land uses, and soil permeability; (2) the frequency and timing of storm events; and (3) stormwater management practices. Streamflows during non-storm periods ("dry weather flows") are the result of urban runoff, agricultural runoff, and surfacing groundwater. Dry weather flows, though small by volume, are significant in that they may carry pollutant loads and can alter the seasonal nature of aquatic and riparian habitats.

Stream gaging stations monitored as part of the USGS network currently exist in all but two of the Region's watersheds. Table 3-17 summarizes permanent streamflow monitoring stations within the region. More than 50 years of streamflow data are available from twelve of the Region's streamflow gages. Table 3-17 also presents mean and median annual streamflow at each of the existing USGS stream gaging stations.

Santa Ysabel Creek just above the gorge.
Photo credit: Jeff Pasek, City of San Diego

Significant differences exist between mean and median streamflows. As previously noted the Region is categorized as a semi-arid climate and experiences few hydrologic events that contribute to surface flows. Mean streamflow is predominantly affected by sporadic extreme hydrologic events, whereas median streamflow is more representative of daily surface runoff for the Region.

Figures 3-6 through 3-8 present mean and median monthly streamflow for three of the largest watercourses within the Region. These three watercourses generate the same trend of peak streamflow in the February to March period. The figures also show the variance of mean and median streamflow, which is caused by the occasional extreme hydrologic event. As indicated by the monthly mean values in the figures, nearly 90% of the streamflow volume in the Santa Margarita, San Luis Rey, and San Diego Rivers occurs during the months of December through May. The majority of streamflow occurs as a result of direct stormwater runoff from a few major storm events within each rainy season. Because significant precipitation within the region typically occurs over only 30 to 60 days of the year, streamflow on most days remains low. This is demonstrated by the median streamflow values shown in Figures 3-6 through 3-8.

Table 3-189 compares pre-1975 and post-1975 summertime streamflow at the Santa Margarita, San Luis Rey, and San Diego River gaging stations. A major cause of the increase in median monthly streamflow values from pre-1975 to post-1975 can be attributed to urbanization in the watershed, which has reduced soil percolation and absorption by increasing paved surfaces, thereby increasing runoff.

While runoff directly associated with precipitation contributes most of the annual volume of streamflow, urban runoff, agricultural runoff, and surfacing groundwater are the prime sources of surface flow during non-storm (dry weather) periods. The Region has experienced a trend of increasing non-storm flows during the past 30 years as the region has developed. Increased development has resulted in increased imported water use and increased urban runoff. Additionally, the availability of good-quality imported water within the Water Authority service area has resulted in reduced groundwater use in the Region's coastal areas during recent decades, increasing the amount of surfacing groundwater that contributes to streamflow in the downstream areas of the region.

Table 3-18: Comparison of Pre-1975 and Post-1975 Median Monthly Summer Streamflow

Gaging Station	Median Monthly Summer Streamflow[1] in Cubic Feet per Second (CFS)	
	Prior to 1975	After 1975
Santa Margarita River at Fallbrook	1.5[2]	5.7[3]
San Luis Rey River at Oceanside	0.0[4]	3.7[3]
San Diego River at Mast Boulevard	0.0[5]	2.6[3]

1 Median of monthly streamflow values (CFS) for the summer months June through October, as reported by U.S. Geological Survey (2012).
2 Data period covering 1924 through 1974.
3 Data period from 1975 through 2012.
4 Data period from 1929 through 1974.
5 Data period from 1912 through 1974.

As shown in Table 3-18, prior to 1975, San Diego River and San Luis Rey River median streamflows during July through October were zero. Since 1975, summertime streamflows of several cubic feet per second have occurred on a sustained basis.

Figure 3-9 presents annual runoff data for the San Luis Rey River at Oceanside that depicts the significant variation in annual runoff within the Region. While median annual runoff at the San Luis Rey River at Oceanside during 1929-2012 was 8,000 acre-feet per year (AFY), annual runoff has exceeded 100,000 AFY during seven years of the period of record. A total of 54% of the San Luis Rey River runoff during 1929-2012 occurred during these seven years.

Table 7-15: Impacts and Effects of Climate Change on Region

Impact	Effect
Temperature	1.5°F to 4.5°F average temperature increase
Rainfall	Variable projections predict between 35% drier and 17% wetter Increase in variability between years
Supply	Up to 25% decrease in SWP supply Up to 20% decrease in Colorado River supply 164,000 acre-feet per year shortfall in imported supply
Demand	Potential 0.6% to 1.8% increase in demand by 2035
Sea level rise	12 to 18 inch rise in mean sea level rise
Wildfires	40% increase in California Coastal Shrub acreage burned in Southwestern U.S. 54% increase in overall acreage burned in Western U.S.

Vulnerability Identification and Prioritization

Using DWR's *Climate Change Handbook for Regional Water Planning*, the Climate Change Workgroup developed an analysis of the Region's vulnerabilities. This analysis was the primary activity of the Climate Change Workgroup during their June 2012 workshop. Once vulnerabilities were identified, they were ranked and categorized. Vulnerabilities were categorized into five priority levels: Very High, High, Medium, Low, and Very Low. Table 7-16, below, shows the vulnerability issues and their respective rankings. Details regarding processing of vulnerabilities can be found in the Climate Change Study, included in this Plan as Appendix 7-D.

The potential risk that could arise from not addressing the climate change vulnerabilities include: insufficient water supply, inability to meet demand during droughts, poorer water quality, damage from increased flooding, damage to habitats and sensitive species, and coastal flooding and inundation of storm drains and sewer systems.

Adaptation/Mitigation Strategy Identification

Potential adaptation and mitigation strategies were identified using the State of California's *California Water Plan*, and refined through the review of other climate change reports and plans, including regional climate change documents. Strategies were identified and prioritized by determining feasibility and relevancy.

The final list of prioritized strategies is provided in Chapter 5 of Appendix 7-D.

Table 7-16: Prioritized Climate Change Vulnerability Issues

Priority Level	Category and Vulnerability Issue
Very High	Water Supply: Decrease in imported supply
High	Water Supply: Sensitivity due to higher drought potential Water Quality: Increased constituent concentrations Flooding: Increases in flash flooding and inundation (extreme weather) Ecosystem/Habitat: Decrease in available necessary habitat Sea Level Rise: Inundation of storm drains and sewer systems Ecosystem/Habitat: Decrease in ecosystem services
Medium	Water Demand: Crop demand would increase Water Demand: Industrial demand would increase Water Supply: Decrease in groundwater supply Water Quality: Increase in treatment cost Sea Level Rise: Damage to coastal recreation / tourism due to inundation
Low	Water Demand: Limited ability to conserve further Water Supply: Lack of groundwater storage to buffer drought Water Quality: Increased eutrophication Flooding: Increases in inland flooding Ecosystem/Habitat: Increased impacts to coastal species
Very Low	Water Demand: Limited ability to meet summer demand Water Supply: Invasive species can reduce supply available Water Quality: Decrease in recreational opportunity Sea Level Rise: Decrease in land Sea Level Rise: Damage to ecosystem/habitat Ecosystem/habitat: Decrease in environmental flows Hydropower: Decrease in hydropower potential

7.8.2 Opportunities for Collaboration

The Climate Change Study contains a list of recommendations for successful implementation of identified climate change adaptation and mitigation strategies. These recommendations focus on implementation of adaptive management, and prioritization of projects that address climate change impacts.

Adaptive management uses a flexible path of actions in order to implement different measures if key risk triggers or early warning indicators are met. This allows managers to plan for and adjust management strategies to best respond to changes, which can be important when managing issues with high uncertainty, such as climate change. According the Climate Change Handbook, there are five steps in an adaptive management plan:

1. Identify risk triggers associated with important vulnerabilities or uncertainties
2. Quantify impacts and uncertainties
3. Evaluate strategies and define an implementation path that allows for multiple options at specific triggers
4. Monitor performance and critical variables in the system
5. Implement or reevaluate strategies when triggers are reached

In addition to adaptive management, the Climate Change Workgroup recommended prioritizing projects that help to address climate change, which may be done in two ways: 1) Include climate change adaptation or mitigation in the IRWM Plan Objectives, and 2) Include a weighted climate change scoring category in project selection, based on strategy prioritization described above. Both of these recommendations have been incorporated into this 2013 IRWM Plan (see Objective K, *Chapter 2, Vision and Objectives* and Table 9-2, *Chapter 9, Project Evaluation and Prioritization*).

7.9 Summary of Agency Coordination

As described in *Chapter 6, Governance and Stakeholder Involvement*, the San Diego IRWM program facilitates the RAC and Workgroups to allow for agency coordination and communication. These stakeholder groups enable the various planning entities within the Region to communicate about the water resource issues and challenges they are facing, as well as IRWM-funded projects and programs. Increased knowledge of what other entities are doing allows stakeholders to partner or combine activities and reduce redundancies.

As described in *Chapter 3, Region Description*, the San Diego RWMG cooperates with the two neighboring IRWM regions in the San Diego Funding Area on topics of mutual interest: the Upper Santa Margarita and South Orange County IRWM Regions. The three RWMGs coordinate directly through the Tri-County FACC's period meetings and conference calls. The group addresses water management issues that occur within the two watersheds that overlap Region boundaries: Santa Margarita River and San Juan. The group is specifically tasked through their MOU to identify projects that will address issues within the overlay areas (see *Chapter 3, Region Description*). For example, the Upper Santa Margarita and San Diego IRWM Regions both submitted a joint project in Proposition 84-Rounds 1 and 2 that document and address nutrient loading in the Santa Margarita River Estuary and tributaries. Although the three RWMGs coordinate directly through the Tri-County FACC, they have not consolidated into a single IRWM region because of differences in political boundaries, water management infrastructure, regulatory permitting, and land use authority.

As described above, the IRWM Program coordinates directly with numerous local planning entities on water resource issues and projections. Other State and federal agencies participate in the IRWM Program through the RAC and stakeholder email list (see Table 6-4 in *Chapter 6, Governance and Stakeholder Involvement).*

7.10 References

California Department of Water Resources (DWR). 20x2020 Water Conservation Plan. 2010.

California Regional Water Quality Control Board, San Diego Region. Water Quality Control Plan for the San Diego Region. 1994.

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Metropolitan Water District of Southern California. The Regional Urban Water Management Plan for Southern California. 2010a.

Metropolitan Water District of Southern California. Integrated Water Resources Plan. 2010b.

San Diego County Water Authority. Water Shortage and Drought Response Plan. 2012.

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U.S. Environmental Protection Agency. California Toxics Rule (Title 40, Section 131.38, Code of Federal Regulations). 1998.

SAN DIEGO
Integrated Regional
Water Management

2013 San Diego Integrated Regional Water Management Plan

An Update of the 2007 IRWM Plan

Volume I: Plan

Prepared by the Regional Water Management Group
in collaboration with the Regional Advisory Committee

The City of San Diego *County of San Diego* *San Diego County Water Authority*

Final - September 2013

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Final - September 2013

SAN DIEGO
Integrated Regional Water Management

Appendix 7-B:
Integrated Flood Management Planning Study




INTEGRATED FLOOD MANAGEMENT PLANNING

SAN DIEGO
Integrated Regional Water Management

APRIL 2013

- Provide flood warning services to the county.
- Repair and restore affected watersheds within and without the District. ·
- To regulate the discharge of pollutants into District Facilities.
- Provide a water supply to county residents without existing service.
- Operate outside of its jurisdiction to assist with watershed issues within the County of San Diego and in counties and nations with watersheds that drain into the District's jurisdiction.
- Make investigations within and without the District to study local watershed issues.

3.3 History of Flooding

From 1770 until 1952, 29 floods were recorded in the County of San Diego. Between 1950 and 2006, flooding prompted 12 Proclaimed States of Emergency in the County of San Diego. Several very large floods have caused significant damage in the County. The Hatfield Flood of 1916 destroyed the Sweetwater and Lower Otay Dams, and caused 22 deaths and $4.5 million in damages. Most of the deaths were attributed to the failure of Lower Otay Dam. The flood of 1927 caused $117,000 in damages and washed out the Old Town railroad bridge. The floods of 1937 and 1938 caused approximately $600,000 in damages.

Recent serious floods affecting the County occurred during tropical storms Kathleen (1977) and Doreen (1978) and during winter storms in 1980, 1987, 1998, 2005 and 2010. In the 1980 flood, approximately 16-20 inches of rain accumulated over a six week period. This slow moving storm, which was the most severe since the Hatfield Flood of 1916, lead to wide-spread small stream flooding and evacuations of residents in Mission Valley. The San Diego River at Mission Valley peaked at 27,000 cubic feet per second (cfs) and caused $120 million in damage. The following table displays a history of flooding in the County of San Diego, as well as the loss estimation associated with each flood event where available.

Table 3-3: Historical Records of Large Floods in San Diego County

Date	Loss Estimation	Source of Estimate	Comments
1862	Not available	County of San Diego Sanitation and Flood Control	6 weeks of rain
1891	Not available	County of San Diego Sanitation and Flood Control	33 inches in 60 hours
1916	$4.5 Million	County of San Diego Sanitation and Flood Control	Destroyed 2 dams, 22 deaths
1927	$117,000	County of San Diego Sanitation and Flood Control	Washed out railroad bridge Old Town
1937 & 1938	$600,000	County of San Diego Sanitation and Flood Control	n/a
1965	Not available	San Diego Union	6 killed
1969	Not available	San Diego Union	All of State declared disaster Area
1979	$2,766,268	County OES	Cities of La Mesa, Lemon Grove, National City, San Marcos, San Diego and unincorporated areas
1980	$120 million	County of San Diego Sanitation and Flood Control; Earth Times	San Diego river topped out in Mission Valley
Oct – 87	$640,500	State OES	NA
1995	$Tens of Millions	County OES	San Diego County Declared Disaster Area
Source: *Multi-Jurisdictional Hazard Mitigation Plan, San Diego County* (March 2004)			

3.4 Flood Hazard Identification

Regional mapping of the existing flood hazards for the San Diego region has been prepared by FEMA as part for the National Flood Insurance Program (NFIP), which requires each community to identify 100-year recurrence interval flood prone areas as part of adopting floodplain management regulations. The minimum federal flood protection goals and requirements are administered by FEMA as part of the NFIP. The NFIP originally established in 1968 provides low-cost federally subsidized flood insurance to those communities that participate in this program. Participation in the program requires that the community adopt floodplain regulations which meet the requirements of the NFIP defined in *44CFR Chapter 1 Part 59* which include mapping of existing flood hazards.

Hydrologic-hydraulic studies are required to analyze the delineation of the 100-year recurrence interval floodplain limits. The published FEMA flood hazard maps provide an approximation of the regional floodplain limits based on the standards for FMEA alluvial fan hazards. The mapped flood hazards focus on regional flood hazards and do not evaluate localized flooding, particularly in urbanized areas, so there can be areas which may flood in even small storm events but may not be within a mapped flood hazard zone.

FEMA is the federal entity responsible for producing Flood Insurance Rate Maps (FIRMs). The flood risk information presented on the FIRM is based on historic, meteorological, hydrologic, and hydraulic data, as well as open-space conditions, flood-control works, and development within the study area. The FEMA flood hazard zones represents the areas susceptible to the 1% annual chance flood (commonly referred to as the “100-year flood), and the 0.2% annual chance flood

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION
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U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, California 94105
http://www.epa.gov/region9/

ORDER NO. R9-2009-0001
NPDES NO. CA0107409

WASTE DISCHARGE REQUIREMENTS AND NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FOR THE CITY OF SAN DIEGO E.W. BLOM POINT LOMA METROPOLITAN WASTEWATER TREATMENT PLANT DISCHARGE TO THE PACIFIC OCEAN THROUGH THE POINT LOMA OCEAN OUTFALL, SAN DIEGO COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order and Permit:

Table 1. Discharger Information

Discharger	**City of San Diego**
Name of Facility	**E. W. Blom Point Loma Metropolitan Wastewater Treatment Plant, Collection System, and Ocean Outfall**
Facility Address	**1902 Gatchell Road**
	San Diego, CA 92106
	San Diego County
The U.S. Environmental Protection Agency (USEPA) and the California Regional Water Quality Control Board, San Diego Region have classified this discharge as a major discharge.	

The discharge by the City of San Diego from the discharge points identified below is subject to waste discharge requirements as set forth in this Order and Permit:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	**Advanced primary treated effluent**	32º 39' 55" N	117º 19' 25" W	Pacific Ocean

Table 3. Administrative Information for State Order

This Order was adopted by the Regional Water Quality Control Board on:	**June 10, 2009**
This Order shall become effective on:	**August 1, 2010**
This Order shall expire on:	**July 31, 2015**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**February 1, 2015**

I, David W. Gibson, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on June 10, 2009[1].

David W. Gibson
Executive Officer

Table 4. Administrative Information for Federal Permit

This permit was issued by the U.S. Environmental Protection Agency, Region IX on:	16 June 2010
This permit shall become effective on:	**August 1, 2010**
This permit shall expire on:	**July 31, 2015**
The Discharger shall submit, in accordance with 40 CFR 122.21(d), a new application at least 180 days before the expiration date of the existing permit:	**February 1, 2015**

I, Alexis Strauss, do hereby certify that this permit with all attachments is a full, true, and correct copy of a NPDES permit issued by the U.S. Environmental Protection Agency, Region IX, on

16 June 2010.

Alexis Strauss
Water Division Director

[1] Sections VI.C.6.c, VI.C.6.c.i, and VI.C.6.c.ii of this NPDES permit were added by USEPA subsequent to the adoption of the permit by the San Diego Water Board and are only part of the permit as issued by USEPA.

Table of Contents

[1] Sections VI.C.6.c, VI.C.6.c.i, and VI.C.6.c.ii of this NPDES permit were added by USEPA subsequent to the adoption of the permit by the San Diego Water Board and are only part of the permit as issued by USEPA.

List of Tables

List of Attachments

I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order and Permit:

Table 5. Facility Information

Discharger	**City of San Diego**
Name of Facility	**E. W. Blom Point Loma Metropolitan Wastewater Treatment Plant, Collection System, and Ocean Outfall**
Facility Address	**1902 Gatchell Road**
	San Diego, CA 92106
	San Diego County
Facility Contact, Title, and Phone	**Jim Barrett** **Director of Public Utilities** **(619) 533-7555**
Mailing Address	**600 B Street, Suite 400** **San Diego, CA 92101-4514**
Type of Facility	**Publicly-Owned Treatment Works**
Facility Design Flow	**240 Million Gallons per Day (MGD)**

II. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (hereinafter San Diego Water Board) and the U.S. Environmental Protection Agency, Region IX (hereinafter USEPA), find:

A. **Background.** The City of San Diego Metropolitan Wastewater Department (hereinafter Discharger) is currently discharging pursuant to Order No. R9-2002-0025, as amended, and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0107409, as modified. The Discharger has submitted a Report of Waste Discharge (ROWD) and applied for a 301(h)-modified NPDES permit renewal to discharge up to 240 MGD of chlorinated advanced primary treated wastewater from the E.W. Blom Point Loma Metropolitan Wastewater Treatment Plant (hereinafter Facility). The application was deemed complete on June 6, 2008.

For the purposes of this Order and Permit, references to the "discharger" or "permittee" in applicable federal and State laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

Facility Description. The Discharger owns and operates its collection system, an advanced primary treatment facility, and ocean outfall (POTW). The treatment system consists of mechanical bar screens, aerated grit removal, chemical addition, and sedimentation and partial chlorination. Wastewater is discharged from Discharge Point No. 001 (see table on cover page) to the Pacific Ocean, a water of the United States. The ocean outfall discharges wastewater effluent approximately 4.5 miles offshore. Although this is beyond the limit of State-regulated ocean waters, potential plume migration within this limit warrants joint regulation of the effluent, from USEPA as well as the State.

In addition to domestic sewage and industrial discharges, the Facility accepts flow and pollutants from low-flow urban runoff diversion systems and "first flush" industrial stormwater diversion systems that are routed to the sanitary sewer collection system.

This Order and Permit establish discharge requirements based on modified secondary treatment requirements in accordance with federal Clean Water Act (CWA) Sections 301(h) and (j)(5). A detailed facility description is provided in Attachment F to this Order and Permit. Attachment B provides a map of the area around the facility. Attachment C provides flow schematics of the facility.

B. **Legal Authorities.** This Order and Permit are issued pursuant to Section 402 of the federal CWA and implementing regulations adopted by the USEPA and chapter 5.5, division 7 of the California Water Code (commencing with Section 13370). It shall serve as a jointly-issued federal and State NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the California Water Code (commencing with Section 13260).

C. **Background and Rationale for Requirements.** The San Diego Water Board and USEPA developed the requirements in this Order and Permit based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order/Permit requirements, is hereby incorporated into this Order and Permit and constitutes part of the Findings. Attachments A through E and H are also incorporated into this Order and Permit.

D. **California Environmental Quality Act (CEQA).** Under California Water Code Section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code Sections 21100-21177.

E. **Technolog y-based Effluent Limitations.** Section 301(b) of the CWA and implementing USEPA permit regulations at Section 122.44, title 40 of the Code of Federal Regulations[1], require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order and Permit must meet minimum requirements based on a variance from secondary treatment standards, as specified in CWA Sections 301 (h) and (j)(5). A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

F. **Water Quality-Based Effluent Limitations.** Section 301(b) of the CWA and Section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA Section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided in Section 122.44(d)(1)(vi).

G. **Water Quality Control Plans.** The San Diego Water Board adopted a Water Quality Control Plan for the San Diego Region (hereinafter Basin Plan) on September 8, 1994 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for the Pacific Ocean and other receiving waters addressed through the Basin Plan. Subsequent revisions to the Basin Plan have also been adopted by the San Diego Water Board and approved by

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

the State Water Board. Beneficial uses applicable to the Pacific Ocean specified in the Basin Plan are as follows:

Table 6. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Industrial Service Supply; navigation; contact water recreation; non-contact water recreation; commercial and sport fishing; preservation of biological habitats of special significance; wildlife habitat; rare, threatened, or endangered species, marine habitat, aquaculture, migration of aquatic organisms; spawning, reproduction, and/or early development; shellfish harvesting

Requirements of this Order implement the Basin Plan.

H. **California Ocean Plan.** The State Water Board adopted the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan) in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, and 2005. The State Water Board adopted the latest amendment on April 21, 2005 and it became effective on February 14, 2006. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. The Ocean Plan identifies beneficial uses of ocean waters of the State to be protected as summarized below:

Table 7. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
001	Pacific Ocean	Industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish spawning and shellfish harvesting

In order to protect the beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Requirements of this Order implement the Ocean Plan.

I. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and tribal water quality standards (WQS) become effective for CWA purposes. (40 CFR § 131.21; 65 Fed. Reg. 24641 (April 27, 2000).) Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000 may be used for CWA purposes, whether or not approved by USEPA.

J. **Stringency of Requirements for Individual Pollutants.** This Order contains effluent limitations for total suspended solids (TSS) and biochemical oxygen demand (5-day @ 20°C; BOD5) based on CWA Sections 301(h) and (j)(5), as described in the Fact Sheet for this permit. This Order contains technology-based effluent limitations for TSS, oil and grease, settleable solids, turbidity, and pH, based on Table A requirements in the Ocean Plan. This Order's technology-based effluent limitations are not more stringent than required by the CWA.

This Order contains water quality based effluent limitations (WQBELs) that have been scientifically derived to implement water quality objectives in Table B of the Ocean Plan that protect beneficial uses. Both the beneficial uses and water quality objectives have been approved pursuant to federal law and are the applicable State water quality standards. The scientific procedures for calculating individual WQBELs are based on the Ocean Plan which was approved by USEPA on February 14, 2006. All beneficial uses and water quality objectives contained in the Basin Plan are approved under State law and were submitted to, and approved by, USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR 131.21(c)(1).

Collectively, this Order's restrictions on individual pollutants are not more stringent than required by the CWA.

K. Antidegradation Policy. Section 131.12 requires that the State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The San Diego Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provision of Section 131.12 and State Water Board Resolution No. 68-16.

L. Anti-Backsliding Requirements. CWA Section 402(o) and 40 CFR 122.44(l) prohibit the backsliding of effluent limitations, conditions, and standards in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Some effluent limitations in this Order are less stringent that those in the previous Order. As discussed in detail in the Fact Sheet this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

M. California Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code Sections 2050 to 2097). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the State. The Discharger is responsible for meeting all requirements of the California Endangered Species Act.

N. **Monitoring and Reporting.** 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. California Water Code Sections 13267 and 13383 authorize the San Diego Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements, including those found under CWA Section 301(h) and 40 CFR 125, Subpart G. The Monitoring and Reporting Program is provided in Attachment E.

O. **Standard and Special Provisions.** Standard Provisions which apply to all NPDES permits in accordance with 40 CFR 122.41 and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The San Diego Water Board and USEPA have also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

P. **Storm Water Requirements.** On November 16, 1990, the USEPA promulgated NPDES permit application requirements for storm water discharges (40 CFR 122, 123, and 124) which are applicable to the Facility. On April 17, 1997, the State Water Board adopted Water Quality Order No. 97-03-DWQ, NPDES General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities. Storm water discharges from wastewater treatment facilities tributary to the Point Loma Ocean Outfall (PLOO) are subject to the terms and conditions of Order No. 97-03-DWQ, as amended.

Q. **Sanitary Sewer Overflows.** The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on May 2, 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the system that is subject to this Order, certain standard provisions are applicable as specified in Provisions, Section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the facility were required to obtain enrollment for regulation under the General Order by December 1, 2006.

R. **Reclamation of Wastewater.** The Constitution of California states, "...the general welfare requires that the water resources of the State be put to the beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." Based on this constitutional declaration and other considerations, the State Water Board has concluded that "in all cases where an applicant in a water-short area proposes a discharge of once-used wastewater to the ocean, the report of waste discharge should include an explanation as to why the effluent is not being reclaimed for further beneficial use." (State Water Board Order No. WQ 84-7) It has been and continues to be the policy of the San Diego Water Board to encourage reclamation and reuse of water resources.

S. 301(h) Tentative Deci sion. USEPA has drafted a 301(h) Tentative Decision Document (TDD) evaluating the Discharger's proposed improved discharge and effluent limitations for TSS and BOD_5, the projected annual average end-of-permit effluent flow rate of 202 MGD (annual average daily flow), and 2002 through 2007 effluent concentrations for TSS and BOD_5, as provided in the updated 2007 301(h) application. The 2008 TDD concludes that the Discharger's 301(h) application satisfies CWA Sections 301(h) and 301(j)(5). Based on this information, it is the Regional Administrator's tentative decision to grant the Discharger's variance request for TSS and BOD_5, in accordance with the terms, conditions, and limitations of the TDD. In accordance with this decision and the 1984 301(h) Memorandum of Understanding between the State and USEPA, the San Diego Water Board and USEPA have jointly proposed issuance of a draft 301(h)-modified permit incorporating both federal NPDES requirements and State Waste Discharge Requirements. The final permit will be issued without prejudice to the rights of any party to address the legal issue of the applicability of Section 1311(j)(5) of the Act to the Discharger's future NPDES permits.

T. Permit Renewal Contingency. The Discharger's permit renewal of the variance from federal secondary treatment standards, pursuant to CWA Sections 301(h) and (j)(5), is contingent upon:

1. Determination by the California Coastal Commission that the proposed discharge is consistent with the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 *et seq.*);

2. Determination by the U.S. Fish and Wildlife Service and the NOAA National Marine Fisheries Service that the proposed discharge is consistent with the federal Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*);

3. Determination by the NOAA National Marine Fisheries Service that the proposed discharge is consistent with the Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 U.S.C. 1801, *et seq.*);

4. Determination by the San Diego Water Board that the discharge will not result in additional treatment pollution control, or other requirement, on any other point or nonpoint sources (40 CFR 125.64);

5. The San Diego Water Board's certification/concurrence that the discharge will comply with water quality standards for the pollutants which the 301(h) variance is requested (40 CFR 125.61) (i.e., TSS and BOD_5). The joint issuance of a NPDES permit which incorporates both the 301(h) variance and State waste discharge requirements will serve as the State's concurrence; and

6. The USEPA Regional Administrator's final decision regarding the Discharger's CWA Section 301(h) variance request.

U. Notification of Interested Parties. The San Diego Water Board and USEPA have notified the Discharger and interested agencies and persons of their intent to issue Waste Discharge Requirements and a NPDES permit for the discharge and have provided them with an opportunity to submit their written and oral comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

V. Consideration of Pub lic Comment. The San Diego Water Board and USEPA, at a joint public hearing, heard and considered all comments pertaining to the discharge. Details of the public hearings conducted by the San Diego Water Board and USEPA are provided in the Fact Sheet of this Order.

THEREFORE, IT IS HEREBY ORDERED, that this Order supercedes Order No. R9-2002-0025 except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with Section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

A. The discharge of waste in a manner or to locations that have not been specifically authorized by this Order and Permit, or for which valid waste discharge requirements and NPDES permits are not in force, is prohibited.

B. Discharge through the PLOO from the Facility in excess of a monthly average flow rate of 240 MGD is prohibited.

C. The discharge of any pollutant that is not subject to an effluent limitation in this Order and Permit is prohibited, except in the following circumstances:

1. The pollutant has been identified in the administrative record for this Order and Permit,

2. The pollutant has not been identified in the administrative record for the Order and Permit, so long as the Discharger:

   a. Has complied with all applicable requirements for disclosure of information about its pollutant discharges, operations, and sources of wastes; and

   b. Complies with all applicable requirements for notification of changes in its operations and discharges.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations and Performance Goals – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

The discharge of effluent to Discharge Point No. 001 shall be measured at Monitoring Location EFF-001 as described in Attachment E, Monitoring and Reporting Program, except as otherwise noted. The effluent limitations and performance goals below are enforceable to the number of significant digits given in the effluent limitation or performance goal.

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location No. EFF-001 as described in the attached MRP:

Table 8.a. Effluent Limitations Based on CWA Sections 301(h) and (j)(5)

Effluent Constituent	Units	Annual Average	Monthly Average
TSS	% removal[1]	---	$\geq$80
	mg/l	---	75[4]
	metric tons/year	15,000[2]	---
		13,598[3]	---
BOD5	% removal[1]	$\geq$58	---

[1] To be calculated on a system-wide basis, as provided in Addendum No. 1 to Order No. R9-2002-0025.
[2] To be achieved on permit effective date through December 31, 2013. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[3] To be achieved on January 1, 2014. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[4] Based on average monthly performance data (1990 through 1994) for the Point Loma WTP provided by the Discharger for the 1995 301(h) application.

Table 8.b. Effluent Limitations Based on Advanced Primary Treatment and Table A of the Ocean Plan

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Oil and Grease	mg/L	25	40	--	--	75
	lbs/day	42,743	68,388	---	--	128,228
Total Suspended Solids	% removal	1	--	--	--	--
Settleable Solids	ml/L	1.0	1.5	--	--	3.0
Turbidity	NTU	75	100	--	--	225
pH	Standard unit	--	--	--	6.0	9.0

[1] The Discharger shall, as a 30-day average, remove 75% of suspended solids from the influent stream to the Facility before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L.

b. The discharge of effluent from the Discharger's Facilities to Discharge Point No. 001, as monitored at Monitoring Location EFF-001, shall maintain compliance with the following effluent limitations:

Table 9. Effluent Limitations Based on Table B of the Ocean Plan

Parameter	Unit	Water Quality-Based Effluent Limitations			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
BASED ON OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE					
Chronic Toxicity[1]	TUc	--	205	--	--
Total Chlorine Residual	µg/L	4.1E+02	1.6E+03	1.2E+04	--
	lbs/day	7.0E+02	2.8E+03	2.1E+04	--
Phenolic Compounds (non-chlorinated)	µg/L	6.2E+03	2.5E+04	6.2E+04	--
	lbs/day	1.1E+04	4.2E+04	1.1E+05	--
Chlorinated Phenolics	µg/L	2.1E+02	8.2E+02	2.1E+03	--
	lbs/day	3.5E+02	1.4E+03	3.5E+03	--
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS					
Chlordane[2]	µg/L	--	--	--	4.7E-03
	lbs/day	--	--	--	8.1E-03
Chlorodibromomethane	µg/L	--	--	--	1.8E+03
	lbs/day	--	--	--	3.0E+03
Chloroform	µg/L	--	--	--	2.7E+04
	lbs/day	--	--	--	4.6E+04
1,4-Dichlorobenzene	µg/L	--	--	--	3.7E+03
	lbs/day	--	--	--	6.3E+03
Dichlorobromomethane	µg/L	--	--	--	1.3E+03
	lbs/day	--	--	--	2.2E+03
Dichloromethane	µg/L	--	--	--	9.2E+04
	lbs/day	--	--	--	1.6E+05
Halomethanes[3]	µg/L	--	--	--	2.7E+04
	lbs/day	--	--	--	4.6E+04
Heptachlor	µg/L	--	--	--	1.0E-02
	lbs/day	--	--	--	1.8E-02

[1] Chronic toxicity is expressed as Chronic Toxicity Units (TUc) = 100/NOEL, where NOEL (No Observed Effect Level) is expressed as the maximum percent effluent that causes no observable effect on a test organism.
[2] Chlordanes represent the sum of chlordane-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.
[3] Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

c. Constituents that do not have reasonable potential or had inconclusive reasonable potential analysis results are referred to as performance goal constituents and assigned the performance goals listed in the following table. Performance goal constituents shall also be monitored at EFF-001, but the results will be used for informational purposes only, not compliance determination.

Table 10. Performance Goals Based on the Ocean Plan (Concentrations and Daily Mass Emissions).

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
BASED ON OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE					
Arsenic, Total Recoverable	µg/L	1.0E+03	5.9E+03	1.6E+04	--
	lbs/day	1.8E+03	1.0E+04	2.7E+04	--
Cadmium, Total Recoverable	µg/L	2.1E+02	8.2E+02	2.1E+03	--
	lbs/day	3.5E+02	1.4E+03	3.5E+03	--
Chromium VI, Total Recoverable[2]	µg/L	4.1E+02	1.6E+03	4.1E+03	--
	lbs/day	7.0E+02	2.8E+03	7.0E+03	--
Copper, Total Recoverable	µg/L	2.1E+02	2.1E+03	5.7E+03	--
	lbs/day	3.5E+02	3.5E+03	9.8E+03	--
Lead, Total Recoverable	µg/L	4.1E+02	1.6E+03	4.1E+03	--
	lbs/day	7.0E+02	2.8E+03	7.0E+03	--
Mercury, Total Recoverable[11]	µg/L	8.1	3.3E+01	8.2E+01	--
	lbs/day	1.4E+01	5.6E+01	1.4E+02	--
Nickel, Total Recoverable	µg/L	1.0E+03	4.1E+03	1.0E+04	--
	lbs/day	1.8E+03	7.0E+03	1.8E+04	--
Selenium, Total Recoverable	µg/L	3.1E+03	1.2E+04	3.1E+04	--
	lbs/day	5.3E+03	2.1E+04	5.3E+04	--
Silver, Total Recoverable	µg/L	1.1E+02	5.4E+02	1.4E+03	--
	lbs/day	1.9E+02	9.3E+02	2.4E+03	--
Zinc, Total Recoverable	µg/L	2.5E+03	1.5E+04	3.9E+04	--
	lbs/day	4.2E+03	2.5E+04	6.7E+04	--
Cyanide, Total Recoverable[3]	µg/L	2.1E+02	8.2E+02	2.1E+03	--
	lbs/day	3.5E+02	1.4E+03	3.5E+03	--
Ammonia (expressed as nitrogen)	µg/L	1.2E+05	4.9E+05	1.2E+06	--
	lbs/day	2.1E+05	8.4E+05	2.1E+06	--
Acute Toxicity	TUa	NA	6.42	NA	--
Endosulfan[10]	µg/L	1.8	3.7	5.5	--
	lbs/day	3.2	6.3	9.5	--
Endrin	µg/L	0.41	0.82	1.2	--
	lbs/day	0.7	1.4	2.1	--
HCH[4]	µg/L	0.82	1.6	2.5	--
	lbs/day	1.4	2.8	4.2	--

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
Radioactivity	pci/l	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations, Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.			
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS					
Acrolein	µg/L	--	--	--	4.5E+04
	lbs/day	--	--	--	7.7E+04
Antimony	µg/L	--	--	--	2.5E+05
	lbs/day	--	--	--	4.2E+05
Bis(2-chloroethoxy) Methane	µg/L	--	--	--	9.0E+02
	lbs/day	--	--	--	1.5E+03
Bis(2-chloroisopropyl) ether	µg/L	--	--	--	2.5E+05
	lbs/day	--	--	--	4.2E+05
Chlorobenzene	µg/L	--	--	--	1.2E+05
	lbs/day	--	--	--	2.0E+05
Chromium, Total Recoverable (III)[2]	µg/L	--	--	--	3.9E+07
	lbs/day	--	--	--	6.7E+07
Di-n-butyl Phthalate	µg/L	--	--	--	7.2E+05
	lbs/day	--	--	--	1.2E+06
Dichlorobenzenes[5]	µg/L	--	--	--	1.0E+06
	lbs/day	--	--	--	1.8E+06
Diethyl Phthalate	µg/L	--	--	--	6.8E+06
	lbs/day	--	--	--	1.2E+07
Dimethyl Phthalate	µg/L	--	--	--	1.7E+08
	lbs/day	--	--	--	2.9E+08
4,6-dinitro-2-methylphenol	µg/L	--	--	--	4.5E+04
	lbs/day	--	--	--	7.7E+04
2,4-dinitrophenol	µg/L	--	--	--	8.2E+02
	lbs/day	--	--	--	1.4E+03
Ethylbenzene	µg/L	--	--	--	8.4E+05
	lbs/day	--	--	--	1.4E+06
Fluoranthene	µg/L	--	--	--	3.1E+03
	lbs/day	--	--	--	5.3E+03
Hexachlorocyclopentadiene	µg/L	--	--	--	1.2E+04
	lbs/day	--	--	--	2.0E+04
Nitrobenzene	µg/L	--	--	--	1.0E+03
	lbs/day	--	--	--	1.7E+03

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
Thallium, Total Recoverable	µg/L	--	--	--	4.1E+02
	lbs/day	--	--	--	7.0E+02
Toluene	µg/L	--	--	--	1.7E+07
	lbs/day	--	--	--	3.0E+07
Tributyltin	µg/L	--	--	--	2.9E-01
	lbs/day	--	--	--	4.9E-01
1,1,1-trichloroethane	µg/L	--	--	--	1.1E+08
	lbs/day	--	--	--	1.9E+08
BASED ON OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS					
Acrylonitrile	µg/L	--	--	--	21
	lbs/day	--	--	--	35
Aldrin	µg/L	--	--	--	4.5E-03
	lbs/day	--	--	--	7.7E-03
Benzene	µg/L	--	--	--	1.2E+03
	lbs/day	--	--	--	2.1E+03
Benzidine	µg/L	--	--	--	1.4E-02
	lbs/day	--	--	--	2.4E-02
Beryllium	µg/L	--	--	--	6.8
	lbs/day	--	--	--	1.2E+01
Bis(2-chloroethyl) Ether	µg/L	--	--	--	9.2
	lbs/day	--	--	--	1.6E+01
Bis(2-ethlyhexyl) Phthalate	µg/L	--	--	--	7.2E+02
	lbs/day	--	--	--	1.2E+03
Carbon Tetrachloride	µg/L	--	--	--	1.8E+02
	lbs/day	--	--	--	3.2E+02
DDT[6]	µg/L	--	--	--	3.5E-02
	lbs/day	--	--	--	6.0E-02
3,3'-dichlorobenzidine	µg/L	--	--	--	1.7
	lbs/day	--	--	--	2.8
1,2-dichloroethane	µg/L	--	--	--	5.7E+03
	lbs/day	--	--	--	9.8E+03
1,1-dichloroethylene	µg/L	--	--	--	1.8E+02
	lbs/day	--	--	--	3.2E+02
1,3-dichloropropene	µg/L	--	--	--	1.8E+03
	lbs/day	--	--	--	3.1E+03
Dieldrin	µg/L	--	--	--	8.2E-03
	lbs/day	--	--	--	1.4E-02

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
2,4-dinitrotoluene	µg/L	--	--	--	5.3E+02
	lbs/day	--	--	--	9.1E+02
1,2-diphenylhydrazine	µg/L	--	--	--	3.3E+01
	lbs/day	--	--	--	5.6E+01
Heptachlor Epoxide	µg/L	--	--	--	4.1E-03
	lbs/day	--	--	--	7.0E-03
Hexachlorobenzene	µg/L	--	--	--	4.3E-02
	lbs/day	--	--	--	7.4E-02
Hexachlorobutadiene	µg/L	--	--	--	2.9E+03
	lbs/day	--	--	--	4.9E+03
Hexachloroethane	µg/L	--	--	--	5.1E+02
	lbs/day	--	--	--	8.8E+02
Isophorone	µg/L	--	--	--	1.5E+05
	lbs/day	--	--	--	2.6E+05
N-nitrosodimethylamine	µg/L	--	--	--	1.5E+03
	lbs/day	--	--	--	2.6E+03
N-nitrosodi-N-propylamine	µg/L	--	--	--	7.8E+01
	lbs/day	--	--	--	1.3E+02
N-nitrosodiphenylamine	µg/L	--	--	--	5.1E+02
	lbs/day	--	--	--	8.8E+02
PAHs[7]	µg/L	--	--	--	1.8
	lbs/day	--	--	--	3.1
PCBs[8]	µg/L	--	--	--	3.9E-03
	lbs/day	--	--	--	6.7E-03
TCDD equivalents[9]	µg/L	--	--	--	8.0E-07
	lbs/day	--	--	--	1.4E-06
1,1,2,2-tetrachloroethane	µg/L	--	--	--	4.7E+02
	lbs/day	--	--	--	8.1E+02
Tetrachloroethylene	µg/L	--	--	--	4.1E+02
	lbs/day	--	--	--	7.0E+02
Toxaphene	µg/L	--	--	--	4.3E-02
	lbs/day	--	--	--	7.4E-02
Trichloroethylene	µg/L	--	--	--	5.5E+03
	lbs/day	--	--	--	9.5E+03
1,1,2-trichloroethane	µg/L	--	--	--	1.9E+03
	lbs/day	--	--	--	3.3E+03
2,4,6-trichlorophenol	µg/L	--	--	--	5.9E+01
	lbs/day	--	--	--	1.0E+02

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
Vinyl Chloride	µg/L	--	--	--	7.4E+03
	lbs/day	--	--	--	1.3E+04

1 Scientific "E" notation is used to express certain values. In scientific "E" notation, the number following "E" indicates the position of the decimal point in the value. Negative numbers after the "E" indicate that the value is less than 1, and positive numbers after the "E" indicate that the value is greater than 1. In this notation a value of 6.1E-02 represents 6.1×10^{-2} or 0.061, 6.1E+02 represents 6.1×10^{2} or 610, and 6.1E+00 represents 6.1×10^{0} or 6.1.

2 Dischargers may, at their option, meet this limitation (or apply this performance goal) as a total chromium limitation (or performance goal).

3 If a Discharger can demonstrate to the satisfaction of the San Diego Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by (or performance goals may be evaluated with) the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136, as revised May 14, 1999.

4 HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

5 Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.

6 DDD (dichlorodiphenyldichloroethane), DDE (dichlorodiphenyldichloroethylene), and DDT (dichlorodiphenyltrichloroethane) represent the sum of 4,4'DDT; 2,4'DDT; 4,4'DDE; 2,4'DDE; 4,4'DDD; and 2,4'DDD.

7 PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenapthylene; anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo[k]fluoranthene; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[a,h]anthracene; fluorene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene.

8 PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

9 TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 1613 shall be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

10 Endosulfan shall mean the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

11 USEPA Method 1631E, with a quantitation level of 0.5 ppt (0.5 ng/L), shall be used to analyze total mercury.

d. USEPA Toxics Mass Emission Benchmarks.

These mass emission benchmarks are established to address the uncertainty due to projected increases in toxic pollutant loadings from the Point Loma WTP to the marine environment during the 5-year 301(h) variance, and to establish a framework for evaluating the need for an antidegradation analysis to determine compliance with water quality standards at the time of permit reissuance. The benchmarks contained in Order No. R9-2002-0025 are retained for this permit.

The annual mass emission benchmarks for the 1995 permit were determined using 1990 through April 1995 n-day average monthly performance (95th percentile) of the Point Loma WTP and the Discharger's projected end-of-permit effluent flow of 205 mgd for the 1995 301(h) application. For the 2002 permit, mass emission benchmarks for copper and selenium were recalculated using the 1994 n-day average monthly performance (95th percentile) and 205 mgd and the mass emission benchmark for cyanide was corrected. Average monthly performance was calculated as outlined in Appendix E of *Technical Support Document for Water Quality-based Toxics Control* (EPA/5005/2-90-001, 1991; TSD)

These mass emission benchmarks are not water quality-based effluent limitations and are not enforceable, as such. The mass emission threshold values may be re-evaluated and modified during the permit term, or the permit may be modified to incorporate water quality-based effluent limits, in accordance with the requirements set forth at 40 CFR 122.62 and 124.5. The following effluent mass emission benchmarks for toxic and carcinogenic materials apply to the undiluted effluent from Point Loma WTP discharged to the PLOO:

Table 11. Performance Goals Based on the Ocean Plan (Annual Mass Emissions).

Effluent Constituent	Units	Annual Mass Emission
Arsenic	mt/yr	0.88
Cadmium	mt/yr	1.4
Chromium (hexavalent)	mt/yr	14.2
Copper	mt/yr	26
Lead	mt/yr	14.2
Mercury[10]	mt/yr	0.19
Nickel	mt/yr	11.3
Selenium	mt/yr	0.44
Silver	mt/yr	2.8
Zinc	mt/yr	18.3
Cyanide[1]	mt/yr	1.57
Ammonia (as N)	mt/yr	8018
Phenolic compounds (non-chlorinated)	mt/yr	2.57
Chlorinated phenolics	mt/yr	1.73
Endosulfan[9]	mt/yr	0.006
Endrin	mt/yr	0.008
HCH[2]	mt/yr	0.025

Effluent Constituent	Units	Annual Mass Emission
Acrolein	mt/yr	17.6
Antimony	mt/yr	56.6
Bis(2-chloroethoxy) methane	mt/yr	1.5
Bis(2-chloroisopropyl) ether	mt/yr	1.61
Chlorobenzene	mt/yr	1.7
Di-n-butyl phthalate	mt/yr	1.33
Dichlorobenzenes[3]	mt/yr	2.8
Diethyl phthalate	mt/yr	6.23
Dimethyl phthalate	mt/yr	1.59
4,6-dinitro-2-methylphenol	mt/yr	6.8
2,4-dinitrophenol	mt/yr	11.9
Ethylbenzene	mt/yr	2.04
Flouranthene	mt/yr	0.62
Nitrobenzene	mt/yr	2.07
Thallium	mt/yr	36.8
Toluene	mt/yr	3.31
Tributyltin	mt/yr	0.001
1,1,1-trichloroethane	mt/yr	2.51
Acrylonitrile	mt/yr	5.95
Aldrin	mt/yr	0.006
Benzene	mt/yr	1.25
Benzidine	mt/yr	12.5
Beryllium	mt/yr	1.42
Bis(2-chloroethyl) ether	mt/yr	1.61
Bis(2-ethylhexyl) phthalate	mt/yr	2.89
Carbon tetrachloride	mt/yr	0.79
Chlordane[5]	mt/yr	0.014
Chloroform	mt/yr	2.19
DDT[4]	mt/yr	0.043
1,4-dichlorobenzene	mt/yr	1.25
3,3'-dichlorobenzidine	mt/yr	4.67
1,2-dichloroethane	mt/yr	0.79
1,1-dichloroethylene	mt/yr	0.79
Dichloromethane	mt/yr	13.7
1,3-dichloropropene	mt/yr	1.42
Dieldrin	mt/yr	0.011
2,4-dinitrotoluene	mt/yr	1.61
1,2-diphenylhydrazine	mt/yr	1.52
Halomethanes[6]	mt/yr	5.86
Heptachlor	mt/yr	0.001
Heptachlor epoxide	mt/yr	0.024
Hexachlorobenzene	mt/yr	0.54
Hexachlorobutadiene	mt/yr	0.54
Hexachloroethane	mt/yr	1.13
Isophorone	mt/yr	0.71
N-nitrosodimethylamine	mt/yr	0.76
N-nitrosodiphenylamine	mt/yr	1.47
PAHs[7]	mt/yr	15.45

Effluent Constituent	Units	Annual Mass Emission
PCBs[8]	mt/yr	0.275
1,1,2,2-tetrachloroethane	mt/yr	1.95
Tetrachloroethylene	mt/yr	4
Toxaphene	mt/yr	0.068
Trichloroethylene	mt/yr	1.56
1,1,2-trichloroethane	mt/yr	1.42
2,4,6-trichlorophenol	mt/yr	0.96
Vinyl chloride	mt/yr	0.4

1 If a Discharger can demonstrate to the satisfaction of the San Diego Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by (or performance goals may be evaluated with) the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136, as revised May 14, 1999.
2 HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.
3 Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.
4 DDD (dichlorodiphenyldichloroethane), DDE (dichlorodiphenyldichloroethylene), and DDT (dichlorodiphenyltrichloroethane) represent the sum of 4,4'DDT; 2,4'DDT; 4,4'DDE; 2,4'DDE; 4,4'DDD; and 2,4'DDD.
5 Chlordanes represent the sum of chlordane-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.
6 Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).
7 PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenapthylene; anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo[k]fluoranthene; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[a,h]anthracene; fluorene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene.
8 PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.
9 Endosulfan shall mean the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.
10 USEPA Method 1631E, with a quantitation level of 0.5 ppt (0.5 ng/L), shall be used to analyze total mercury

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Not Applicable

C. Reclamation Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

Unless specifically excepted by this Order, the discharge, by itself or jointly with any other discharge(s), shall not cause violation of the numerical water quality objectives established in Chapter II, Table B of the Ocean Plan and shall not cause a violation of the following water quality objectives. Compliance with these objectives shall be determined by samples collected at stations representative of the area within the waste field where initial dilution is completed.

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and Ocean Plan and are a required part of this Order. The discharge shall not cause the following in the Pacific Ocean:

1. Bacterial Characteristics

a. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the San Diego Water Board (i.e., waters designated as REC-1), but including all kelp beds, the following bacterial objectives shall be maintained throughout the water column.

i. 30-day Geometric Mean – The following standards are based on the geometric mean of the five most recent samples from each site:

1) Total coliform density shall not exceed 1,000 per 100 ml;

2) Fecal coliform density shall not exceed 200 per 100 ml; and

3) Enterococcus density shall not exceed 35 per 100 ml.

ii. Single Sample Maximum:

1) Total coliform density shall not exceed 10,000 per 100 ml;

2) Fecal coliform density shall not exceed 400 per 100 ml;

3) Enterococcus density shall not exceed 104 per 100 ml; and

4) Total coliform density shall not exceed 1,000 per 100 ml when the fecal coliform/total coliform ratio exceeds 0.1.

b. The Initial Dilution Zone for any wastewater outfall shall be excluded from designation as kelp beds for purposes of bacterial standards. Adventitious assemblages of kelp plants on waste discharge structures (e.g., outfall pipes and diffusers) do not constitute kelp beds for purposes of bacterial standards.

c. California Department of Public Health (DPH) has established minimum protective bacteriological standards for coastal waters adjacent to public beaches and for public water-contact sports areas in ocean waters. These standards are found in the California Code of Regulations, title 17, Section 7958, and they are identical to the objectives contained in subsection a. above. When a public beach or public water-contact sports area fails to meet these standards, DPH or the local public health officer may post with warning signs or otherwise restrict use of the public beach or public water-contact sports area until the standards are met. The DPH regulations impose more frequent monitoring and more stringent posting and closure requirements on certain high-use public beaches that are located adjacent to a storm drain that flows in the summer.

For beaches not covered under AB 411 regulations, DPH imposes the same standards as contained in Title 17 and requires weekly sampling but allows the county health officer more discretion in making posting and closure decisions.

d. At all areas where shellfish may be harvested for human consumption, as determined by the San Diego Water Board, the median total coliform density shall not exceed 70 per 100 ml throughout the water column, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

e. Ocean waters beyond the outer limit of the territorial sea shall not exceed the following 304(a)(1) criteria for enterococcus density beyond the zone of initial dilution in areas where primary contact recreation, as defined in USEPA guidance, occurs. USEPA describes the "primary contact recreation" use as protective when the potential for ingestion of, or immersion in, water is likely. Activities usually include swimming, water-skiing, skin-diving, surfing, and other activities likely to result in immersion. (Water Quality Standards Handbook, EPA-823-B-94-005a, 1994, p. 2-2.)

Table 12. 304(a)(1) ambient water quality criteria for bacteria in federal waters where primary contact recreation occurs.

Indicator	30-day Geometric Mean (per 100 ml)	Single Sample Maximum (per 100 ml)
Enterococci	35	104 for designated bathing beach
		158 for moderate use
		276 for light use
		501 for infrequent use

2. Physical Characteristics

a. Floating particulates and grease and oil shall not be visible.

b. The discharge of waste shall not cause aesthetically undesirable discoloration of the ocean surface.

c. Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste.

d. The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.

3. Chemical Characteristics

a. The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen demanding waste materials.

b. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.

c. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions.

d. The concentration of substances set forth in Chapter II, Table B of the Ocean Plan, shall not be increased in marine sediments to levels that would degrade indigenous biota.

e. The concentration of organic materials in marine sediments shall not be increased to levels that would degrade marine life.

f. Nutrient materials shall not cause objectionable aquatic growths or degrade indigenous biota.

g. Waste management systems that discharge to the ocean must be designed and operated in a manner that will maintain the indigenous marine life and a healthy and diverse marine community.

h. Waste discharged to the ocean must be essentially free of:

i. Material that is floatable or will become floatable upon discharge.

ii. Settleable material or substances that may form sediments which will degrade benthic communities or other aquatic life.

iii. Substances which will accumulate to toxic levels in marine waters, sediments or biota.

iv. Substances that significantly decrease the natural light to benthic communities and other marine life.

v. Materials that result in aesthetically undesirable discoloration of the ocean surface.

i. Waste effluents shall be discharged in a manner which provides sufficient initial dilution to minimize the concentrations of substances not removed in the treatment.

j. Location of waste discharges must be determined after a detailed assessment of the oceanographic characteristics and current patterns to assure that:

i. Pathogenic organisms and viruses are not present in areas where shellfish are harvested for human consumption or in areas used for swimming or other body-contact sports.

ii. Natural water quality conditions are not altered in areas designated as being of special biological significance or areas that existing marine laboratories use as a source of seawater.

iii. Maximum protection is provided to the marine environment.

k. Waste that contains pathogenic organisms or viruses should be discharged a sufficient distance from shellfishing and water-contact sports areas to maintain applicable bacterial standards without disinfection. Where conditions are such that an adequate distance cannot be attained, reliable disinfection in conjunction with a reasonable separation of the discharge point from the area of use must be provided. Disinfection procedures that do not increase effluent toxicity and that constitute the least environmental and human hazard should be used.

4. Biological Characteristics

a. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded.

b. The natural taste, odor, color of fish, shellfish, or other marine resources used for human consumption shall not be altered.

c. The concentration of organic materials in fish, shellfish, or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

5. Radioactivity

Discharge of radioactive waste shall not degrade marine life.

B. Groundwater Limitations – Not Applicable

VI. PROVISIONS

A. Standard Provisions

1. Federal Standard Provisions. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

2. San Diego Water Board Standard Provisions. The Discharger shall comply with the following provisions:

a. Compliance with Ocean Plan Discharge Prohibitions, summarized in Attachment G is required as a condition of this order and permit.

b. Compliance with Discharge Prohibitions contained in Chapter 4 of the Basin Plan, summarized in Attachment G, is required as a condition of this order and permit.

c. The Discharger shall comply with all requirements and conditions of this Order. Any permit noncompliance constituents a violation of the CWA and/or the CWC and is grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of an application for permit renewal, modification, or reissuance.

d. The Discharger shall comply with all applicable federal, State, and local laws and regulations that pertain to sewage sludge handling, treatment, use and disposal, including CWA Section 405 and USEPA regulations at 40 CFR Part 257.

e. The Discharger's wastewater treatment facilities shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Title 23, Division 3, Chapter 26 of the California Code of Regulations (CCRs).

f. All proposed new treatment facilities and expansions of existing treatment facilities shall be completely constructed and operable prior to initiation of the discharge from the new or expanded facilities. The Discharger shall submit a certification report for each new treatment facility, expansion of an existing treatment facility, and re-ratings, the certification report shall be prepared by the design engineer. For re-ratings, the certification report shall be prepared by the engineer who evaluated the treatment facility capacity. The certification report shall:

i. Identify the design capacity of the treatment facility, including the daily and 30-day design capacity,

ii. Certify the adequacy of each component of the treatment facility, and

iii. Contain a requirement-by-requirement analysis, based on acceptable engineering practices, of the process and physical design of the facility to ensure compliance with this Order.

The signature and engineering license number of the engineer preparing the certification report shall be affixed to the report. If reasonable, the certification report shall be submitted prior to beginning construction. The Discharger shall not initiate a discharge from an existing treatment facility at a daily flow rate in excess of its previously approved design capacity until:

iv. The certification report is received by the Executive Officer,

v. The Executive Officer has received written notification of completion of construction (new treatment facilities and expansions only),

vi. An inspection of the facility has been made by staff of the San Diego Water Board or their designated representatives (new treatment facilities and expansions only), and

vii. The Executive Officer and Director have provided the Discharger with written authorization to discharge at a daily flow rate in excess of its previously approved design capacity.

g. All waste treatment, containment, and disposal facilities shall be protected against 100-year peak stream flows as defined by the San Diego County flood control agency.

h. All waste treatment, containment, and disposal facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour storm event.

i. This Order expires on July 31, 2015, after which, the terms and conditions of this permit are automatically continued pending issuance of a new permit, provided that all requirements of USEPA's NPDES regulations at 40 CFR 122.6 and the State's regulations at CCR Title 23, Section 2235.4 regarding the continuation of expired permits and waste discharge requirements are met.

j. The Discharger's wastewater treatment facilities shall be operated and maintained in accordance with the operations and maintenance manual prepared by the Discharger pursuant to the Clean Water Grant Program.

k. A copy of this Order shall be posted at a prominent location at or near the treatment and disposal facilities and shall be available to operating personnel at all times.

l. The Discharger shall comply with any interim limitations established by addendum, enforcement action, or revised waste discharge requirements that have been or may be adopted by the San Diego Water Board or USEPA.

m. The Discharger shall comply with effluent standards and prohibitions for toxic pollutants established pursuant to Section 307(a) of the CWA within the time frame set forth by the regulations that establish those standards and prohibitions, even if this Order has not been modified to incorporate the requirements.

B. Monitoring and Reporting Program (MRP) Requirements

1. The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

2. Reports required to be submitted to the San Diego Water Board and USEPA shall be sent to:

   Executive Officer
   California Regional Water Quality Control Board
   San Diego Region
   9174 Sky Park Court, Suite 100
   San Diego, CA 92123-4340

U.S. EPA, Region 9
ATTN: WTR-7, NPDES/DMR
75 Hawthorne Street
San Francisco, 94105

Notifications required to be provided to this San Diego Water Board shall be made to:

Telephone – (858) 467-2952
Facsimile – (858) 571-6972

Notifications required to be provided to USEPA shall be made to:

Telephone – (415) 972-3577
Facsimile – (415) 947-3545

3. After notification by the State or San Diego Water Board, or USEPA, the Discharger may be required to electronically submit self-monitoring reports. Until such time as electronic submissions of self-monitoring reports is required, the Discharger shall submit discharge monitoring reports (DMRs) in accordance with the requirements described in this Order.

DMRs must be signed and certified as required by the Standard Provisions (Attachment D). The Discharger shall submit the original DMR and one copy to:

State Water Resources Control Board
Division of Water Quality
c/o DMR Processing Center
PO Box 100
Sacramento, CA 95812-1000

The Discharger shall submit one copy of the DMR to:

U.S. EPA, Region 9
ATTN: WTR-7, NPDES/DMR
75 Hawthorne Street
San Francisco, CA 94105

All discharge monitoring results should be reported on the official USEPA pre-printed DMR forms (USEPA Form 3320-1). Forms that are self-generated must be approved by USEPA.

C. Special Provisions

1. Re-opener Provisions

a. This Order may be re-opened for modification to include an effluent limitation if monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above an Ocean Plan Table B water quality objective.

b. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following;

   i. Violation of any terms or conditions of this Order;

   ii. Obtaining this Order by misrepresentation or failure to disclose fully all relevant fact; or

   iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

   The filing of a request by the Discharger for modifications, revocation and reissuance, or termination of this Order does not stay any condition of this Order. Notification by the Discharger of planned operational or facility changes, or anticipated noncompliance with this Order does not stay any condition of this Order.

c. If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant and that standard or prohibition is more stringent than any limitation on the pollutant in this Order, the San Diego Water Board may institute proceedings under these regulations to modify or revoke and reissue the Order to conform to the toxic effluent standard or prohibition.

d. This Order may be re-opened and modified, to incorporate in accordance with the provisions set forth in 40 CFR Parts 122 and 124, to include requirements for the implementation of the watershed management approach.

e. This Order may be re-opened and modified, in accordance with the provisions set forth in 40 CFR Parts 122 and 124, to include new Minimum Levels (MLs).

f. This Order may be re-opened and modified to revise effluent limitations as a result of future Basin Plan Amendments, or the adoption of a total maximum daily load allocation (TMDL) for the receiving water.

g. This Order may be re-opened upon submission by the Discharger of adequate information, as determined by this San Diego Water Board, to provide for dilution credits or a mixing zone, as may be appropriate.

h. This Order may be re-opened and modified to revise the toxicity language once that language becomes standardized.

i. This Order may also be re-opened and modified, revoked and, reissued or terminated in accordance with the provisions of 40 CFR Sections 122.44, 122.62 to 122.64, 125.62, and 125.62. Causes for taking such actions include, but are not limited to, failure to comply with any condition of this Order and Permit, and endangerment to human health or the environment resulting from the permitted activity.

j. In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include effluent limitations or permit conditions to address chronic or acute toxicity in the effluent or receiving waterbody, as a result of the discharge; or to implement new, revised, or newly interpreted water quality standards applicable to whole effluent toxicity.

k. The 1995 and 2003 permits contained toxics mass emission benchmarks for effluent discharged through the PLOO which are incorporated into this permit. These benchmarks were established to address the uncertainty due to projected increases in toxic pollutant loadings from the Point Loma WTP to the marine environment during the 5-year 301(h) variance, and to establish a framework for evaluating the need for an antidegradation analysis to determine compliance with water quality standards at the time of permit reissuance. Annual mass emission benchmarks for the 1995 permit were determined using 1990 through April 1995 n-day average monthly performance (95^{th} percentile) of the Point Loma WTP and the Discharger's projected end-of-permit effluent flow of 205 mgd for the 1995 301(h) application. For the 2003 permit, mass emission benchmarks for copper and selenium were recalculated using the 1994 n-day average monthly performance (95^{th} percentile) and 205 mgd and the mass emission benchmark for cyanide was corrected. Average monthly performance was calculated as outlined in Appendix E of *Technical Support Document for Water Quality-based Toxics Control* (EPA/5005/2-90-001, 1991; TSD). The mass emission threshold values may be re-evaluated and modified during the permit term, or the permit may be modified to incorporate water quality-based effluent limits, in accordance with the requirements set forth at 40 CFR 122.62 and 124.5.

l. The Monitoring and Reporting Program (MRP) for this Order may be modified by the San Diego Water Board and USEPA to enable the Discharger to participate in comprehensive regional monitoring activities conducted in the Southern California Bight during the term of this permit. The intent of regional monitoring activities is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and to best utilize the pooled scientific resources of the region. During these coordinated sampling efforts, the Discharger's sampling and analytical effort may be reallocated to provide a regional assessment of the impact of the discharge of municipal wastewater to the Southern California Bight. Anticipated modifications to the monitoring program will be coordinated so as to provide a more comprehensive picture of the ecological and statistical significance of monitoring results and to determine cumulative impacts of various pollution sources. If predictable relationships among the biological, water quality, and effluent monitoring variables can be demonstrated, it may be appropriate to decrease the Discharger's sampling effort. Conversely, the monitoring program may be intensified if it appears that the objectives cannot be achieved through the Discharger's existing monitoring program. These changes will improve the overall effectiveness of monitoring in the Southern California Bight. Minor changes may be made without further public notice.

m. In accordance with 40 CFR Parts 122 and 124, this permit may be modified to include effluent limitations or permit conditions for phenolic compounds (non-chlorinated) to implement and address Tier II antidegradation, as a result of the discharge.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. Chronic Toxicity Notification Requirements

There is a chronic toxicity effluent limit for this discharge. For this discharge, a mixing zone or dilution allowance is authorized and the chronic toxicity effluent limit is any one test result greater than 205 TUc (during the monthly reporting period). Results shall be reported in TUc, where TUc = 100/NOEC. The No Observed Effect Concentration (NOEC) is the highest concentration of toxicant to which organisms are exposed in a short-term chronic test that causes no observable adverse effects on the test organisms (e.g., the highest concentration of toxicant in which the values for the observed responses are not statistically significantly different from the controls). This permit requires additional toxicity testing if the chronic toxicity effluent limit is exceeded.

The Discharger shall notify the San Diego Water Board and USEPA in writing within 14 days of exceedance of the chronic toxicity effluent limitation. This notification shall describe actions the Discharger has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or reason(s) that no action has been taken.

b. Acute Toxicity Notification Requirements

There is no acute toxicity effluent limit for this discharge. The acute toxicity performance goal is any one test result greater than 6.42 TUa (during the monthly reporting period). Results shall be reported in TUa, where TUa = 100/LC50. The Lethal Concentration, 50 Percent (LC50) is the toxic or effluent concentration that would cause death in 50 percent of the test organisms over a specified period of time. This permit requires additional toxicity testing if an acute toxicity effluent performance goal is exceeded.

The Discharger shall notify the San Diego Water Board and USEPA in writing within 14 days of exceedance of an acute toxicity effluent performance goal. This notification shall describe actions the Discharger has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or reason(s) that no action has been taken.

c. Initial Investigation TRE Workplan for Whole Effluent Toxicity

Within 90 days of the permit effective date, the Discharger shall prepare and submit an updated copy of their Initial Investigation Toxicity Reduction Evaluation (TRE) Workplan (1-2 pages) to the San Diego Water Board and USEPA for review. This plan shall include steps the Discharger intends to implement if toxicity is measured above a toxicity effluent limit or performance goal and should include, at minimum:

i. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.

ii. A description of methods for maximizing in-house treatment system efficiency, good housekeeping practices, and a list of all chemicals used in operations at the facility.

iii. If a Toxicity Identification Evaluation (TIE) is necessary, an indication of who would conduct the TIEs (i.e., an in-house expert or outside contractor).

This workplan is subject to approval and modification by the San Diego Water Board and USEPA.

d. Accelerated Toxicity Testing and TRE/TIE Process for Whole Effluent Toxicity

i. If a toxicity effluent limit or performance goal is exceeded and the source of toxicity is known (e.g., a temporary plant upset), then the Discharger shall conduct one additional toxicity test using the same species and test method. This test shall begin within 14 days of receipt of test results exceeding the toxicity effluent limit or performance goal. If the additional toxicity test does not exceed the toxicity effluent limit or performance goal, then the Discharger may return to their regular testing frequency.

ii. If a toxicity effluent limit or performance goal is exceeded and the source of toxicity is not known, then the Discharger shall conduct six additional toxicity tests using the same species and test method, approximately every two weeks, over a 12 week period. This testing shall begin within 14 days of receipt of test results exceeding the toxicity effluent limit or performance goal. If none of the additional toxicity tests exceed the toxicity effluent limit or performance goal, then the Discharger may return to their regular testing frequency.

iii. If one of the additional toxicity tests (in paragraphs d.i or d.ii of this Section) exceeds the toxicity effluent limit or performance goal, then the Discharger shall notify the Executive Officer and Director. If the Executive Officer and Director determine that the discharge consistently exceeds the toxicity effluent limit or performance goal, then the Discharger shall initiate a TRE using as guidance the USEPA manuals: *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA/ 833/B-99/002, 1999) or *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA/600/2-88/070, 1989). In conjunction, the Discharger shall develop and implement a Detailed TRE Workplan which shall include: further actions undertaken by the Discharger to investigate, identify, and correct the causes of toxicity; actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and a schedule for these actions. This Detailed TRE Workplan and schedule are subject to approval and modification by the San Diego Water Board and USEPA.

iv. As part of a TRE, the Discharger may initiate a Toxicity Identification Evaluation (TIE)—using the same species and test method, and USEPA TIE guidance manuals—to identify the causes of toxicity. The USEPA TIE guidance manuals are: *Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I* (EPA/600/6-91/005F, 1992; only chronic toxicity); *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA/600/6-91/003, 1991; only acute toxicity); *Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/080, 1993); *Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/081, 1993); and *Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document* (EPA/600/R-96-054, 1996).

e. Antidegradation Analysis

USEPA and the San Diego Water Board have concluded that a full antidegradation analysis justifying that the continued increase in effluent loading of phenolic compounds (non-chlorinated) to a Tier II waterbody may be necessary. For phenolic compounds (non-chlorinated), the Discharger shall conduct a thorough analysis of the projected effluent load above the mass emission benchmark level, the resulting impact to receiving water quality of the total effluent load, and opportunities for effluent load reduction through additional treatment or controls (including local limits) and pollution prevention. If this analysis shows that the total effluent load for phenolic compounds (non-chlorinated) produces either (1) a receiving water concentration at the boundary of the zone of initial dilution that is less than ten percent above the ambient (farfield) concentration, or (2) the receiving water concentration at the boundary of the zone of initial dilution is less than 50 percent of the California Ocean Plan water quality objectives for phenolic compounds (non-chlorinated), then the resulting impact to water quality is not considered "significant" and further analysis is not required at this time. However, if the change in receiving water quality is found to be "significant" upon review by USEPA and the San Diego Water Board, then the Discharger must conduct a socioeconomic analysis considering the full benefits and costs of the increased effluent loading of phenolic compounds (non-chlorinated), including environmental impacts. Specifically, this analysis must assess whether allowing these increased loadings is necessary to accommodate important social and economic development in the San Diego service area.

These two evaluations (i.e., the analysis determine "significance" and the socioeconomic analysis) shall be conducted by the Discharger in coordination with USEPA and the San Diego Water Board. Within 90 days of the permit effective date, the Discharger shall submit study plans for these two analyses and implementation schedules to USEPA and San Diego Water Board for review and approval. These plans and schedules shall be modified and implemented as directed by USEPA and the San Diego Water Board. A final report analyzing "significance" is due within one year of the permit effective date. A final Tier II antidegradation analysis report, including a socioeconomic analysis considering the full benefits and costs of the increased effluent loading of phenolic compounds (non-chlorinated) and environmental impacts, is due within 6 months of a determination by USEPA that the increased loadings are significant.

3. **Best Management Practices and Pollution Prevention – Not Applicable**

4. **Construction, Operation and Maintenance Specifications – Not Applicable**

5. **Special Provisions for Municipal Facilities (POTWs Only)**

   a. **Treatment Plant Capacity**

   The Discharger shall submit a written report to the Executive Officer and Director within 90 days after the monthly average influent flow rate equals or exceeds 75 percent of the advanced primary design capacity of the wastewater treatment and/or disposal facilities. The Discharger's senior administrative officer shall sign a letter in accordance with Standard Provision V.B. (Attachment D) which transmits that report and certifies that that policy-making body is adequately informed of the influent flow rate relative to the Facility's design capacity. The report shall include the following:

   i. Average influent daily flow for the calendar month; the date on which the maximum daily flow occurred; and the rate of that maximum flow.

   ii. The Discharger's best estimate of when the average daily influent flow for a calendar month will equal or exceed the design capacity of the facilities.

iii. The Discharger's intended schedule for studies, design, and other steps needed to provide additional treatment for the wastewater from the collection system before the waste flow exceeds the capacity of present units.

b. Sludge (Biosolids) Disposal Requirements

(Note: "Biosolids" refers to non-hazardous sewage sludge, as defined at 40 CFR 503.9. Sewage sludge that is hazardous, as defined at 40 CFR 261, must be disposed of in accordance with the RCRA.)

i. General Requirements

(a) All biosolids generated by the Discharger shall be used or disposed of in compliance with applicable portions of: 40 CFR 503—for biosolids that are land applied, placed in a surface disposal site (dedicated land disposal site, monofill, or sludge-only parcel at a municipal landfill), or incinerated; 40 CFR 258—for biosolids disposed of in a municipal solid waste landfill (with other materials); and 40 CFR 257—for all biosolids use and disposal practices not covered under 40 CFR 258 or 503.

40 CFR 503, Subpart B (land application), sets forth requirements for biosolids that are applied for the purpose of enhancing plant growth or for land reclamation. 40 CFR 503, Subpart C (surface disposal), sets forth requirements for biosolids that are placed on land for the purpose of disposal.

The Discharger is responsible for assuring that all biosolids produced at its facility are used or disposed of in accordance with these rules, whether the Discharger uses or disposes of the biosolids itself, or transfers their biosolids to another party for further treatment, use, or disposal. The Discharger is responsible for informing subsequent preparers, appliers, and disposers of requirements they must meet under these rules.

(b) Duty to Mitigate: The Discharger shall take all reasonable steps to prevent or minimize any biosolids use or disposal which has a likelihood of adversely affecting human health or the environment.

(c) No biosolids shall be allowed to enter wetlands or other waters of the United States.

(d) Biosolids treatment, storage, use, or disposal shall not contaminate groundwater.

(e) Biosolids treatment, storage, use, or disposal shall not create a nuisance such as objectionable odors or flies.

(f) The Discharger shall assure that haulers transporting biosolids off-site for treatment, storage, use, or disposal take all necessary measures to keep the biosolids contained. Trucks hauling biosolids that are not Class A, as defined at 40 CFR 503.32(a), shall be cleaned as necessary after loading and after unloading, so as to have no biosolids on the exterior of the truck or wheels. Trucks hauling biosolids that are not Class A shall be tarped. All haulers must have spill clean-up procedures. Trucks hauling biosolids that are not Class A shall not be used for hauling food or feed crops after unloading the biosolids unless the Discharger submits a hauling description, to be approved by USEPA, describing how trucks will be thoroughly cleaned prior to adding food or feed.

(g) If biosolids are stored for over two years from the time they are generated, the Discharger must ensure compliance with all requirements for surface disposal under 40 CFR 503, Subpart C, or must submit a written notification to USEPA and the State with the information specified under 40 CFR 503.20(b), demonstrating the need for longer temporary storage. During storage of any length for non-Class A biosolids, whether on the facility site or off-site, adequate procedures must be taken to restrict access by the public and domestic animals.

(h) Any biosolids treatment, disposal, or storage site shall have facilities adequate to divert surface runoff from adjacent areas, to protect the site boundaries from erosion, and to prevent any conditions that would cause drainage from the materials to escape from the site. Adequate protection is defined as protection from at least a 100-year storm and the highest tidal stage which may occur.

(i) There shall be adequate screening at the plant headworks and/or at the biosolids treatment units to ensure that all pieces of metal, plastic, glass, and other inert objects with a diameter greater than 3/8 inches are removed.

ii. Inspection and Entry

The USEPA, State, or an authorized representative thereof, upon the presentation of credentials, shall be allowed by the Discharger directly, or through contractual arrangements with their biosolids management contractors, to:

(a) Enter upon all premises where biosolids produced by the Discharger are treated, stored, used, or disposed of, by either the Discharger or another party to whom the Discharger transfers biosolids for further treatment, storage, use, or disposal.

(b) Have access to and copy any records that must be kept by either the Discharger or another party to whom the Discharger transfers biosolids for further treatment, storage, use, or disposal, under the conditions of this permit or 40 CFR 503.

(c) Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations used in biosolids treatment, storage, use, or disposal by either the Discharger or another party to whom the Discharger transfers biosolids for further treatment, storage, use, or disposal.

iii. Monitoring

(a) Biosolids shall be monitored for the following constituents, at the frequency stipulated in Table 1 of 40 CFR 503.16: arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, organic nitrogen, ammonia nitrogen, and total solids. If biosolids are removed for use or disposal on a routine basis, sampling should be scheduled at regular intervals throughout the year. If biosolids are stored for an extended period prior to use or disposal, sampling may occur at regular intervals, or samples of the accumulated stockpile may be collected prior to use or disposal, corresponding to the tons accumulated in the stockpile over that period.

Monitoring shall be conducted using the methods in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846), or as otherwise required under 40 CFR 503.8(b). All results must be reported on a 100% dry weight basis and records of all analyses must state on each page of the analytical results whether the reported results are expressed on an "as-is" or a "100% dry weight" basis.

(b) The Discharger shall sample biosolids twice per year for the pollutants listed under CWA Section 307(a), using best practicable detection limits.

iv. Pathogen and Vector Control

(a) Prior to land application, the permittee shall demonstrate that biosolids meet Class A or Class B pathogen reduction levels by one of the methods listed under 40 CFR 503.32.

(b) Prior to disposal in a surface disposal site, the Discharger shall demonstrate that biosolids meet Class B pathogen reduction levels, or ensure that the site is covered at the end of each operating day. If pathogen reduction is demonstrated using a "Process to Further Reduce Pathogens" or one of the "Processes to Significantly Reduce Pathogens", the Discharger shall maintain daily records of the operating parameters used to achieve this reduction. If pathogen reduction is demonstrated by testing for fecal coliform and/or pathogens, samples must be collected at the frequency specified in Table 1 of 40 CFR 503.16. If Class B is demonstrated using fecal coliform, at least seven grab samples must be collected during each monitoring period and a geometric mean calculated from these samples. The following holding times between sample collection and analysis shall not be exceeded: fecal coliform—24 hours when cooled to 4 degrees C; *Salmonella* spp. bacteria—24 hours when cooled to 4 degrees C; enteric viruses—2 weeks when frozen; helminth ova—one month when cooled to 4 degrees C.

(c) For biosolids that are land applied or placed in a surface disposal site, the Discharger shall track and keep records of the operational parameters used to achieve the Vector Attraction Reduction requirements under 40 CFR 503.33(b).

v. Surface Disposal

If biosolids are placed in a surface disposal site (dedicated land disposal site or monofill), a qualified groundwater scientist shall develop a groundwater monitoring program for the site, or shall certify that the placement of biosolids on the site will not contaminate an aquifer.

vi. Landfill Disposal

Biosolids placed in a municipal landfill shall be tested by the Paint Filter Test (Method 9095) at the frequency specified in Table 1 of 40 CFR 503.16, or more often if necessary to demonstrate that there are no free liquids.

vii. Notifications

The Discharger, either directly or through contractual arrangements with their biosolids management contractors, shall comply with the following notification requirements.

(a) Notification of Non-compliance

The Discharger shall notify USEPA and the State (for both Discharger and use or disposal site) of any non-compliance within 24 hours, if the non-compliance may seriously endanger health or the environment. For other instances of non-compliance, the Discharger shall notify USEPA and the State of the non-compliance in writing within 5 working days of becoming aware of the non-compliance. The Discharger shall require their biosolids management contractors to notify USEPA and the State of any non-compliance within these same time-frames.

(b) Interstate Notification

If biosolids are shipped to another State or Tribal Land, the Discharger shall send 60 days prior notice of the shipment to the permitting authorities in the receiving State or Tribal Land, and the USEPA Regional Office.

(c) Land Application Notification

Prior to using any biosolids from this facility (other than composted biosolids) at a new or previously unreported site, the permittee shall notify USEPA and the State. This notification shall include a description and topographic map of the proposed site(s), names and addresses of the applier and site owner, and a listing of any State or local permits which must be obtained. It shall also include a description of the crops or vegetation to be grown, proposed loading rates, and a determination of agronomic rates.

Within a given monitoring period, if any biosolids do not meet the applicable metals concentration limits specified under 40 CFR 503.13, then the Discharger (or its contractor) must pre-notify USEPA, and determine the cumulative metals loading at that site to date, as required by 40 CFR 503.12.

The Discharger shall notify the applier of all subject requirements under 40 CFR 503, including the requirement for the applier to certify that management practices, site restrictions, and applicable vector attraction reduction requirements have been met. The Discharger shall require the applier to certify at the end of 38 months, following application of Class B biosolids, that harvesting restrictions in effect for up to 38 months have been met.

(d) Surface Disposal Notification

Prior to disposal at a new or previously unreported site, the Discharger shall notify USEPA and the State. The notice shall include a description and topographic map of the proposed site, depth to groundwater, whether the site is lined or unlined, site operator and site owner, and any State or local permits. It shall also describe procedures for ensuring grazing and public access restrictions for three years following site closure. The notice shall include a groundwater monitoring plan or description of why groundwater monitoring is not required.

viii. Reporting

The Discharger shall submit an annual biosolids report to the USEPA Region 9 Biosolids Coordinator and the State by February 19 of each year for the period covering the previous calendar year. The report shall include:

(a) The amount of biosolids generated that year, in dry metric tons, and the amount accumulated from previous years.

(b) Results of all pollutant monitoring required under Monitoring, above. Results must be reported on a 100% dry weight basis.

(c) Demonstrations of pathogen and vector attraction reduction methods, as required under 40 CFR 503.17 and 503.27, and certifications.

(d) Names, mailing addresses, and street addresses of persons who received biosolids for storage, further treatment, disposal in a municipal landfill, or other use or disposal method not covered above, and volumes delivered to each.

(e) The following information must be submitted by the Discharger, unless the Discharger requires its biosolids management contractors to report this information directly to the EPA Region 9 Biosolids Coordinator.

i. For land application sites:

Locations of land application sites (with field names and numbers) used that calendar year, size of each field applied to, applier, and site owner.

Volumes applied to each field (in wet tons and dry metric tons), nitrogen applied, and calculated plant available nitrogen.

Crops planted, dates of planting and harvesting.

For biosolids exceeding 40 CFR 503.13 Table 3 metals concentrations, the locations of sites where the biosolids were applied and cumulative metals loading at the sites to date.

Certifications of management practices at 40 CFR 503.14.

Certifications of site restrictions at 40 CFR 503(b)(5).

ii. For surface disposal sites:

Locations of sites, site operator and site owner, size of parcel on which biosolids were disposed.

Results of any required groundwater monitoring.

Certifications of management practices at 40 CFR 503.24.

For closed sites, the date of site closure and certifications of management practices for three years following site closure.

(f) All reports shall be submitted to:

Regional Biosolids Coordinator
U.S. Environmental Protection Agency
CWA Compliance Office (WTR-7)
75 Hawthorne Street
San Francisco, CA 94105-3901

Biosolids Program Coordinator
Arizona Department of Environmental Quality
Mail Code: 5415B-1
1110 West Washington Street
Phoenix, AZ 85007

c. Pretreatment Program

i. The Discharger shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent revisions to that part. Where 40 CFR Part 403 or subsequent revisions place mandatory actions upon the Discharger, as Control Authority, but do not specify a timetable for completion, the Discharger shall complete the mandatory actions within 6 months of the issuance date of this Order, or the effective date of the revisions to 40 CFR Part 403, whichever is later. For violations of pretreatment requirements, the Discharger shall be subject to enforcement actions, penalties, fines, and other remedies imposed by the USEPA and/or the San Diego Water Board, as provided in the CWA and/or the CWC.

ii. The Discharger shall comply with the urban area pretreatment program requirements under CWA Section 301(h) and the implementation requirements at 40 CFR 125. The Discharger's actions to comply shall include the following:

(a) During each calendar year, maintaining a rate of significant noncompliance (SNC), as defined at 40 CFR 403.8(f)(2)(vii), for Significant Industrial Users (SIUs) of no more than 15 percent of the total number of SIUs. The 15 percent noncompliance criteria includes only SIUs that are in SNC and which have not received at least a second level formal enforcement action from the Discharger, in accordance with the Enforcement Response Plan included in Appendix K-2 of the Discharger's April 1995 301(h) modification application. The second level of enforcement is an Administrative Notice and Order.

(b) Providing the annual analysis regarding local limits required under 40 CFR 125.65(c)(1)(iii). As a consequence of any new local limits, some SIUs may need time to come into compliance with those limits. In any such cases, the Discharger shall issue a Compliance Findings of Violation and Order which is the first level of formal enforcement in its Enforcement Response Plan. The Order shall contain a schedule for achieving compliance with the new local limits. SIUs receiving such orders will not be included in the 15 percent noncompliance criteria.

iii. The Discharger shall implement and enforce its approved pretreatment program, and all subsequent revisions, which are hereby made enforceable conditions of this Order. The Discharger shall enforce the requirements promulgated pursuant to Sections 307(b), 307(c), 307(d), and 402(b) of the CWA with timely, appropriate, and effective enforcement actions. The Discharger shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements, or, in the case of a new nondomestic user, upon commencement of the discharge.

iv. The Discharger shall perform the pretreatment functions required by 40 CFR 403, including, but not limited to:

(a) Implement the necessary legal authorities as required by 40 CFR 403.8(f)(1);

(b) Enforce the pretreatment requirements under 40 CFR 403.5 and 403.6;

(c) Implement the programmatic functions as required by 40 CFR 403.8(f)(2); and

(d) Provide the requisite funding and personnel to implement the pretreatment program, as required by 40 CFR 403.8(f)(3).

v. By March 1 of each year, the Discharger shall submit an annual report to the San Diego Water Board; USEPA Region 9; the State Water Board, Division of Water Quality, Regulations Unit; and the San Diego County Department of Health Services, Hazardous Materials Division, describing its pretreatment activities over the previous calendar year. In the event the Discharger is not in compliance with any condition or requirement of this Order, or any pretreatment compliance inspection/audit requirements, the Discharger shall include the reasons for noncompliance and state how and when it will comply with such conditions and requirements. The annual report shall contain, but not be limited, the following information:

(a) A summary of analytical results from representative flow-proportioned 24-hour composite sampling of the Discharger's influent and effluent for those pollutants USEPA has identified under Section 307(a) of the CWA, which are known or suspected to be discharged by nondomestic users. This will consist of an annual full priority pollutant scan. Wastewater sampling and analysis shall be performed in accordance with the minimum frequency of analysis required by the Monitoring and Reporting program of this Order (Attachment E). The Discharger shall also provide influent and effluent monitoring data for non-priority pollutants, which the Discharger believes may be causing or contributing to interference or pass through. The Discharger is not required to sample and analyze for asbestos. Sludge sampling and analysis is addressed elsewhere in this permit. Wastewater sampling and analysis shall be performed in accordance with 40 CFR Part 136;

(b) A discussion of upset, interference, or pass through, if any, at the Discharger's Facilities, which the Discharger knows or suspects were caused by nondomestic users of the POTW system. The discussion shall include the reasons why the incidents occurred, any corrective actions taken, and, if known, the name and address of the responsible nondomestic user(s). The discussion shall also include a review of the applicable local pollutant limitations to determine whether any additional limitations or changes to existing limitations, are necessary to prevent pass-through, interference, or noncompliance with sludge disposal requirements;

(c) An updated list of the Discharger's SIUs including their names and addresses, and a list of deletions, additions and SIU name changes keyed to the previously submitted list. The Discharger shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall also indicate which SIUs are subject to local limitations;

(d) The Discharger shall characterize the compliance status of each SIU by providing a list or table for the following:

(1) Name of SIU

(2) Category, if subject to categorical standards;

(3) Type of wastewater treatment or control processes in place;

(4) Number of samples taken by SIU during the year;

(5) Number of samples and inspections by Discharger during the year;

(6) For an SIU subject to discharge requirements for total toxic organics (TTO), whether all required certifications were provided;

(7) A list of pretreatment standards (categorical or local) violated during the year, or any other violations;

(8) SIUs in significant noncompliance (SNC) as defined at 40 CFR 403.8(f)(2)(viii), at any time during the year;

(9) A summary of enforcement actions or any other actions taken against SIUs during the year. Describe the type of action, final compliance date, and the amount of fines and/or penalties collected, if any. Describe any proposed actions for bringing SIUs into compliance; and

(10) The name(s) of any SIU(s) required to submit a baseline monitoring report and any SIUs currently discharging under a baseline monitoring report.

(11) The names of any SIUs required to prepare and/or implement a pollution prevention plan pursuant to CA SB 709 and SB 2165.

(e) A brief description of any programs the Discharger implements to reduce pollutants from nondomestic users not classified as SIUs;

(f) A brief description of any significant changes in operating the pretreatment program which differ from the previous year, including, but not limited to, changes in the program's administrative structure, local limits, monitoring program, legal authority, enforcement policy, funding, and staffing levels;

(g) A summary of the annual pretreatment program budget, including the cost of pretreatment program functions and equipment purchases;

(h) A summary of activities to involve and inform the public of the pretreatment program, including a copy of the newspaper notice, if any, required by 40 CFR 403.8(f)(2)(vii);

(i) A description of any changes in sludge disposal methods;

(j) A description of the program to quantify, characterize, regulate, and treat flow from low-flow urban runoff diversion systems and "first flush" industrial stormwater diversion systems that are routed to the sanitary sewer collection system; and

(k) A discussion of any concerns not described elsewhere in the annual report.

vi. Semiannual SIU Status Report

The Discharger shall submit a semiannual SIU noncompliance status report to the San Diego Water Board, the State Water Board, and the USEPA. The reports shall cover the periods of January 1 through June 30, and July 1 through December 31 and shall be submitted no later than September 1 and March 1, respectively. The report shall contain:

(a) The names and addresses of all SIUs which violated any discharge or reporting requirements during the semi-annual reporting period;

(b) A description of the violations, including whether the discharge violations were for categorical standards or local limits;

(c) A description of the enforcement actions or other actions taken to remedy the noncompliance;

(d) The status of enforcement actions or other actions taken in response to SIU noncompliance identified in previous reports; and

(e) The status of any SIUs required to prepare and/or implement a pollution prevention plan pursuant to CA SB 709 and SB 2165.

vii. Non-industrial Source Control Program

In accordance with CWA Section 301(h)(7) and 40 CFR 125.66(d), the Discharger shall continue to develop and implement its non-industrial source control program and public education program, described in Volume VII, Appendix K, of the 2007 301(h) application. The purpose of these programs is to eliminate the entrance of non-industrial toxic pollutants and pesticides into the POTW. These programs shall be periodically reviewed and addressed in the annual report.

d. Collection System

On May 2, 2006, the State Water Board adopted State Water Board Order No. 2006-0003, a Statewide General WDR for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003 and any future revisions thereto. Order No. 2006-0003 requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the General WDR.

Regardless of the coverage obtained under Order No. 2006-0003, the Discharger's collection system is part of the publicly-owned treatment works or Facility that is subject to this Order. As such, pursuant to federal regulations, the Discharger must properly operate and maintain its collection system [40 CFR 122.41(e)], report any non-compliance [40 CFR 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR 122.41(d)].

6. **Other Special Provisions**

   a. **Continuous Monitoring for Residual Chlorine.** To ensure compliance with WQBELs for total chlorine residual, continuous monitoring of the effluent is required. Within 180 days of the effective date of this permit, the Discharger shall begin continuous monitoring for total chlorine residual in the effluent. Until that time, at least four grab samples per day, representative of the daily discharge, shall be collected immediately prior to entering the PLOO and analyzed for total chlorine residual.

   b. **Plume Tracking**. The Discharger shall prepare a feasibility study that assesses behavior of the PLOO wastewater plume and means of tracking the plume. The feasibility study shall present a recommended plan for plume tracking which includes identifying recommended modifications in receiving water sampling parameters, locations, and/or sampling protocols. The feasibility study shall be submitted to the Executive Director within two years of the effective date of this Order.

   c. **Wastewater Reclamation and Recycling Opportunities Study Reporting Condition for Federal Permit.**[1]

      i. The Discharger's federal permit renewal for a variance from federal secondary treatment standards, pursuant to CWA Sections 301(h) and (j)(5), is contingent upon determination by the California Coastal Commission (CCC) that the proposed discharge is consistent with the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 et seq.). On October 7, 2009, the CCC conditionally concurred with consistency certification CC-056-09 for the reissuance of a secondary treatment waiver for the Point Loma wastewater treatment plant and outfall. The CCC found that, if modified in accordance with the condition specified in section C.6.c.2 of this Permit, the federally permitted discharge would be consistent with the enforceable policies of the California Coastal Management Program.

      ii. Wastewater Reclamation and Recycling Opportunities Study. The City will return for a public hearing before the Coastal Commission in (approximately)

[1] Sections VI.C.6.c, VI.C.6.c.i, and VI.C.6.c.ii were added by USEPA subsequent to the adoption of the permit by the San Diego Water Board and are only part of the permit as issued by USEPA.

two years when its study of Wastewater Reclamation and Recycling Opportunities (Note: This study refers to the City's Cooperative Agreement with San Diego Coastkeeper and the San Diego Chapter of Surfrider Foundation, approved on February 18, 2009, described further in and contained in Exhibit 15 of the Commission's adopted findings for CC-056-09.) is completed and the findings and recommendations have been documented in a report, and inform the Commission how, and to what extent, the City intends to implement the recommendations in the report or any alternatives to the recommendations in the report. If the City does not intend to implement the recommendations of the report, the City will provide an explanation of its reasoning to the Commission.

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in Section IV of this Order will be determined as specified below:

A. Compliance with Average Monthly Effluent Limitation (AMEL).

If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of noncompliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for the month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month.

B. Compliance with Average Weekly Effluent Limitation (AWEL).

If the average of daily discharges over a calendar week (Sunday through Saturday) exceeds the AWEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of noncompliance. The average of daily discharges over the calendar week that exceeds the AWEL for a parameter will be considered out of compliance for that week only. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week.

C. Compliance with Maximum Daily Effluent Limitation (MDEL).

The MDEL shall apply to flow weighted 24-hour composite samples. If a daily discharge exceeds the MDEL for a given parameter, an alleged violation will be flagged and the

Discharger will be considered out of compliance for that parameter for that one day only within the reporting period.

D. Compliance with Instantaneous Minimum Effluent Limitation

The instantaneous minimum effluent concentration limitation shall apply to grab sample determinations. If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, a violation will be flagged and the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of noncompliance with the instantaneous minimum effluent limitation.

E. Compliance with Instantaneous Maximum Effluent Limitation.

The instantaneous maximum effluent concentration limitation shall apply to grab sample determinations. If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, a violation will be flagged and the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of noncompliance with the instantaneous maximum effluent limitation).

F. Compliance with Six-month Median Effluent Limitation.

If the median of daily discharges over any 180-day period exceeds the six-month median effluent limitation for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that 180-day period for that parameter. The next assessment of compliance will occur after the next sample is taken. If only a single sample is taken during a given 180-day period and the analytical result for that sample exceeds the six-month median, the Discharger will be considered out of compliance for the 180-day period.

G. Mass and Concentration Limitations.

Compliance with mass and concentration effluent limitations for the same parameter shall be determined separately with their respective limitations. When the concentration of a constituent in an effluent sample is determined to be Not Detected (ND) or Detected, but Not Quantified (DNQ), the corresponding mass emission rate (MER) determined from that sample concentration shall also be reported as "ND" or "DNQ".

H. Percent Removal.

Compliance with percent removal requirements for monthly average percent removal of biochemical oxygen demand (BOD_5) and total suspended solids (TSS) shall be determined separately for each wastewater treatment facility discharging through an outfall. For each wastewater treatment facility, the monthly average percent removal is the average of the calculated daily discharge percent removals only for days on which the constituent concentration is monitored in both the influent and effluent of the wastewater treatment facility at the location specified in the Monitoring and Reporting Program (Attachment E) within a calendar month.

The percent removal for the Point Loma Wastewater Treatment Plant (applicable to TSS removal based on Table A of the Ocean Plan, and BOD_5 removal at the Facility) for each day shall be calculated according to the following equation:

$$\text{Daily discharge percent removal} = \frac{\text{Influent Concentration - Effluent Concentration}}{\text{Influent Concentration}} \times 100\%$$

The system-wide percent removals of TSS and BOD_5 shall be calculated using the following formula (mass emissions in metric tons):

$$\text{Percent removal} = \frac{(\text{System Influents} - \text{Return Streams}) - \text{Outfall Discharge}}{\text{System Influents} - \text{Return Streams}} \times 100\%$$

Where:

System Influents:	Point Loma WTP Influent, North City Water Reclamation Plant (NCWRP) Influent Pump Station, and NCWRP Influent from Penasquitos Pump Station.
Return Streams:	NCWRP Filter Backwash, NCWRP Plant Drain, NCWRP Secondary and Un-disinfected Filtered Effluent Bypass, NCWRP Final Effluent, and MBC Centrate.

I. 2005 California Ocean Plan Provisions for Table B Constituents.

1. Sampling Reporting Protocols

a. Dischargers must report with each sample result the reported ML, selected in accordance with Ocean Plan Section III.C.5, and the laboratory's current Method Detection Limit (MDL).

b. Dischargers must also report results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

i. Sample results greater than or equal to the reported ML must be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample).

ii. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, must be reported as "Detected, but Not Quantified", or DNQ. The laboratory must write the estimated chemical concentration of the sample next to DNQ as well as the words "Estimated Concentration" (may be shorted to Est. Conc.").

iii. Sample results less than the laboratory's MDL must be reported as "Not Detected", or ND.

2. **Compliance Determination**

Sufficient sampling and analysis shall be required to determine compliance with the effluent limitation.

a. **Compliance with Single-Constituent Effluent Limitations**

The Discharger shall be deemed out of compliance with an effluent limitation or discharge specification if the concentration of the constituent in the monitoring sample is greater than the effluent limitation or discharge specification and greater than or equal to the reported ML.

b. **Compliance with Effluent Limitations expressed as a Sum of Several Constituents**

Dischargers are out of compliance with an effluent limitation that applies to the sum of a group of chemicals (e.g., PCBs) if the sum of the individual pollutant concentrations is greater than the effluent limitation. Individual pollutants of the group will be considered to have a concentration of zero if the constituent is reported as ND or DNQ.

c. **Multiple Sample Data Reduction**

The concentration of the pollutant in the effluent may be estimated from the result of a single sample analysis or by a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses when all sample results are quantifiable (i.e., greater than or equal to the reported ML). When one or more sample results are reported as ND or DNQ, the central tendency concentration of the pollutant shall be the median (middle) value of the multiple samples. If, in an even number of samples, one or both of the middle values is ND or DNQ, the median will be the lower of the two middle values.

d. **Mass Emission Rate**

The mass emission rate (MER), in pounds per day, shall be obtained from the following calculation for any calendar day:

Mass Emission Rate (lbs/day) = 8.34 x Q x C

In which Q and C are the flow rate in million gallons per day, and the constituent concentration in mg/L, respectively, and 8.34 is a conversion factor (lbs/gallon of water). If a composite sample is taken, then C is the concentration measured in the composite sample and Q is the average flow rate occurring during the period over which the samples are composited.

e. Bacterial Standards and Analysis

iii. The geometric mean used for determining compliance with bacterial standards is calculated with the following equation:

Geometric Mean = $(C_1 \times C_2 \times \ldots \times C_n)^{1/n}$

Where n is the number of days samples were collected during the period and C is the concentration of bacteria (CFU/100 mL) found on each day of sampling.

iv. For bacterial analyses, sample dilutions should be performed so the range of values extends as follows:

- 2 to 16,000/100ml colony-forming units (CFU) for total coliforms
- 2 to 12,000/100ml CFU for fecal coliforms
- 2 to 12,000/100ml CFU for enterococci

The detection methods used for each analysis shall be reported with the results of the analysis. Detection methods used for coliform (total and fecal) shall be those presented in Table 1A of 40 CFR 136, unless alternate methods have been approved in advance by USEPA, pursuant to 40 CFR 136. Detection methods used for enterococcus shall be those presented in USEPA publication EPA 600/4-85/076, *Test Methods for Escherichia coli and Enterococci in Water by Membrane Filter Procedure*, listed under 40 CFR 136, or any improved method determined by the San Diego Water Board or USEPA to be appropriate.

f. Single Operational Upset

A single operational upset (SOU) that leads to simultaneous violations of more than one pollutant parameter shall be treated as a single violation and limits the Discharger's liability in accordance with the following conditions:

i. A single operational upset is broadly defined as a single unusual event that temporarily disrupts the usually satisfactory operation of a system in such a way that it results in violation of multiple pollutant parameters.

ii. A Discharger may assert SOU to limit liability only for those violations which the Discharger submitted notice of the upset as required in Provision H of Attachment D.

iii. For purposes outside of CWC Section 13385(h) and (i), determination of compliance and civil liability (including any more specific definition of SOU), the requirements for Dischargers to assert the SOU limitation of liability, and the manner of counting violations, shall be in accordance with the USEPA Memorandum "Issuance of Guidance Interpreting Single Operational Upset" (September 27, 1989).

iv. For purposes of CWC Section 13385(h) and (i), determination of compliance and civil liability (including any more specific definition of SOU, the requirements for Dischargers to assert the SOU limitation of liability, and the manner of counting violations shall be in accordance with CWC Section 13385(f)(2).

ATTACHMENT A – DEFINITIONS

Acute Toxicity

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{96\text{-hr LC } 50\%}$$

Areas of Special Biological Significance (ASBS)
Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Biosolids
Biosolids refers to non-hazardous sewage sludge, as defined at 40 CFR 503.9. Sewage sludge that is hazardous, as defined at 40 CFR 261, must be disposed of in accordance with the RCRA.

Chlordane
Shall mean the sum of chlordane-alpha, chlordane-gamma, chlordene-alpha, chlordene-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

Chronic Toxicity
This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

$$TUc = \frac{100}{NOEL}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Ocean Plan Appendix II.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

DDT
Shall mean the sum of 4,4'DDT, 2,4'DDT, 4,4'DDE, 2,4'DDE, 4,4'DDD, and 2,4'DDD.

Degrade
Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

Detected, but Not Quantified (DNQ)
Sample results that are less than the reported Minimum Level, but greater than or equal to the laboratory's MDL.

Dichlorobenzenes
Shall mean the sum of 1,2- and 1,3-dichlorobenzene.

Downstream Ocean Waters
Waters downstream with respect to ocean currents.

Dredged Material
Any material excavated or dredged from the navigable waters of the United States, including material otherwise referred to as "spoil".

Enclosed Bays
Indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. This definition includes but is not limited to: Humboldt Bay, Bodega Harbor, Tomales Bay, Drakes Estero, San Francisco Bay, Morro Bay, Los Angeles Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay.

Endosulfan
The sum of endosulfan-alpha and -beta and endosulfan sulfate.

Estuaries and Coastal Lagoons are waters at the mouths of streams that serve as mixing zones for fresh and ocean waters during a major portion of the year. Mouths of streams that are temporarily separated from the ocean by sandbars shall be considered as estuaries. Estuarine waters will generally be considered to extend from a bay or the open ocean to the upstream limit of tidal action but may be considered to extend seaward if significant mixing of fresh and salt water occurs in the open coastal waters. The waters described by this definition include but are not limited to the Sacramento-San Joaquin Delta as defined by Section 12220 of the California Water Code, Suisun Bay, Carquinez Strait downstream to Carquinez Bridge, and appropriate areas of the Smith, Klamath, Mad, Eel, Noyo, and Russian Rivers.

Halomethanes shall mean the sum of bromoform, bromomethane (methyl bromide) and chloromethane (methyl chloride).

HCH shall mean the sum of the alpha, beta, gamma (lindane) and delta isomers of hexachlorocyclohexane.

Initial Dilution
The process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.

For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and non-buoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Kelp Beds
For purposes of the bacteriological standards of the Ocean Plan, are significant aggregations of marine algae of the genera Macrocystis and Nereocystis. Kelp beds include the total foliage canopy of Macrocystis and Nereocystis plants throughout the water column.

Mariculture
The culture of plants and animals in marine waters independent of any pollution source.

Material
(a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of the Ocean Plan relating to waste disposal, dredging and the disposal of dredged material and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable waters of the United States. See also, DREDGED MATERIAL.

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant.

Method Detection Limit (MDL)
The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Appendix B.

Minimum Level (ML)
The concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Natural Light
Reduction of natural light may be determined by the San Diego Water Board by measurement of light transmissivity or total irradiance, or both, according to the monitoring needs of the San Diego Water Board.

Not Detected (ND)
Those sample results less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. If a discharge outside the territorial waters of the State could affect the quality of the waters of the State, the discharge may be regulated to assure no violation of the Ocean Plan will occur in ocean waters.

PAHs (polynuclear aromatic hydrocarbons)
The sum of acenaphthylene, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo[k]fluoranthene, 1,12-benzoperylene, benzo[a]pyrene, chrysene, dibenzo[ah]anthracene, fluorene, indeno[1,2,3-cd]pyrene, phenanthrene and pyrene.

PCBs (polychlorinated biphenyls)
The sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Aroclor-1254 and Aroclor-1260.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP is to reduce all potential sources of pollutants through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below water quality standards in the Ocean Plan. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative pollutants where there is evidence that beneficial uses are being impacted. The San Diego Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a PMP, if required pursuant to Water Code Section 13263.3(d), shall be considered to fulfill the PMP requirements in Section III.C.9 of the Ocean Plan.

Reported Minimum Level
The ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting sample results that are selected or established by the San Diego Water Board and USEPA, in accordance with Ocean Plan Section III.C.5. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interference. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied when there are matrix effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, the additional factor must be applied to the ML in the computation of the reported ML.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Shellfish
Organisms identified by the California Department of Public Health (DPH) as shellfish for public health purposes (i.e., mussels, clams and oysters).

Significant Difference
Defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

Six-Month Median Effluent Limitation

The highest allowable moving median of all daily discharges for any 180-day period.

State Water Quality Protection Areas (SWQPAs)
Non-terrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) that were previously designated by the State Water Board in Resolution No.s 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by the Ocean Plan.

TCDD Equivalents
The sum of the concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown in the table below.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8-tetra CDD	1.0
2,3,7,8-penta CDD	0.5
2,3,7,8-hexa CDDs	0.1
2,3,7,8-hepta CDD	0.01
octa CDD	0.001
2,3,7,8 tetra CDF	0.1
1,2,3,7,8 penta CDF	0.05
2,3,4,7,8 penta CDF	0.5
2,3,7,8 hexa CDFs	0.1
2,3,7,8 hepta CDFs	0.01
octa CDF	0.001

Toxicity Reduction Evaluation (TRE)
A study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

Waste
As used in the Ocean Plan, waste includes a Discharger's total discharge, of whatever origin, i.e., gross, not net, discharge.

Water Reclamation

The treatment of wastewater to render it suitable for reuse, the transportation of treated wastewater to the place of use, and the actual use of treated wastewater for a direct beneficial use or controlled use that would not otherwise occur.

ATTACHMENT B – MAP

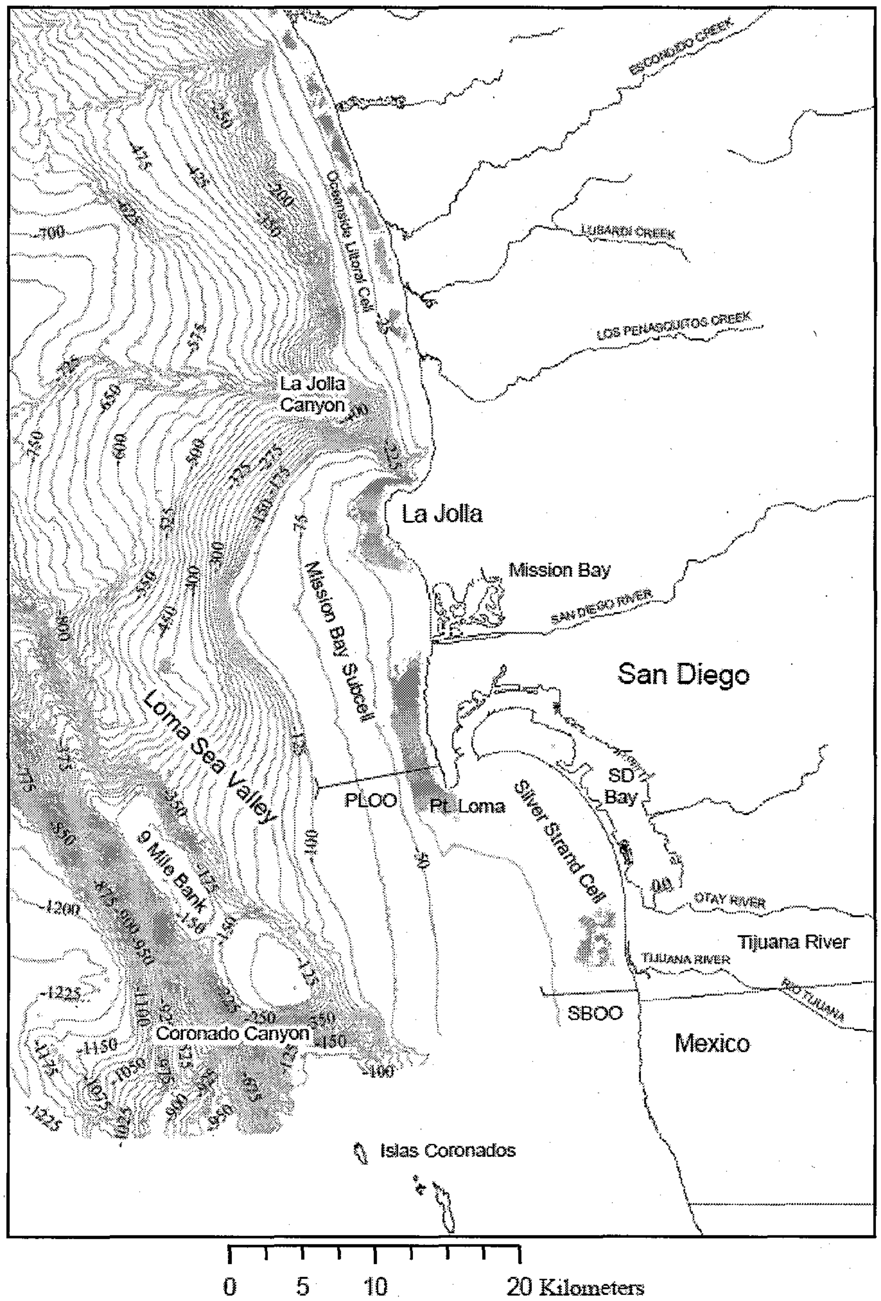
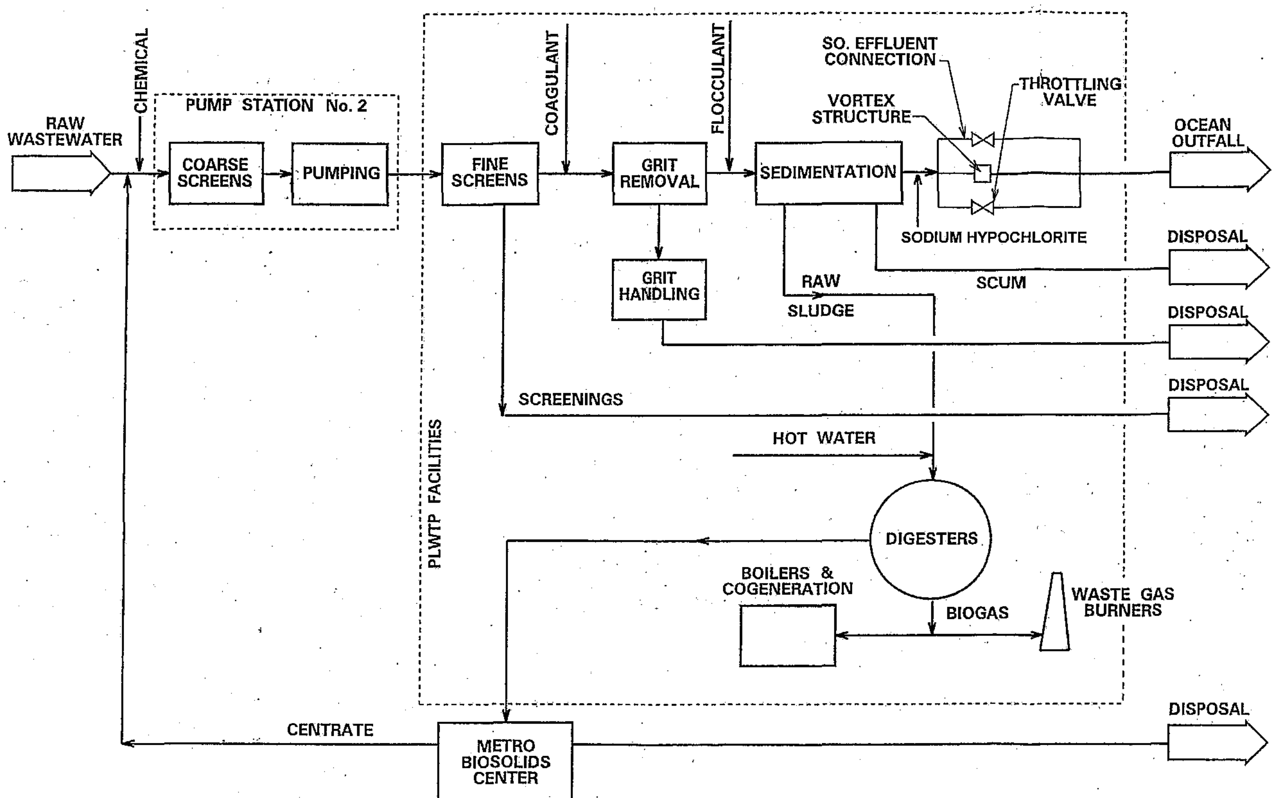


Figure 1. Map of marine shelf of San Diego County. Bathymetric units are meters. Locations of littoral cells, submarine canyons, outfalls (PLOO and SBOO), rivers, and Kelp Forests (shaded areas close to shore) are indicated.

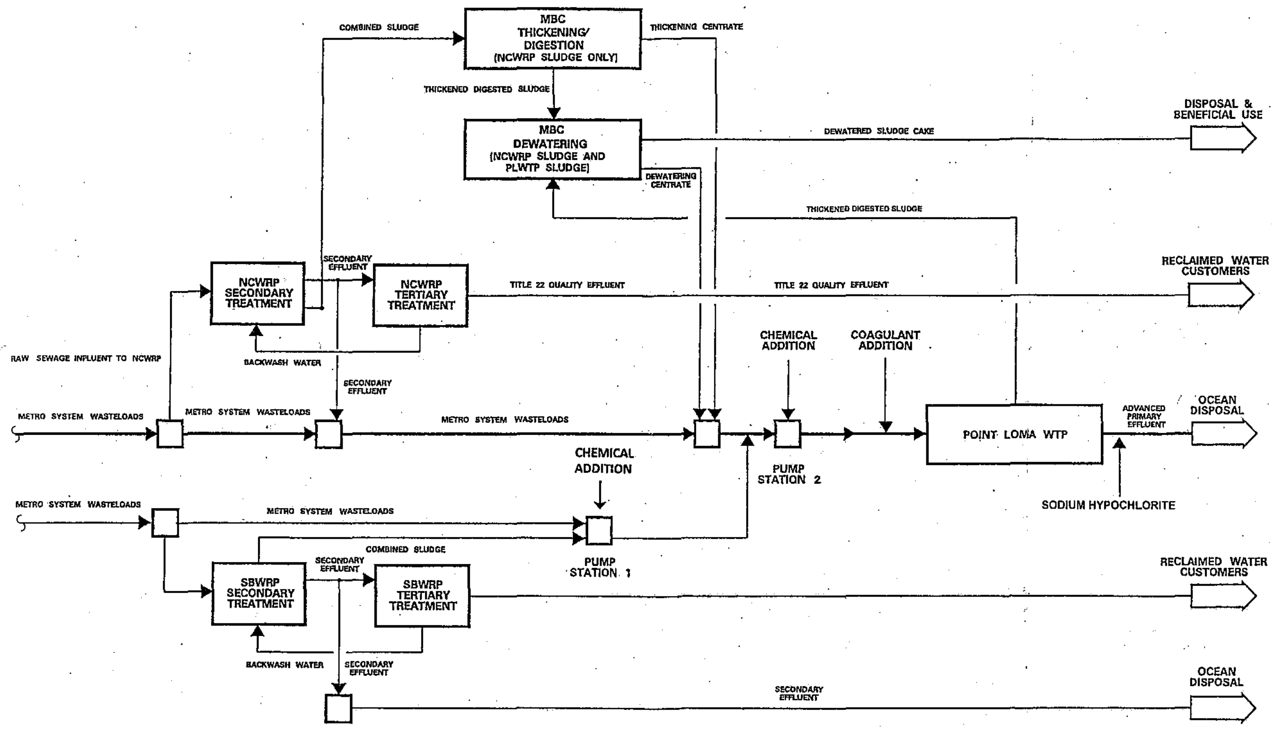
ATTACHMENT C – FLOW SCHEMATICS

C.1. Wastewater Treatment Flow Schematic



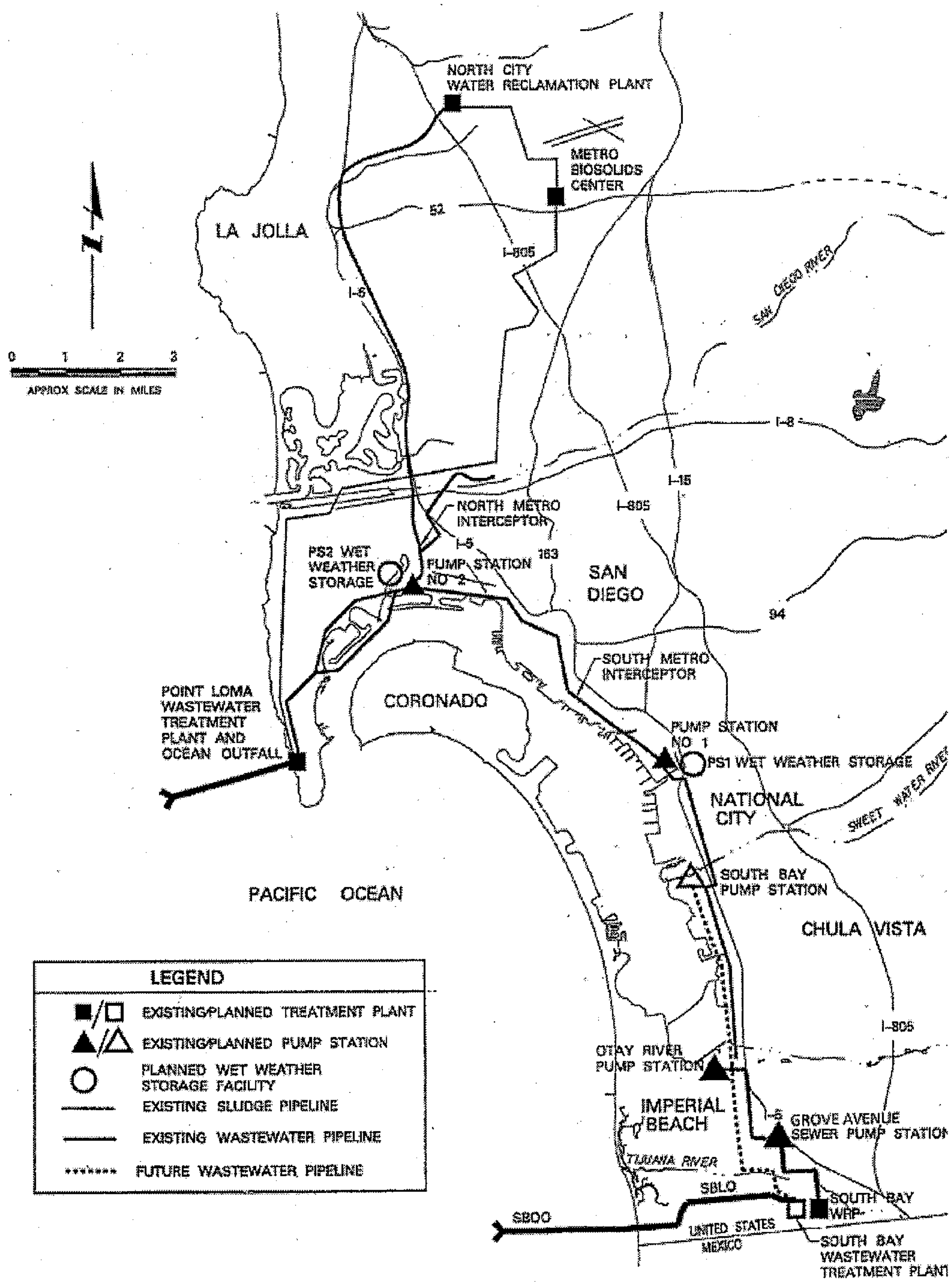
POINT LOMA WASTEWATER TREATMENT PLANT PROCESS SCHEMATIC DIAGRAM

C.2. System-Wide Flow Schematic



METRO SYSTEM PROCESS SCHEMATIC

C.3. Collection System



EXISTING AND PLANNED METRO SYSTEM FACILITIES

ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR § 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use and disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 CFR § 122.41(e).)

E. Propert y Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations. (40 CFR § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the San Diego Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR § 122.41(i); Water Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR § 122.41(i)(1));
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR § 122.41(i)(2));
3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR § 122.41(i)(3)); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR § 122.41(i)(4).)

G. Bypass

1. Definitions

   a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR § 122.41(m)(1)(i).)

   b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the San Diego Water Board and USEPA may take enforcement action against a Discharger for bypass, unless (40 CFR § 122.41(m)(4)(i)):

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR § 122.41(m)(4)(i)(A));

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR § 122.41(m)(4)(i)(B)); and

   c. The Discharger submitted notice to the San Diego Water Board and USEPA as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR § 122.41(m)(4)(i)(C).)

4. The San Diego Water Board and USEPA may approve an anticipated bypass, after considering its adverse effects, if the San Diego Water Board and USPEA determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR § 122.41(m)(4)(ii).)

5. **Notice**

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass. (40 CFR § 122.41(m)(3)(i).)

   b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was

caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR § 122.41(n)(3)):

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR § 122.41(n)(3)(i));

   b. The permitted facility was, at the time, being properly operated (40 CFR § 122.41(n)(3)(ii));

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR § 122.41(n)(3)(iii)); and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the San Diego Water Board and USEPA. The San Diego Water Board and USEPA may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR § 122.41(j)(1).)

B. According to test procedures approved under 40 CFR Part 136 for the analyses of pollutants or another method is required under 40 CFR subchapters N or O. In the case of pollutants for which there are no approved methods under 40 CFR Part 136 or otherwise required under 40 CFR subchapters N or O, monitoring must be conducted according to a test procedure specified in the permit for such pollutants.

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the San Diego Water Board Executive Officer or USEPA Director at any time. (40 CFR § 122.41(j)(2).) It is recommended that the Discharger maintain the results of all analyses indefinitely.

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR § 122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 CFR § 122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 CFR § 122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 CFR § 122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 CFR § 122.41(j)(3)(v)); and
6. The results of such analyses. (40 CFR § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 CFR § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR § 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 CFR § 122.7(b)(2).)

V. ST ANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the San Diego Water Board, State Water Board, or USEPA within a reasonable time, any information which the San Diego Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the San Diego Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR § 122.41(h); Water Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the San Diego Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR § 122.22(a)(3).).

3. All reports required by this Order and other information requested by the San Diego Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR § 122.22(b)(1));

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR § 122.22(b)(2)); and

   c. The written authorization is submitted to the San Diego Water Board, State Water Board, and USEPA. (40 CFR § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the San Diego Water Board, State Water Board, and USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 CFR § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR § 122.41(i)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the San Diego Water Board, State Water Board, or USEPA for reporting results of monitoring of sludge use or disposal practices. (40 CFR § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the San Diego Water Board or USEPA. (40 CFR § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR § 122.41(l)(5).)

E. T wenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR § 122.41(l)(6)(ii)):

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR § 122.41(l)(6)(ii)(A).)

   b. Any upset that exceeds any effluent limitation in this Order. (40 CFR § 122.41(l)(6)(ii)(B).)

   c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. (40 CFR §122.44(g).)

3. The San Diego Water Board and USEPA may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the San Diego Water Board and USEPA as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in Section 122.29(b) (40 CFR § 122.41(l)(1)(i));

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 CFR § 122.41(l)(1)(ii)); or

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR§ 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the San Diego Water Board or State Water Board, and USEPA, of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the San Diego Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The San Diego Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, Sections 13385, 13386, and 13387.

B. The Clean Water Act provides that any person who violates Section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such Sections in a permit issued under Section 402, or any requirement imposed in a pretreatment program approved under Sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The Clean Water Act provides that any person who *negligently* violates Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such Sections in a permit issued under Section 402 of the Act, or any requirement imposed in a pretreatment program approved under Section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both. Any person who *knowingly* violates such Sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both. Any person who knowingly violates Section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such Sections in a permit issued under Section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

C. Any person may be assessed an administrative penalty by the Administrator for violating Section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such Sections in a permit issued under Section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000.

D. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. (40 CFR 122.41(j)(5).)

E. Th e CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both. (40 CFR 122.41(k)(2).)

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the San Diego Water Board and USEPA of the following (40 CFR § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 CFR § 122.42(b)(1));

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order. (40 CFR § 122.42(b)(2)); and

3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 CFR § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations Section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (San Diego Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and California regulations. In addition, the Discharger must establish a monitoring and reporting program that meets the requirements of CWA Section 301(h) and 40 CFR Section 125.63.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified below and, unless otherwise specified, before the monitored waste stream joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to, and the approval of, the San Diego Water Board and United States Environmental Protection Agency (USEPA). Samples shall be collected at times representative of "worst case" conditions with respect to compliance with the requirements of Order No. R9-2009-0001.

B. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurement is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±5 percent from true discharge rates throughout the range of expected discharge volumes.

C. Monitoring must be conducted according to USEPA test procedures approved at 40 CFR Part 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants*, as amended, unless other test procedures are specified in Order No. R9-2009-0001 or this MRP, or by the San Diego Water Board and USEPA.

D. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Public Health or a laboratory approved by the San Diego Water Board.

E. Records o f monitoring information shall include information required under Standard Provision, Attachment D, Section IV.

F. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices. Annually, the Discharger shall submit to the Executive Officer a written statement signed by a registered professional engineer certifying that all flow measurement devices have been calibrated and will reliably achieve an accuracy with a maximum deviation of less than ±5 percent from true discharge rates throughout the range of expected discharge volumes.

G. The Discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. An annual report shall be submitted by March 30 of each year which summarizes the Quality Assurance activities for the previous year. Duplicate chemical analyses must be conducted on a minimum of ten percent of the samples or at least one sample per month, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples. When requested by USEPA or the San Diego Water Board, the Discharger will participate in the NPDES discharge monitoring report QA performance study. The Discharger should have a success rate equal or greater than 80 percent.

H. Analysis for toxic pollutants, including acute and chronic toxicity, with performance goals based on water quality objectives of the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan) shall be conducted in accordance with procedures described in the Ocean Plan and restated in this MRP.

I. A composite sample is defined as a combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, aliquots must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically. The 100 milliliter minimum volume of an aliquot does not apply to automatic self-purging samplers.

J. A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding 15 minutes.

K. All influent, effluent, and receiving water data shall be submitted annually to USEPA for inclusion in the STORET database. The data shall be submitted in an electronic format specified by USEPA.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations***

Discharge Point Name	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)	Depth (m)
--	INF-001	A location upstream of plant return streams, where a representative sample of the influent can be obtained	--
--	EMG-001	A location where a representative sample of the Tijuana Cross-Border Emergency Connection can be obtained.	--
001	EFF-001	A location where a representative sample of the effluent can be obtained	--
--	RS-001	A location where a representative sample of a return stream can be obtained; for multiple return streams, the return streams shall be sampled and composited based on each return streams contributing flow (flow weighted).	--
OFFSHORE MONITORING STATIONS			
--	F-001	32.637683 N; 117.240316W	18[1]
--	F-002	32.756966 N; 117.272733W	18[1]
--	F-003	32.781833 N; 117.272416W	18[1]
--	F-004	32.594533 N; 117.26875W	60[2]
--	F-005	32.611683 N; 117.26965W	60[2]
--	F-006	32.630833 N; 117.2736W	60[2]
--	F-007	32.651134 N; 117.279994W	60[2]
--	F-008	32.67215 N; 117.283W	60[2]
--	F-009	32.68555 N; 117.286316W	60[2]
--	F-010	32.705419 N; 117.290658W	60[2]
--	F-011	32.725544 N; 117.294632W	60[2]
--	F-012	32.746583 N; 117.302066W	60[2]
--	F-013	32.765383 N; 117.3072W	60[2]
--	F-014	32.781559 N; 117.311423W	60[2]
--	F-015	32.5941 N; 117.28645W	80[3]
--	F-016	32.611833 N; 117.290066W	80[3]
--	F-017	32.630016 N; 117.294166W	80[3]
--	F-018	32.649766 N; 117.298333W	80[3]
--	F-019	32.66785 N; 117.306833W	80[3]
--	F-020	32.685416 N; 117.310966W	80[3]
--	F-021	32.7038 N; 117.318687W	80[3]
--	F-022	32.72273 N; 117.320902W	80[3]
--	F-023	32.741883 N; 117.330416W	80[3]
--	F-024	32.761216 N; 117.33645W	80[3]

--	F-025	32.77895 N; 117.343583W	80[3]
--	F-026	32.593766 N; 117.3122W	98[4]
--	F-027	32.611783 N; 117.321383W	98[4]
--	F-028	32.629287 N; 117.323721W	98[4]
--	F-029	32.647815 N; 117.32493W	98[4]
--	F-030	32.66567 N; 117.32483W	98[4]
--	F-031	32.684668 N; 117.328353W	98[4]
--	F-032	32.701416 N; 117.334166W	98[4]
--	F-033	32.720466 N; 117.339916W	98[4]
--	F-034	32.7389 N; 117.349366W	98[4]
--	F-035	32.7577 N; 117.363383W	98[4]
--	F-036	32.776783 N; 117.374566W	98[4]
KELP MONITORING STATIONS			
--	A-001	32° 39.56'; 117° 15.72'	18[1]
--	A-006	32° 41.56'; 117° 16.18'	18[1]
--	A-007	32° 40.53'; 117° 16.01'	18[1]
--	C-004	32° 39.95'; 117° 14.98'	9[5]
--	C-005	32° 40.75'; 117° 15.40'	9[5]
--	C-006	32° 41.62'; 117° 15.68'	9[5]
--	C-007	32° 42.98'; 117° 16.33'	18[1]
--	C-008	32° 43.96'; 117° 16.40'	18[1]
SHORELINE BACTERIA STATIONS			
--	D-004	At the southernmost tip of Point Loma just north of the lighthouse. 32° 39.94'; 117° 14.62'	--
--	D-005	Directly in front of the Point Loma Wastewater Treatment Plant where the outfall enters the ocean. 32° 40.85'; 117° 14.94'	--
--	D-007	Sunset Cliffs at the foot of the stairs seaward of Ladera Street. 32° 43.16'; 117° 15.44'	--
--	D-008	Ocean Beach at the foot of the stairs seaward of Bermuda Street. 32° 44.22'; 117° 15.32'	--
--	D-009	Just south of the Ocean Beach pier at the foot of the stairs seaward of Narragansett. 32° 44.80'; 117° 15.24'	--
--	D-010	Ocean Beach just north of west end of Newport Avenue, directly west of main lifeguard station. 32° 44.95'; 117° 15.18'	--
--	D-011	North Ocean Beach, directly west of south end of Dog Beach parking area at Voltaire St terminus, south of stub jetty. 32° 45.24'; 117° 15.16'	--

--	D-012	Mission Beach, directly west of main lifeguard station in Belmont Park located at the west end of Mission Bay Drive. 32° 46.28'; 117° 15.21'	--
OFFSHORE SEDIMENT STATIONS			
Primary Core Stations			
--	B-009	32° 45.33'; 117° 21.70'	98
--	B-012	32° 46.36'; 117° 22.30'	98
--	E-002	32° 37.45'; 117° 19.09'	98
--	E-005	32° 38.38'; 117° 19.28'	98
--	E-008	32° 38.91'; 117° 19.34'	98
--	E-011	32° 39.40'; 117° 19.42'	98
--	E-014	32° 39.94'; 117° 19.49'	98
--	E-017	32° 40.48'; 117° 19.54'	98
--	E-020	32° 40.96'; 117° 19.67'	98
--	E-023	32° 41.47'; 117° 19.77'	98
--	E-025	32° 42.38'; 117° 20.07'	98
--	E-026	32° 43.82'; 117° 20.57'	98
Secondary Core Stations			
--	B-008	32° 45.50'; 117° 20.77'	88
--	B-011	32° 46.57'; 117° 21.35'	88
--	E-001	32° 37.53'; 117° 18.35'	88
--	E-007	32° 39.00'; 117° 18.65'	88
--	E-019	32° 41.04'; 117° 19.18'	88
--	B-010	32° 45.22'; 117° 22.16'	116
--	E-003	32° 37.29'; 117° 20.09'	116
--	E-009	32° 38.75'; 117° 20.06'	116
--	E-015	32° 39.88'; 117° 19.91'	116
--	E-021	32° 40.89'; 117° 20.00'	116
TRAWL AND RIG FISH STATIONS			
--	SD-007 (Zone 4)	32° 35.06'; 117° 18.39'	100
--	SD-008 (Zone 3)	32° 37.54'; 117° 19.37'	100
--	SD-010 (Zone 1)	32° 39.16'; 117° 19.50'	100
--	SD-012 (Zone 1)	32° 40.65'; 117° 19.81'	100
--	SD-013 (Zone 2)	32° 42.83'; 117° 20.25'	100
--	SD-014 (Zone 2)	32° 44.30'; 117° 20.96'	100
Rig fish stations shall be located in an area centered around the following sites.			
--	RF-001	32° 40.32'; 117° 19.78'	107
--	RF-002	32° 45.67'; 117° 22.02'	96

1 Discrete depths for bacteria samples include: 1m, 12m, and 18m.
2 Discrete depths for bacteria samples include: 1m, 25m, and 60m.
3 Discrete depths for bacteria samples include: 1m, 25m, 60m, and 80m.
4 Discrete depths for bacteria samples include: 1m, 25m, 60m, 80m, and 98m.
5 Discrete depths for bacteria samples include: 1m, 3m, and 9m.

III. INFLUENT AND EMERGENCY CONNECTION MONITORING REQUIREMENTS

A. Monitoring Location INF-001 and EMG-001

Influent monitoring is required to determine the effectiveness of pretreatment and non-industrial source control programs, to assess the performance of treatment facilities, and to evaluate compliance with effluent limitations. As such, influent monitoring results must accurately characterize raw wastewater from the entire service area of the treatment facilities, unaffected by in-plant return or recycle flows or the addition of treatment chemicals. Influent monitoring shall be conducted at INF-001 and EMG-001 (when flow is present) as shown in the table below.

Table E-2. Influent and Emergency Connection Monitoring at INF-001 and EMG-001

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow rate	MGD	recorder/totalizer	Continuous	[1]
Biochemical Oxygen Demand (5-day @20°C) (BOD_5)	mg/L	24-hr composite	1/Day at INF-001 1/Week at EMG-001	[1]
Volatile Suspended Solids	mg/L	24-hr composite	1/Day at INF-001 1/Week at EMG-001	[1]
Total Dissolved Solids (TDS)	mg/L	24-hr composite	1/Day at INF-001 1/Week at EMG-001	[1]
Temperature	°C	grab	1/Day at INF-001 1/Week at EMG-001	[1]
Floating Particulates	mg/L	24-hr composite	1/Day at INF-001 1/Week at EMG-001	[1]
TABLE A PARAMETERS				
Oil and Grease	mg/L	grab	1/Day at INF-001 1/Week at EMG-001	[1]
Total Suspended Solids	mg/L	24-hr composite	1/Day at INF-001 1/Week at EMG-001	[1]
Settleable Solids	ml/L	grab	1/Day at INF-001 1/Week at EMG-001	[1]
Turbidity	NTU	grab	1/Day at INF-001 1/Week at EMG-001	[1]
pH	units	grab	1/Day at INF-001 1/Week at EMG-001	[1]
TABLE B PARAMETERS FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic, Total Recoverable	µg/L	24-hr composite	1/Week	[1]
Cadmium, Total Recoverable	µg/L	24-hr composite	1/Week	[1]
Chromium (VI), Total Recoverable[2]	µg/L	24-hr composite	1/Week	[1]
Copper, Total Recoverable	µg/L	24-hr composite	1/Week	[1]
Lead, Total Recoverable	µg/L	24-hr composite	1/Week	[1]
Mercury, Total Recoverable[12]	µg/L	24-hr composite	1/Week	[1]
Nickel, Total Recoverable	µg/L	24-hr composite	1/Week	[1]
Selenium, Total Recoverable	µg/L	24-hr composite	1/Week	[1]
Silver, Total Recoverable	µg/L	24-hr composite	1/Week	[1]
Zinc, Total Recoverable	µg/L	24-hr composite	1/Week	[1]

Cyanide, Total Recoverable[3]	µg/L	24-hr composite	1/Week	1
Ammonia (as N)	µg/L	24-hr composite	1/Week	1
Phenolic Compounds (nonchlorinated)	µg/L	24-hr composite	1/Week	1
Phenolic Compounds (chlorinated)	µg/L	24-hr composite	1/Week	1
Endosulfan[11]	µg/L	24-hr composite	1/Week	1
Endrin	µg/L	24-hr composite	1/Week	1
HCH[4]	µg/L	24-hr composite	1/Week	1
Radioactivity	pci/l	24-hr composite	1/Month	1
TABLE B PARAMETERS FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS				
Acrolein	µg/L	grab	1/Month	1
Antimony	µg/L	24-hr composite	1/Month	1
Bis(2-chloroethoxy)methane	µg/L	24-hr composite	1/Month	1
Bis(2-chloroisopropyl) ether	µg/L	24-hr composite	1/Month	1
Chlorobenzene	µg/L	grab	1/Month	1
Chromium (III), Total Recoverable[2]	µg/L	24-hr composite	1/Month	1
Di-n-butyl Phthalate	µg/L	24-hr composite	1/Month	1
Dichlorobenzenes[5]	µg/L	24-hr composite	1/Month	1
Diethyl Phthalate	µg/L	24-hr composite	1/Month	1
Dimethyl Phthalate	µg/L	24-hr composite	1/Month	1
4,6-dinitro-2-methylphenol	µg/L	24-hr composite	1/Month	1
2,4-dinitrophenol	µg/L	24-hr composite	1/Month	1
Ethylbenzene	µg/L	grab	1/Month	1
Fluoranthene	µg/L	24-hr composite	1/Month	1
Hexachlorocyclopentadiene	µg/L	24-hr composite	1/Month	1
Nitrobenzene	µg/L	24-hr composite	1/Month	1
Thallium, Total Recoverable	µg/L	24-hr composite	1/Month	1
Toluene	µg/L	grab	1/Month	1
Tributyltin	µg/L	24-hr composite	1/Month	1
1,1,1-trichloroethane	µg/L	grab	1/Month	1
TABLE B PARAMETERS FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS				
Acrylonitrile	µg/L	grab	1/Month	1
Aldrin	µg/L	24-hr composite	1/Week	1
Benzene	µg/L	grab	1/Month	1
Benzidine	µg/L	24-hr composite	1/Month	1
Beryllium	µg/L	24-hr composite	1/Month	1
Bis(2-chloroethyl) Ether	µg/L	24-hr composite	1/Month	1
Bis(2-ethlyhexyl) Phthalate	µg/L	24-hr composite	1/Month	1
Carbon Tetrachloride	µg/L	grab	1/Month	1
Chlordane	µg/L	24-hr composite	1/Week	1
Chlorodibromethane	µg/L	24-hr composite	1/Month	1
Chloroform	µg/L	grab	1/Month	1
DDT[6]	µg/L	24-hr composite	1/Week	1
1,4-dichlorobenzene	µg/L	24-hr composite	1/Month	1

3,3'-dichlorobenzidine	µg/L	24-hr composite	1/Month	1
1,2-dichloroethane	µg/L	grab	1/Month	1
1,1-dichloroethylene	µg/L	grab	1/Month	1
Dichlorobromomethane	µg/L	24-hr composite	1/Month	1
Dichloromethane	µg/L	grab	1/Month	1
1,3-dichloropropene	µg/L	24-hr composite	1/Month	1
Dieldrin	µg/L	24-hr composite	1/Week	1
2,4-dinitrotoluene	µg/L	24-hr composite	1/Month	1
1,2-diphenylhydrazine	µg/L	24-hr composite	1/Month	1
Halomethanes[7]	µg/L	24-hr composite	1/Month	1
Heptachlor	µg/L	24-hr composite	1/Month	1
Heptachlor Epoxide	µg/L	24-hr composite	1/Month	1
Hexachlorobenzene	µg/L	24-hr composite	1/Month	1
Hexachlorobutadiene	µg/L	24-hr composite	1/Month	1
Hexachloroethane	µg/L	24-hr composite	1/Month	1
Isophorone	µg/L	24-hr composite	1/Month	1
N-nitrosodimethylamine	µg/L	24-hr composite	1/Month	1
N-nitrosodi-N-propylamine	µg/L	24-hr composite	1/Month	1
N-nitrosodiphenylamine	µg/L	24-hr composite	1/Month	1
PAHs[8]	µg/L	24-hr composite	1/Month	1
PCBs[9]	µg/L	24-hr composite	1/Week	1
1,1,2,2-tetrachloroethane	µg/L	grab	1/Month	1
TCDD equivalents[10]	µg/L	24-hr composite	1/Month	1
Tetrachloroethylene	µg/L	grab	1/Month	1
Toxaphene	µg/L	24-hr composite	1/Week	1
Trichloroethylene	µg/L	grab	1/Month	1
1,1,2-trichloroethane	µg/L	grab	1/Month	1
2,4,6-trichlorophenol	µg/L	24-hr composite	1/Month	1
Vinyl Chloride	µg/L	grab	1/Month	1
Remaining priority pollutants[13]	µg/L	24-hr composite	1/Month	1

1 As required under 40 CFR 136.

2 Dischargers may, at their option, meet this limitation (or apply this performance goal) as a total chromium limitation (or performance goal).

3 If a Discharger can demonstrate to the satisfaction of the San Diego Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations (or performance goals) for cyanide may be met by the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136.

4 HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

5 Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.

6 DDD (dichlorodiphenyldichloroethane), DDE (dichlorodiphenyldichloroethylene), and DDT (dichlorodiphenyltrichloroethane) represent the sum of 4,4'DDT; 2,4'DDT; 4,4'DDE; 2,4'DDE; 4,4'DDD; and 2,4'DDD.

7 Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

8 PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenaphthylene; anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo[k]fluoranthene; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[ah]anthracene; fluorene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene.

9 PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

10 TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 1613 shall be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

11 Endosulfan shall mean the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

12 USEPA Method 1631E, with a quantitation level of 0.5 ng/L, shall be used to analyze total mercury.

13 Also including the 301(h) pesticides listed at 40 CFR 125.58(p).

IV. EFFLUENT MONITORING REQUIREMENTS

Effluent monitoring is required to determine compliance with the permit conditions and to identify operational problems and improve plant performance. Effluent monitoring also provides information on wastewater characteristics and flows for use in interpreting water quality and biological data. The effluent sampling station shall be located where representative samples of the effluent can be obtained. The sampling station shall be located downstream from any in-plant return flows and from the last connection through which waste can be admitted to the outfalll. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level. The Discharger shall monitor effluent at EFF-001 as follows.

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow rate	MGD	recorder/totalizer	Continuous	[1]
BOD_5@20°C	mg/L	24-hr composite	1/Day	[1]
	% removal[13]	calculate	1/Day	[1]
Volatile Suspended Solids	mg/L	24-hr composite	1/Day	[1]
Total Dissolved Solids	mg/L	24-hr composite	1/Day	[1]
Temperature	°C	grab	1/Day	[1]

Total Residual Chlorine[15]	µg/L	Continuous[12]	Continuous	1
Floating Particulates	mg/L	24-hr composite	1/Day	1
TABLE A PARAMETERS				
Oil and Grease	mg/L	grab	1/Day	1
Total Suspended Solids	mg/L	24-hr composite	1/Day	1
	% removal[13]	calculate	1/Day	1
Settleable Solids	ml/L	grab	1/Day	1
Turbidity	NTU	grab	1/Day	1
pH	units	grab	1/Day	1
Total Coliform	CFU/100ml	grab	1/Week	
Fecal Coliform	CFU/100ml	grab	1/Week	
Enterococcus	CFU/100ml	grab	1/Week	
TABLE B PARAMETERS FOR PROTECTION OF MARINE AQUATIC LIFE				
Arsenic, Total Recoverable	µg/L	24-hr composite	1/Week	1
Cadmium, Total Recoverable	µg/L	24-hr composite	1/Week	1
Chromium (VI) , Total Recoverable[2]	µg/L	24-hr composite	1/Week	1
Copper, Total Recoverable	µg/L	24-hr composite	1/Week	1
Lead, Total Recoverable	µg/L	24-hr composite	1/Week	1
Mercury, Total Recoverable[14]	µg/L	24-hr composite	1/Week	1
Nickel, Total Recoverable	µg/L	24-hr composite	1/Week	1
Selenium, Total Recoverable	µg/L	24-hr composite	1/Week	1
Silver, Total Recoverable	µg/L	24-hr composite	1/Week	1
Zinc, Total Recoverable	µg/L	24-hr composite	1/Week	1
Cyanide, Total Recoverable[3]	µg/L	24-hr composite	1/Week	1
Ammonia (as N)	µg/L	24-hr composite	1/Week	1
Phenolic Compounds (nonchlorinated)	µg/L	24-hr composite	1/Week	1
Phenolic Compounds (chlorinated)	µg/L	24-hr composite	1/Week	1
Endosulfan[11]	µg/L	24-hr composite	1/Week	1
Endrin	µg/L	24-hr composite	1/Week	1
HCH[4]	µg/L	24-hr composite	1/Week	1
Radioactivity	pci/l	24-hr composite	1/Month	1
TABLE B PARAMETERS FOR PROTECTION OF HUMAN HEALTH – NON CARCINOGENS				
Acrolein	µg/L	grab	1/Month	1
Antimony	µg/L	24-hr composite	1/Month	1
bis(2-chloroethoxy)methane	µg/L	24-hr composite	1/Month	1
Bis(2-chloroisopropyl) ether	µg/L	24-hr composite	1/Month	1
Chlorobenzene	µg/L	grab	1/Month	1
Chromium (III)[2]	µg/L	24-hr composite	1/Month	1
Di-n-butyl Phthalate	µg/L	24-hr composite	1/Month	1
Dichlorobenzenes[5]	µg/L	24-hr composite	1/Month	1
Diethyl Phthalate	µg/L	24-hr composite	1/Month	1
Dimethyl Phthalate	µg/L	24-hr composite	1/Month	1

4,6-dinitro-2-methylphenol	μg/L	24-hr composite	1/Month	1
2,4-dinitrophenol	μg/L	24-hr composite	1/Month	1
Ethylbenzene	μg/L	grab	1/Month	1
Fluoranthene	μg/L	24-hr composite	1/Month	1
Hexachlorocyclopentadiene	μg/L	24-hr composite	1/Month	1
Nitrobenzene	μg/L	24-hr composite	1/Month	1
Thallium, Total Recoverable	μg/L	24-hr composite	1/Month	1
Toluene	μg/L	grab	1/Month	1
Tributyltin	μg/L	24-hr composite	1/Month	1
1,1,1-trichloroethane	μg/L	grab	1/Month	1
TABLE B PARAMETERS FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS				
Acrylonitrile	μg/L	grab	1/Month	1
Aldrin	μg/L	24-hr composite	1/Week	1
Benzene	μg/L	grab	1/Month	1
Benzidine	μg/L	24-hr composite	1/Month	1
Beryllium	μg/L	24-hr composite	1/Month	1
Bis(2-chloroethyl) Ether	μg/L	24-hr composite	1/Month	1
Bis(2-ethlyhexyl) Phthalate	μg/L	24-hr composite	1/Month	1
Carbon Tetrachloride	μg/L	grab	1/Month	1
Chlordane	μg/L	24-hr composite	1/Week	1
Chlorodibromethane	μg/L	24-hr composite	1/Month	1
Chloroform	μg/L	grab	1/Month	1
DDT[6]	μg/L	24-hr composite	1/Week	1
1,4-dichlorobenzene	μg/L	24-hr composite	1/Month	1
3,3'-dichlorobenzidine	μg/L	24-hr composite	1/Month	1
1,2-dichloroethane	μg/L	grab	1/Month	1
1,1-dichloroethylene	μg/L	grab	1/Month	1
Dichlorobromomethane	μg/L	24-hr composite	1/Month	1
Dichloromethane	μg/L	grab	1/Month	1
1,3-dichloropropene	μg/L	24-hr composite	1/Month	1
Dieldrin	μg/L	24-hr composite	1/Week	1
2,4-dinitrotoluene	μg/L	24-hr composite	1/Month	1
1,2-diphenylhydrazine	μg/L	24-hr composite	1/Month	1
Halomethanes[7]	μg/L	24-hr composite	1/Month	1
Heptachlor	μg/L	24-hr composite	1/Month	1
Heptachlor Epoxide	μg/L	24-hr composite	1/Month	1
Hexachlorobenzene	μg/L	24-hr composite	1/Month	1
Hexachlorobutadiene	μg/L	24-hr composite	1/Month	1
Hexachloroethane	μg/L	24-hr composite	1/Month	1
Isophorone	μg/L	24-hr composite	1/Month	1
N-nitrosodimethylamine	μg/L	24-hr composite	1/Month	1
N-nitrosodi-N-propylamine	μg/L	24-hr composite	1/Month	1
N-nitrosodiphenylamine	μg/L	24-hr composite	1/Month	1
PAHs[8]	μg/L	24-hr composite	1/Month	1
PCBs[9]	μg/L	24-hr composite	1/Week	1

1,1,2,2-tetrachloroethane	µg/L	grab	1/Month	1
TCDD equivalents[10]	µg/L	24-hr composite	1/Month	1
Tetrachloroethylene	µg/L	grab	1/Month	1
Toxaphene	µg/L	24-hr composite	1/Week	1
Trichloroethylene	µg/L	grab	1/Month	1
1,1,2-trichloroethane	µg/L	grab	1/Month	1
2,4,6-trichlorophenol	µg/L	24-hr composite	1/Month	1
Vinyl Chloride	µg/L	grab	1/Month	1
Remaining priority pollutants[16]	µg/L	24-hr composite	1/Month	1

1 As required under 40 CFR 136.

2 Dischargers may, at their option, meet this limitation (or apply this performance goal) as a total chromium limitation (or performance goal).

3 If a Discharger can demonstrate to the satisfaction of the San Diego Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations (or performance goals) for cyanide may be met by the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136

4 HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

5 Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.

6 DDD (dichlorodiphenyldichloroethane), DDE (dichlorodiphenyldichloroethylene), and DDT (dichlorodiphenyltrichloroethane) represent the sum of 4,4'DDT; 2,4'DDT; 4,4'DDE; 2,4'DDE; 4,4'DDD; and 2,4'DDD.

7 Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

8 PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenaphthylene; anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo[k]fluoranthene; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[ah]anthracene; fluorene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene.

9 PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

10 TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 1613 shall be used to analyze TCDD equivalents.

Isomer Group	**Toxicity Equivalence Factor**
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

11 Endosulfan shall mean the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

[12] Continuous monitoring for total residual chlorine becomes effective 6 months after the adoption date of this Order. At a minimum, daily grab samples shall be taken until continuous monitoring becomes possible (not to exceed 180 days following the adoption of this Order).

[13] Percent removal shall be calculated and reported based on mass for the Point Loma WTP and System-Wide:

Point Loma WTP % removal = (Influent mass – effluent mass) / Influent mass
Where:
Influent mass (lbs/day) = Influent flow (MGD) x influent parameter concentration (mg/L) x 8.34
Effluent mass (lbs/day) = Effluent flow (MGD) x effluent parameter concentration (mg/L) x 8.34

System-Wide % removal = [((System Influents–Return Streams) – Outfall Discharge)/(System Influents-Return Streams)] X 100
Where:
System Influents = Point Loma WTP influent, North City Water Reclamation Plant (NCWRP) Influent Pump Station, and NCWRP Influent from Penasquitos Pump Station.
Return Streams = NCWRP Filter Backwash, NCWRP Plant Drain, NCWRP Secondary and Un-disinfected Filtered Effluent Bypass, NCWRP Final Effluent, and MBC Centrate.

[14] USEPA Method 1631E, with a quantitation level 0.5 ng/l, shall be used to analyzed total mercury.

[15] Continuous monitoring is required. Within 180 days of the effective date of this permit, the Discharger shall begin continuous monitoring for total chlorine residual. Until that time, at least four grab samples per day, representative of the daily discharge, shall be collected immediately prior to entering the PLOO and analyzed for total chlorine residual. ***

[16] Also including the 301(h) pesticides listed at 40 CFR 125.58(p).

For system-wide percent removal the TSS and BOD_5 concentration, together with flow rate, of each stream shall be measured daily and a system-wide removal rate calculated according to the above formula. In the event that a flow rate measurement, TSS concentration, or BOD_5 concentration is not obtained from a stream, the median value for the previous calendar year for that stream shall be used as a surrogate number to allow completion of the calculation. The Discharger shall be required to flag values where surrogate numbers are used in their self-monitoring reports submitted to the Executive Officer. The failure to obtain a value may still be considered a violation of the permit that could result in enforcement action depending on the frequency of failures and efforts by the Discharger to prevent such failures.

V. WHOLE EFFLUENT T OXICITY TESTING REQUIREMENTS

The Discharger shall conduct acute and chronic toxicity testing on effluent samples collected at Effluent Monitoring Station EFF-001 in accordance with the following schedule and requirements:

Table E-4. Whole Effluent Toxicity Testing

Test	Unit	Sample	Minimum Test Frequency
Acute Toxicity	TU_a	24-Hr Composite	2/Year
Chronic Toxicity	TU_c	24-Hr. Composite	1/Month

A. Chronic Whole Effluent Toxicity Testing Requirements

1. Monitoring Frequency for Chronic Toxicity

The Discharger shall conduct monthly chronic toxicity tests on 24-hour composite effluent samples. For the initial three suites of chronic toxicity tests, the Discharger shall split a 24-hour composite effluent sample and concurrently conduct toxicity tests using a fish, an invertebrate, and an alga species. After the initial screening period, the Discharger shall conduct routine monthly toxicity testing using the most sensitive species. Every other year, the Discharger shall re-screen at a different time from the prior years. Re-screening can be limited to one month, if results are the same as the previous three-month screening. However, if results of the re-screening are different, then the Discharger shall conduct two additional months of re-screening to determine the most sensitive species and then conduct routine monthly toxicity testing using the most sensitive species.

Chronic toxicity test samples shall be collected for each point of discharge at the designated NPDES sampling station for the effluent (i.e., downstream from the last treatment process and any in-plant return flows where a representative effluent sample can be obtained). A split of each sample shall be analyzed for all other monitored parameters at the minimum frequency of analysis specified by the effluent monitoring program.

2. Marine and Estuarine Species and Chronic Test Methods

Species and short-term test methods for estimating the chronic toxicity of NPDES effluents are found in the first edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995), as amended, and applicable water quality standards. The Discharger shall conduct a static renewal toxicity test with the topsmelt, *Atherinops affinis* (Larval Survival and Growth Test Method 1006.01); a static non-renewal toxicity test with the giant kelp, *Macrocystis pyrifera* (Germination and Growth Test Method 1009.0); and a toxicity test with one of the following invertebrate species:

a. Static renewal toxicity test with the mysid, *Holmesimysis costata* (Survival and Growth Test Method 1007.01);
b. Static non-renewal toxicity test with the Pacific oyster, *Crassostrea gigas*, or the mussel, *Mytilus* spp., (Embryo-larval Shell Development Test Method 1005.0);
c. Static non-renewal toxicity test with the red abalone, *Haliotis rufescens* (Larval Shell Development Test Method);
d. Static non-renewal toxicity test with the purple sea urchin, *Strongylocentrotus purpuratus*, or the sand dollar, *Dendraster excentricus* (Embryo-larval Development Test Method); or
e. Static non-renewal toxicity test with the purple sea urchin, *Strongylocentrotus purpuratus*, or the sand dollar, *Dendraster excentricus* (Fertilization Test Method 1008.0).

If laboratory-held cultures of the topsmelt, *Atherinops affinis*, are not available for testing, then the Discharger shall conduct a static renewal toxicity test with the inland silverside, *Menidia beryllina* (Larval Survival and Growth Test Method 1006.01), found in the third edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821/R-02/014, 2002; Table IA, 40 CFR Part 136).

3. Quality Assurance for Chronic Toxicity Testing

a. Quality assurance measures, instructions, and other recommendations and requirements are found in the test methods manuals previously referenced. Additional requirements are specified, below.

b. For this discharge, a mixing zone or dilution allowance is authorized. The chronic instream waste concentration (IWC) for this discharge is 0.4878% effluent. A series of at least five effluent dilutions and a control shall be tested. At minimum, the dilution series shall include and bracket the IWC.

c. Effluent dilution water and control water should be prepared and used as specified in the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995) and/or *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821/R-02/014, 2002). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used. If the use of artificial sea salts is considered provisional in the test method, then artificial sea salts shall not be used to increase the salinity of the effluent sample prior to toxicity testing without written approval by the Executive Officer and USEPA.

d. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).

e. If either the reference toxicant or effluent toxicity tests do not meet all test acceptability criteria in the test methods manual, then the Discharger must resample and retest within 14 days.

f. Following Paragraph 10.2.6.2 in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821/R-02/014, 2002), all chronic toxicity test results from the multi-concentration tests required by this permit must be reviewed and reported according to USEPA guidance on the evaluation of concentration-response relationships found in *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR 136) (EPA/821/B-00-004, 2000).

g. Because this permit requires sublethal hypothesis testing endpoints from test methods in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995), within-test variability must be reviewed for acceptability and a variability criterion (upper %MSD bound) must be applied, as directed under each test method. Based on this review, only accepted effluent toxicity test results shall be reported on the DMR form. If excessive within-test variability invalidates a test result, then the Discharger must resample and retest within 14 days.

h. Because this permit provides for a sublethal hypothesis testing endpoint from Method 1006.0 in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPA/821/R-02/014, 2002), within-test variability must be reviewed for acceptability and variability criteria (upper and lower PMSD bounds) must be applied, as directed under Section 10.2.8 - Test Variability of the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms.* Under Section 10.2.8, the calculated percent minimum significant difference (PMSD) for both reference toxicant test and effluent toxicity test results must be compared with the upper and lower PMSD bounds variability criteria specified in Table 6 - Variability Criteria (Upper and Lower PMSD Bounds) for Sublethal Hypothesis Testing Endpoints Submitted Under NPDES Permits, following the review criteria in Paragraphs 10.2.8.2.1 through 10.2.8.2.5 of the test methods manual. Based on this review, only accepted effluent toxicity test results shall be reported on the DMR form. If excessive within-test variability invalidates a test result, then the Discharger must resample and retest within 14 days.

i. If the effluent is chlorinated and discharged without further treatment, then chlorine shall not be removed from the effluent sample prior to toxicity testing without written approval by the Executive Officer and USEPA.

4. Reporting of Chronic Toxicity Monitoring Results

a. A full laboratory report for all toxicity testing shall be submitted for the month in which the toxicity test was conducted and shall also include the toxicity test results as TUc = 100/NOEC and as EC25 (or IC25), reported according to the test methods manual chapter on report preparation and test review; the dates of sample collection and initiation of each toxicity test; water quality measurements monitored in the Toxicology Lab concurrently with the toxicity test(s); and progress reports on accelerated testing and TRE/TIE investigations.

b. The Discharger shall notify the San Diego Water Board and USEPA in writing within 14 days of exceedance of the chronic toxicity effluent limit. This notification shall describe actions the Discharger has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or reason(s) that no action has been taken.

B. Acute Whole Effluent Toxicity Testing Requirements

1. Monitoring Frequency for Acute Toxicity

The Discharger shall conduct semi-annual acute toxicity tests on 24-hour composite effluent samples. For the initial three suites of acute toxicity tests, performed concurrently, the Discharger shall split a 24-hour composite effluent sample and conduct toxicity tests using a fish and an invertebrate. After the initial screening period, the Discharger shall conduct routine semi-annual toxicity testing using the most sensitive species. Every other year, the Discharger shall re-screen at a different time from the prior years. Re-screening can be limited to one month, if results are the same as the previous three-month screening. However, if results of the re-screening are different, then the Discharger shall conduct two additional months of re-screening to determine the most sensitive species and then conduct routine semi-annual toxicity testing using the most sensitive species.

Acute toxicity test samples shall be collected for each point of discharge at the designated NPDES sampling station for the effluent (i.e., downstream from the last treatment process and any in-plant return flows where a representative effluent sample can be obtained). A split of each sample shall be analyzed for all other monitored parameters at the minimum frequency of analysis specified by the effluent monitoring program.

2. Marine and Estuarine Species and Acute Test Methods

The Discharger shall conduct 96-hour static renewal toxicity tests with the following vertebrate species:

a. The topsmelt, *Atherinops affinis* (Larval Survival and Growth Test Method 1006.0 in the first edition of Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms (EPA/600/R-95/136, 1995) (preferred for Pacific Coast waters);

b. The Inland silverside, *Menidia beryllina*; Atlantic silverside, *Menidia menidia*; or Tidewater silverside, *Menidia peninsulae* (Acute Toxicity Test Method 2006.0);

c. The sheepshead minnow, *Cyprinodon varigatus* (Acute Toxicity Test Method 2004.0);

And the following invertebrate species:

d. The West Coast mysid, *Holmesimysis costata* (Table 19 in the acute test methods manual) (preferred for Pacific Coast waters);

e. The mysid, *Americamysis bahia* (Acute Toxicity Test Method 2007.0).

Where not indicated, above, species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the fifth edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012, 2002; Table IA, 40 CFR Part 136).

3. Quality Assurance for Acute Toxicity Testing

a. Quality assurance measures, instructions, and other recommendations and requirements are found in the test methods manual previously referenced. Additional requirements are specified, below.

b. For this discharge, a mixing zone or dilution allowance is authorized such that the critical IWC is set at a % effluent value lower than 100% effluent. The acute instream waste concentration (IWC) for this discharge is 15.57% effluent. A series of at least five effluent dilutions and a control shall be tested. At minimum, the dilution series shall include and bracket the IWC.

c. Effluent dilution water and control water should be prepared and used as specified in the test methods manual *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPA/821/R-02/012, 2002); and/or, for *Atherinops affinis*, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used. If the use of artificial sea salts is considered provisional in the test method, then artificial sea salts shall not be used to increase the salinity of the effluent sample prior to toxicity testing without written approval by the Executive Officer and USEPA.

d. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).

e. If either the reference toxicant or effluent toxicity tests do not meet all test acceptability criteria in the test methods manual, then the Discharger must resample and retest within 14 days.

f. Following Paragraph 12.2.6.2 of the acute test methods manual, all acute toxicity test results from the multi-concentration tests required by this permit must be reviewed and reported according to USEPA guidance on the evaluation of concentration-response relationships found in *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR 136) (EPA/821/B-00/004, 2000).

g. Within-test variability of individual toxicity tests should be reviewed for acceptability and variability criteria (upper and lower PMSD bounds) should be applied, as directed under Section 12.2.8 - Test Variability of the test methods manual, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.* Under Section 12.2.8, the calculated percent minimum significant difference (PMSD) for both reference toxicant test and effluent toxicity test results must be compared with the upper and lower PMSD bounds variability criteria specified in Table 3-6 - Range of Relative Variability for Endpoints of Promulgated WET Methods, Defined by the 10th and 90th Percentiles from the Data Set of Reference Toxicant Tests, taken from *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program* (EPA/833/R-00/003, 2000). Based on this review, only accepted effluent toxicity test results shall be reported on the DMR form. If excessive within-test variability invalidates a test result, then the Discharger must resample and retest within 14 days.

h. Because this permit provides for a 96-hour LC50 endpoint from Method 1006.0 in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPA/600/R-95/136, 1995), with-in test variability must be reviewed for acceptability and a variability criterion (upper %MSD bound) must be applied, as directed under the test method. Based on this review, only accepted effluent toxicity test results shall be reported on the DMR form. If excessive within-test variability invalidates a test result, then the Discharger must resample and retest within 14 days.

i. If the effluent is chlorinated and discharged without further treatment, then chlorine shall not be removed from the effluent sample prior to toxicity testing without written approval by the Executive Officer and USEPA.

j. Where total ammonia concentrations in the effluent are >5 mg/l, toxicity may be contributed by unionized ammonia. pH drift during the toxicity test may contribute to artifactual toxicity when ammonia or other pH-dependent toxicants (e.g., metals) are present. This problem is minimized by conducting toxicity tests in a static-renewal or flow-through mode, as outlined in Paragraph 9.5.9 of the acute test methods manual.

k. pH drift during the toxicity test may contribute to artifactual toxicity when pH-dependent toxicants (e.g., ammonia, metals) are present in an effluent. To determine whether or not pH drift during the toxicity test is contributing to artifactual toxicity, the Discharger shall conduct three sets of parallel toxicity tests, in which the pH of one treatment is controlled at the pH of the effluent and the pH of the other treatment is not controlled. Like a TIE, this test shall begin within 14 days of receipt of test results indicating acute toxicity exceedance. Testing shall be conducted as described in Section 11.3.6.1 of the test methods manual, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA/821/R-02/013, 2002). Toxicity is confirmed to be artifactual and due to pH drift when no toxicity above the toxicity effluent limit is observed in the treatments controlled at the pH of the effluent. If toxicity is confirmed to be artifactual and due to pH drift, then, following written approval by the Executive Officer and USEPA, the Discharger may use the procedures outlined in Section 11.3.6.2 of the test methods manual to control sample pH during the toxicity test.

4. Reporting of Acute Toxicity Monitoring Results

a. A full laboratory report for all toxicity testing shall be submitted as an attachment to the DMR for the month in which the toxicity test was conducted and shall also include: the toxicity test results—LC50; TUa = 100/LC50—reported according to the test methods manual chapter on report preparation and test review; the dates of sample collection and initiation of each toxicity test; all results for effluent parameters monitored concurrently with the toxicity test(s); and progress reports on TRE/TIE investigations.

b. The Discharger shall notify the San Diego Water Board and USEPA in writing within 14 days of exceedance of an acute toxicity effluent performance goal. This notification shall describe actions the Discharger has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or reason(s) that no action has been taken.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Core Monitoring

There are five components to the Core Monitoring Program: general water quality monitoring and bacteriological monitoring of shoreline, kelp bed, and offshore waters; offshore sediment monitoring for grain size, chemistry, and benthic infauna community structure; offshore monitoring for fish and megabenthic invertebrate communities, and contaminant body burdens of fishes; and nearshore monitoring of kelp bed canopy cover.

1. General Water Quality Monitoring of Shoreline, Kelp Bed and Offshore Waters

The general water quality monitoring program is designed to help evaluate the fate of the wastewater plume under various conditions and to determine if Ocean Plan water quality standards are being met. The Discharger shall monitor the receiving water at the offshore, kelp bed, and shoreline monitoring stations, as follows:

Table E-5. General Water Quality Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency			Required Analytical Test Method
			Offshore Stations	Kelp Stations	Shoreline Stations	
Temperature	°C	Profile	1/Quarter	5/Month	--	1
Salinity	ppt	Profile	1/Quarter	5/Month	--	1
Dissolved Oxygen	mg/L	Profile	1/Quarter	5/Month	--	1
Light Transmittance	%	Profile	1/Quarter	5/Month	--	1
Chlorophyll a	μg/L	Profile	1/Quarter	5/Month	--	1
pH	units	Profile	1/Quarter	5/Month	--	1
Ammonium	mg/L	Grab	1/Quarter	1/Quarter	--	3
Visual Observations[2]	--	Visual	1/Quarter	5/Month	5/Month	--

1 As specified in 40 CFR 136.3.

2 Visual observations shall note the presence or absence of floatable materials of sewage origin. Observations of wind (direction and speed), weather (e.g., cloudy, sunny, or rainy), and tidal conditions (e.g., high or low tide) shall be recorded. Observations of water color, discoloration, oil and grease, turbidity, odor, materials of sewage origin in the water or on the beach shall be recorded. These observations shall be recorded whenever a sample is collected. Further, the nature and extent of primary contact recreation use in federal waters must be noted and reported.

3 Shall be monitored in State jurisdictional waters only, at the same discrete depths specified for bacterial monitoring in Table E-1.

Within 180 days of the effective date of this permit, the Discharger shall develop and implement a methodology for data analysis which identifies and logically evaluates out-of-range occurrences (ORO) for compliance with Ocean Plan water quality standards for transmissivity, dissolved oxygen, and pH, at offshore water quality stations. Data should be statistically evaluated by stratum (e.g., above, within, below pycnocline) and station. Sampling date reference station(s) should be identified using ocean current measurements and the location of the wastewater plume, etc. For analysis and discussion, stations may be grouped into relevant zones. The total number of out-of-compliance (OOC) events should be summed by parameter and the percentage of OROs and OOC calculated based on comparison with the total number of observations. Coordination with the State and San Diego Water Boards, USEPA, and SCCWRP is encouraged.

2. Bacteriological Monitoring of Shoreline, Kelp Bed and Offshore Waters

The bacteriological monitoring program is designed to help evaluate the fate of the wastewater plume under various conditions, to determine if Ocean Plan water quality standards for recreational waters are being met, and to address issues of beach water quality at the shoreline. The Discharger shall monitor the receiving water at the offshore, kelp bed, and shoreline monitoring stations, as follows:

Table E-6. Bacteriological Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency			Required Analytical Test Method
			Offshore Stations	Shoreline Stations	Kelp Stations	
Total Coliform	CFU/100ml	Grab	--	5/Month	5/Month	1,2
Fecal Coliform	CFU/100ml	Grab	--	5/Month	5/Month	1,2
Enterococcus	CFU/100ml	Grab	1/Quarter	5/Month	5/Month	1,2

1 As specified in 40 CFR 136.3.
2 Shall be monitored at all applicable discrete depths specified for bacterial monitoring in Table E-1.
3 Total coliform, fecal coliform, and enterococcus shall be sampled at the eight kelp bed stations at least five times per month, such that each day of the week is represented over a two month period.

3. Offshore Sediment Monitoring

The physical and chemical properties of sediments and the biological communities that live in or on these sediments are monitored to evaluate potential effects of the PLOO discharge and compliance with narrative water quality standards in the Ocean Plan. The core sediment monitoring program is designed to assess spatial and temporal trends. At the direction of the San Diego Water Board and USEPA, the requirement for sampling the secondary stations for the offshore sediment monitoring program can be relaxed to allow Discharger participation in Bight-wide regional monitoring efforts, or to accommodate Strategic Process Studies.

Twice per year (January and July), sediment samples for grain size and chemistry shall be collected from the offshore sediment monitoring locations specified in Table E-1, which consists of 12 primary stations and an additional 10 secondary stations. Sediment grab samples shall be taken using a 0.1 square meter modified Van Veen grab sampler. Samples for grain size and chemical analyses shall be taken from the top 2 centimeters of the grab. These samples shall be analyzed for the list of constituents, below. Chemical analysis of sediment shall be conducted using USEPA approved methods, methods developed by NOAA's National Status and Trends for Marine Environmental Quality, or methods developed in conjunction with the Southern California Bight Regional Monitoring Program. For chemical analysis of sediment, sample results shall be reported on a dry weight basis.

Table E-7. Offshore Sediment Chemistry Monitoring

Parameter	Units	Type of Sample	Minimum Frequency
Sediment grain size	µm	grab	2/Year[2]
Total Organic Carbon	Percent	grab	2/Year[2]
Total Nitrogen	Percent	grab	2/Year[2]
Acid Volatile Sulfides	mg/kg	grab	2/Year[2]
METALS			
Aluminum, Total Recoverable	mg/kg	grab	2/Year[2]
Antimony, Total Recoverable	mg/kg	grab	2/Year[2]
Arsenic, Total Recoverable	mg/kg	grab	2/Year[2]
Cadmium, Total Recoverable	mg/kg	grab	2/Year[2]

Parameter	Units	Type of Sample	Minimum Frequency
Chromium, Total Recoverable	mg/kg	grab	2/Year[2]
Copper, Total Recoverable	mg/kg	grab	2/Year[2]
Iron, Total Recoverable	mg/kg	grab	2/Year[2]
Lead, Total Recoverable	mg/kg	grab	2/Year[2]
Manganese, Total Recoverable	mg/kg	grab	2/Year[2]
Mercury, Total Recoverable	mg/kg	grab	2/Year[2]
Nickel, Total Recoverable	mg/kg	grab	2/Year[2]
Selenium, Total Recoverable	mg/kg	grab	2/Year[2]
Silver, Total Recoverable	mg/kg	grab	2/Year[2]
Tin, Total Recoverable	mg/kg	grab	2/Year[2]
Zinc, Total Recoverable	mg/kg	grab	2/Year[2]
PCBs AND CHLORINATED PESTICIDES			
PCBs[1]	ng/kg	grab	2/Year[2]
2,4-DDD	ng/kg	grab	2/Year[2]
4,4-DDD	ng/kg	grab	2/Year[2]
2,4-DDE	ng/kg	grab	2/Year[2]
4,4-DDE	ng/kg	grab	2/Year[2]
2,4-DDT	ng/kg	grab	2/Year[2]
2,4-DDT	ng/kg	grab	2/Year[2]
Aldrin	ng/kg	grab	2/Year[2]
Alpha-Chlordane	ng/kg	grab	2/Year[2]
Dieldrin	ng/kg	grab	2/Year[2]
Endosulfan	ng/kg	grab	2/Year[2]
Endrin	ng/kg	grab	2/Year[2]
Gamma-BHC	ng/kg	grab	2/Year[2]
Heptachlor	ng/kg	grab	2/Year[2]
Heptachlor Epoxide	ng/kg	grab	2/Year[2]
Hexachlorobenzene	ng/kg	grab	2/Year[2]
Mirex	ng/kg	grab	2/Year[2]
Trans-Nonachlor	ng/kg	grab	2/Year[2]
POLYCYLIC AROMATIC HYDROCARBONS			
Acenapthene	µg/kg	grab	2/Year[2]
Acenaphthylene	µg/kg	grab	2/Year[2]
Anthracene	µg/kg	grab	2/Year[2]
Benzo(a)anthracene	µg/kg	grab	2/Year[2]
Benzo(o)fluoranthene	µg/kg	grab	2/Year[2]
Benzo(k)fluoranthene	µg/kg	grab	2/Year[2]
Benzo(ghi)pyrelene	µg/kg	grab	2/Year[2]
Benzo(a)pyrene	µg/kg	grab	2/Year[2]
Benzo(e)pyrene	µg/kg	grab	2/Year[2]
Biphenyl	µg/kg	grab	2/Year[2]
Chrysene	µg/kg	grab	2/Year[2]
Dibenz(ah)anthrace	µg/kg	grab	2/Year[2]
Fluoranthene	µg/kg	grab	2/Year[2]
Fluorene	µg/kg	grab	2/Year[2]

Parameter	Units	Type of Sample	Minimum Frequency
Ideno(123cd)pyrene	µg/kg	grab	2/Year[2]
Naphthalene	µg/kg	grab	2/Year[2]
1-Methylnaphthalene	µg/kg	grab	2/Year[2]
2-Methylnaphthalene	µg/kg	grab	2/Year[2]
2,6-Dimethylnaphthalene	µg/kg	grab	2/Year[2]
2,3,5-Trimethylnaphthalene	µg/kg	grab	2/Year[2]
Perylene	µg/kg	grab	2/Year[2]
Phenanthrene	µg/kg	grab	2/Year[2]
1-Methylphenanthrene	µg/kg	grab	2/Year[2]
Pyrene	µg/kg	grab	2/Year[2]

1 For sediment and fish tissue PCBs shall mean the sum of the following congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194, 201, and 206. These represent consensus based numbers developed by agencies participating in offshore regional monitoring programs in Southern California. These 41 congeners are thought to represent the most-important PCB congeners in terms of mass and toxicity.

2 To occur in January and July.

Twice per year (January and July), sediment samples for benthic infauna community structure shall be collected from the offshore sediment monitoring locations specified in Table E-1, which consists of 12 primary stations and an additional 10 secondary stations. Two replicate samples shall be taken using a 0.1 square meter modified Van Veen grab sampler. These samples shall be separate from those collected for grain size and chemistry. The samples shall be sieved using a 1.0-mm mesh screen. The benthic organisms retained on the sieve shall be fixed in 10 percent buffered formalin and transferred to at least 70 percent ethanol within two to seven days for storage. All retained benthic infauna organisms shall be counted and identified to as low a taxon as possible. This enumeration and identification of organisms continues the historical database developed by the Discharger.

Analysis of benthic community structure shall include determination of the number of species, number of individuals per species, and total numerical abundance present. The following parameters shall be calculated for each grab sample and summarized by station as appropriate:

a. Number of species per $0.1m^2$ (species richness);
b. Total (cumulative) number of species per station;
c. Total numerical abundance;
d. Benthic response index (BRI);
e. Swartz's 75% dominance index;
f. Shannon's diversity index (H'); and
g. Pielou's evenness index (J').

4. Fish and Invertebrate Monitoring

Epibenthic trawls shall be conducted to assess the structure of demersal fish and megabenthic invertebrate communities, while the presence of priority pollutants in fish will be analyzed from species captured using both trawling and rig fishing techniques. Single community trawls for fish and invertebrates shall be conducted semi-annually at six trawl stations specified in Table E-1. These stations represent two areas near Discharge Point No. 001 (Stations SD-010 and SD-012), two areas upcoast of Discharge Point No. 001 (Stations SD-013 and SD-014), and two areas downcoast of Discharge Point No. 001 (SD-007 and SD-008). Trawls shall be conducted using a Marinovich 7.62 m (25 ft) head rope otter trawl, using the guidance specified in the field manual developed for the Southern California Bight Regional Monitoring Surveys. Captured organisms shall be identified at all stations.

All fish and megabenthic invertebrates collected by trawls should be identified to species if possible. For fish, community structure analysis shall consist of determining the total wet weight and total number of individuals per species, the total numerical abundance of all fish, species richness, species diversity (H'), and multivariate pattern analyses (e.g., ordination and classification analyses). The presence of any physical abnormalities or disease symptoms (e.g., fin erosion, external lesions, tumors) or parasites shall also be recorded. For invertebrates, community structure shall be summarized as the total number of individuals per species, the total numerical abundance of all invertebrates, species richness, and species diversity (H').

Chemical analyses of fish tissues shall be performed annually on target species collected at or near the trawl and rig fishing stations. The various stations are classified into zones for the purpose of collecting sufficient numbers of fish for tissue analyses. Trawl Zone 1 represents the nearfield zone, defined as the area within a 1-km radius of stations SD-010 and/or SD-012; Trawl Zone 2 is considered the northern farfield zone, defined as the area within a 1-km radius of stations SD-013 and/or SD-014; Trawl Zone 3 represents the LA-5 disposal site zone, and is defined as the area centered within a 1-km radius of station SD-008; Trawl Zone 4 is considered the southern farfield zone, and is defined as the area centered within a 1-km radius of station SD-007. Rig Fishing Zone 1 is the nearfield area centered within a 1-km radius of Station RF-001; Rig Fishing Zone 2 is considered the farfield area centered within a 1-km radius of station RF-002. There are no depth requirements for these six zones with regards to the collection of fishes for tissue analysis.

Liver tissues shall be analyzed annually (i.e., during October) from fishes collected in each of the above four trawl zones. No more than a maximum of five 10-minute (bottom time) trawls shall be required per zone in order to acquire sufficient numbers of fish for composite samples; these trawls may occur anywhere within a defined zone. Three replicate composite samples shall be prepared from each trawl zone, with each composite consisting of tissues from as least three individual fish of the same species. These liver tissues shall be analyzed for the presence and concentrations of lipids, PCB (congeners), chlorinated pesticides, and the following three metals: mercury, arsenic and selenium. The species of fish targeted for tissue analysis from the trawl sites shall be primarily flatfish, including, but not limited to, the longfin sanddab (*Citharichthys xanthostigma*) and the Pacific sanddab

(*Citharichthys sordidus*). If sufficient numbers of these primary species are not present in a zone, secondary candidate species such as other flatfish or rockfish may be collected as necessary.

Muscle tissues shall be analyzed annually (i.e., during October) from fishes collected in each of the above two rig fishing zones in order to monitor the uptake of pollutants in species and tissues that are consumed by humans. These species shall be representative of those caught by recreational and/or commercial fishery activities in the region. All fish shall be collected by hook and line or by setting baited lines or traps within the two rig fishing zones described above. The species targeted for analysis at the rig fishing sites shall be primarily rockfish, which may include, but are not limited to, the vermilion rockfish (*Sebastes miniatus*) and the copper rockfish (*Sebastes caurinus*). If sufficient numbers of these primary species are not present or cannot be caught in a particular zone, secondary target species (e.g., rockfish, scorpionfish) may be collected and analyzed as necessary. Three replicate composite samples of the target species shall be obtained from each zone, with each composite consisting of a minimum of three individual fish. Muscle tissues shall be removed from the composites and analyzed for the presence and concentrations of lipids, PCB (congeners), chlorinated pesticides, and the following nine metals: arsenic, cadmium, chromium, copper, lead, mercury, selenium, tin and zinc.

5. Kelp Bed Canopy Monitoring

Kelp bed monitoring is intended to assess the extent to which the discharge of waste may affect the aerial extent and health of coastal kelp beds. The Discharger shall participate with other ocean Dischargers in the San Diego Region in an annual regional kelp bed photographic survey. Kelp beds shall be monitored annually by means of vertical aerial infrared photography to determine the maximum aerial extent of the region's coastal kelp beds within the calendar year. Surveys shall be conducted as close as possible to the time when kelp bed canopies cover the greatest area. The entire San Diego Region coastline, from the international boundary to the San Diego Region/Santa Ana Region boundary shall be photographed on the same day. The images produced by the surveys shall be presented in the form of a 1:24,000 scale photo-mosaic of the entire San Diego Region coastline. Onshore reference points, locations of all ocean outfalls and diffusers, and the 30-foot (MLLW and 60-foot (MLLW) depth contours shall be shown. The aerial extent of the various kelp beds photographed in each survey shall be compared to that noted in surveys of previous years. Any significant losses which persist for more than one year shall be investigated by divers to determine the probable reason for the loss.

B. Strategic Process Studies

Special studies are an integral part of the permit monitoring program. They differ from other elements of the monitoring program in that they are intended to be short-term and are designed to address specific research or management issues that are not addressed by the routine core monitoring elements.

The scope of the special studies shall be determined by the Discharger in coordination with the Executive Officer and the USEPA. The Discharger may include input from whatever sources they deem appropriate. Each year, the Discharger shall submit proposals for strategic process studies to the Executive Officer and the USEPA by September 30, for the following year's monitoring effort (July through June). The following calendar year, detailed scopes of work for the proposals, including reporting schedules, shall, if requested by the Executive Officer, be presented by the Discharger at a spring San Diego Water Board meeting. Upon approval by the Executive Officer and the USEPA, the Discharger shall implement the special study. Reporting requirements and deadlines for the results of the special project studies will be determined and set at the time of project approval. Strategic studies conducted during the period of this permit shall be at a level of effort equal to that under Order No. R9-2002-0025, unless the Executive Officer, USEPA, and the Discharger agree otherwise.

C. Regional Monitoring

The Discharger shall participate in regional monitoring activities coordinated by the Southern California Coastal Water Research Project (SCCWRP). The procedures for Executive Officer and USEPA approval shall be the same as detailed above for the strategic process studies. The intent of regional monitoring activities is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and to best utilize the pooled scientific resources of the region. During these coordinated sampling efforts, the Discharger's sampling and analytical effort may be reallocated to provide a regional assessment of the impact of the discharge of municipal wastewater to the Southern California Bight. Anticipated modifications to the monitoring program will be coordinated so as to provide a more comprehensive picture of the ecological and statistical significance of monitoring results and to determine cumulative impacts of various pollution sources. The Discharger has participated in regional monitoring efforts in 1994, 1998, 2003, and 2008, and will participate in the regional monitoring effort planned for the timeframe around 2013. The level of effort will be provided to the Executive Officer and USEPA for approval. Proposed regional monitoring activities are defined by the Bight Steering Committee for the regional monitoring effort years.

The Discharger will be responsible for submitting the data collected during their portion of the regional monitoring program according to the prescribed schedule and procedures set by the Bight Steering Committee for that project's effort. Detailed analyses of these data will not be required separately by the Discharger, since they will participate in the analysis and write-up of the complete results from regional monitoring efforts. The final results will be published as part of the comprehensive monitoring effort for the Bight regional monitoring surveys.

It is anticipated that regional monitoring efforts will occur at five-year intervals.

D. Monitoring Location RS-001

1. The Discharger shall monitor return streams at RS-001 as follows:

Table E-8. Return Stream Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flowrate	MGD	Recorder/totalizer	Continuous	1
Total Suspended Solids	mg/L	24-hr Composite	1/Day	1
BOD_5@20°C	mg/L	24-hr Composite	1/Day	1

1 As specified in 40 CFR 136.3.

IX. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Reports of marine monitoring surveys conducted to meet receiving water monitoring requirements of this MRP shall include, as a minimum, the following information:

   a. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

   b. The Discharger shall report all instances of noncompliance not reported under Attachment D, Sections III, V, and VI, of Order No. R9-2009-0001, at the time the monitoring reports are submitted.

   c. By July 1 of each year, the Discharger shall submit an annual report to the San Diego Water Board and USEPA that contains tabular and graphical summaries of the effluent and receiving water monitoring data obtained during the previous year. The Discharger shall discuss the compliance record and corrective actions taken, or which may be needed, to bring the discharge into full compliance with the requirements of this permit. The report shall restate, for the record, the laboratories used by the Discharger to monitor compliance with this permit, and provide a summary of performance relative to the permit requirements. Lists of analytical methods used to monitor pollutants should include available CAS numbers and published MDLs/MLs for the analytical methods.

   d. By April 1 of each year, the Discharger shall submit an annual report to the San Diego Water Board; USEPA Region 9; State Water Board, Division of Water Quality, Regulations Unit; and the San Diego County Department of Health Services, Hazardous Materials Division, describing its pretreatment activities over the previous calendar year, as specified elsewhere in this Order.

e. By April 1 of each year, the Discharger shall submit an annual report to the San Diego Water Board; USEPA; State Water Board, Division of Water Quality, Regulations Unit; and Arizona Department of Environmental Quality, describing its biosolids activities over the previous calendar year, as specified elsewhere in this Order.

f. Reports of marine monitoring surveys conducted to meet receiving water monitoring requirements of this MRP shall include, as a minimum, the following information:

i. A description of climatic and receiving water characteristics at the time of sampling (weather observations, floating debris, discoloration, wind speed and direction, swell or wave action, time of sampling, tide height, etc.).

ii. A description of sampling stations, including differences unique to each station (e.g., station location, sediment grain size, distribution of bottom sediments, rocks, shell litter, calcareous worm tubes, etc.).

iii. A description of the sample collection and preservation procedures used in the survey.

iv. A description of the specific method used for laboratory analysis.

v. An in-depth discussion of the results of the survey. All tabulations and computations shall be explained.

The annual report for all receiving water monitoring is due by July 1 and shall include detailed descriptions of the statistical designs and statistical analyses of all collected data. Methods may include, but are not limited to, various multivariate analyses such as cluster analysis, ordination, and regression. The Discharger should also conduct additional analyses, as appropriate, to elucidate spatial and temporal trends in the data.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or San Diego Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. For this purpose, a hard copy signed penalty of perjury statement accompanying a CD with a single file in PDF format (including the certification specified in Section V.B. 5 of Attachment D) shall qualify as a hard copy SMR. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under Sections III through IX. The Discharger shall submit monthly SMRs

including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-9. Monitoring Periods and Reporting Schedule

Reports	Report Period	Report Due
MONTHLY REPORTS Influent and effluent Solids removal/disposal Receiving water quality Tijuana cross-border emergency connection (when flowing)	Monthly	By the 1st day of 2nd following month (e.g., March 1 for January)
QUARTERLY REPORTS Sludge analysis	January-March April-June July-September October-December	June 1 September 1 December 1 March 1
SEMI-ANNUAL REPORTS Pretreatment report	January-June July-December	September 1 March 1
ANNUAL REPORTS Pretreatment report Sludge analysis QA report Flow measurement Outfall inspection Receiving waters monitoring Kelp report	January-December	April 1 April 1 April 1 July 1 July 1 July 1 October 1

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136. For each numeric effluent limitation or performance goal for a parameter identified in Table B of the Ocean Plan, the Discharger shall not use a ML greater than that specified in Appendix II of the Ocean Plan.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. Compliance Determination. Compliance with effluent limitations for reportable pollutants shall be determined using sample reporting protocols defined above and in Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the reportable pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level (ML).

6. Multiple Sample Data. When determining compliance with a measure of central tendency (arithmetic mean, geometric mean, median, etc.) of multiple sample analyses and the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND), the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

7. The Discharger shall submit SMRs in accordance with the following requirements:

a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

c. SMRs must be submitted to the San Diego Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

Regional Water Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

C. Discharge Monitoring Reports (DMRs)

1. As described in Section IX.B.1 above, at any time during the term of this permit, the State or San Diego Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the State Water Board address listed below, and one copy of the DMR to the USEPA address listed below:

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

U.S. EPA, Region 9
ATTN: WTR-7, NPDES/DMR
75 Hawthorne Street
San Francisco, CA 94105

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of USEPA Form 3320-1.

D. Other Reports

1. The Discharger shall report the results of any acute and chronic toxicity testing, TRE/TIE, Antidegradation Analysis, Treatment Plan Capacity Study, Sludge Disposal Report, Pretreatment Report, and Collection System Report of Non-compliance, as required by Special Provisions – VI.C. of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in Section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those Sections or subSections of this Order that are specifically identified as "not applicable" have been determined to not apply to this Discharger. Sections or subSections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	**9 000000275**
Discharger	**City of San Diego Metropolitan Wastewater Department**
Name of Facility	**E.W. Blom Point Loma Wastewater Treatment Plant**
Facility Address	**1902 Gatchell Road**
	San Diego, CA 92106
	San Diego County
Facility Contact, Title and Phone	**Jim Barrett Director of Public Utilities (619) 533-7555**
Authorized Person to Sign and Submit Reports	**Jim Barrett Director of Public Utilities (619) 533-7555**
Mailing Address	**600 B Street, Suite 400 San Diego, CA 92101-4514**
Billing Address	**9192 Topaz Way San Diego, CA 92123**
Type of Facility	**Publicly-Owned Treatment Works (POTW) (SIC Code 4592)**
Major or Minor Facility	**Major**
Threat to Water Quality	**1**
Complexity	**A**
Pretreatment Program	**Yes**
Reclamation Requirements	**NA**
Facility Permitted Flow	**240 Million Gallons per Day (MGD)**
Facility Design Flow	**240 MGD**
Facility Projected End-of-Permit Flow	**205 MGD**
Watershed	**Pacific Ocean**
Receiving Water	**Pacific Ocean**
Receiving Water Type	**Ocean Waters**

A. The City of San Diego Metropolitan Wastewater Department (hereinafter Discharger) is the owner and operator of E.W. Blom Point Loma Wastewater Treatment Plant (hereinafter Point Loma WTP or Facility), a publicly-owned treatment works (POTW).

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and State laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the Pacific Ocean, a water of the United States, and is currently regulated by Order No. R9-2002-0025 which was adopted on April 10, 2002. Following adoption by the Regional Water Quality Control Board (hereinafter, San Diego Water Board), this order was subsequently appealed to the State Water Resources Control Board (hereinafter, State Water Board) and amended by State Water Board Order No. 2002-0013 on August 15, 2002. On September 13, 2002, the 301(h)-modified permit (NPDES No. CA0107409) was issued by the United States Environmental Protection Agency (USEPA). On October 10, 2002, USEPA issued a minor modification to the federal permit correcting typographical errors. The federal NPDES permit was appealed by several petitioners to the Environmental Appeals Board, on October 16, 2002. Uncontested federal permit provisions became effective on June 16, 2003. During this time period, Order No. R9-2002-0025 was amended by the San Diego Water Board and USEPA to modify the monitoring and reporting program (June 11, 2003). On March 29, 2004, the Environmental Appeals Board dismissed the federal permit appeals in accordance with, and pursuant to, the joint stipulation of the petitioners and USEPA. The federal permit expired on June 15, 2008. On August 13, 2008, the San Diego Water Board adopted effluent limitations and conditions providing for chlorination of the PLOO discharge.

The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit are adopted pursuant to this Order.

C. The Discharger filed a report of waste discharge (ROWD) and submitted an application for renewal of its WDRs and NPDES permit on December 14, 2007. Supplemental information was requested on March 3, 2008 and received on June 6, 2008. A site visit was conducted on March 17, 2008, to observe operations and collect additional data to develop permit limitations and conditions.

D. On December 10, 2007, the Discharger submitted an application for renewal of their 301(h)-modified NPDES permit for the Point Loma WTP to USEPA. In this application, the Discharger requested a renewal of their variance (sometimes informally called a "waiver" or "modification") under CWA Section 301(h), 33 U.S.C. Section 1311(h), and the Ocean Pollution Reduction Act of 1994, 33 U.S.C. Section 1311(j)(5), from federal secondary treatment standards contained in CWA Section 301(b)(1)(B), U.S.C. Section 1311(b)(1)(B). The Discharger has proposed alternative effluent limitations for total suspended solids (TSS) and biochemical oxygen demand (BOD_5), described elsewhere in this Fact Sheet. The 2007 301(h) application is based on an improved discharge, as defined at 40 CFR 125.58(i).

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment or Controls

The E.W. Blom Point Loma Wastewater Treatment Plant is a terminal treatment facility of the San Diego Metropolitan Sewage System (Metro System). The Metro System collects and treats wastewater from the City of San Diego and 15 other cities and agencies within a 450 square mile service area throughout San Diego County. Metro System facilities are owned by the City of San Diego and are managed and operated by the City's Metropolitan Wastewater Department (MWWD). Approximately 70 percent of the total Metro System flows are from the City of San Diego, with the remaining flow from the 15 contributing Metro System participating agencies, listed in Table F-2. The Metro Systems participating agencies are summarized below:

Table F-2. Metro System Participating Agencies

Municipalities	Water/Wastewater Districts	Sanitation/Maintenance Districts
City of Chula Vista City of Coronado City of Del Mar City of El Cajon City of Imperial Beach City of La Mesa City of National City City of Poway	Otay Water District Padre Dam Municipal Water District	Lakeside/Alpine Sanitation District Lemon Grove Sanitation District Spring Valley Sanitation District East Otay Sewer Maintenance District Winter Gardens Sewer Maintenance District

Wastewater collection systems that discharge to the Metro System are owned and operated by respective participating agencies.

The City of San Diego owns and operates Metro System collection, treatment, and effluent disposal facilities.

Primary Metro System facilities include:

1. North City Water Reclamation Plant (North City WRP)

The North City WRP has a design capacity of 30 million gallons per day (MGD). North City WRP is an advanced wastewater treatment facility capable of producing recycled water that complies with the requirements of Title 22, Division 4 of the California Code of Regulations for unrestricted body contact (Title 22 Regulations). Excess recycled water, secondary treated effluent, and plant waste streams from North City WRP are returned to the sewer for transport to Point Loma WTP for additional treatment. Waste solids removed during treatment at North City WRP are directed to the Metro Biosolids Center for treatment and use or disposal.

2. Metro Biosolids Center (MBC)

MBC is located on Marine Corps Air Station Miramar. MBC provides dewatering of sludge from the Point Loma WTP and thickening, anaerobic digestion, and dewatering of sludge from the North City WRP. Dewatered solids are beneficially used as an alternate daily cover at a landfill or as a soil amendment.

3. South Bay Water Reclamation Plant (South Bay WRP)

South Bay WRP has a tertiary design capacity of 15 MGD and a hydraulic capacity of 18 MGD. South Bay WRP is an advanced wastewater treatment facility producing recycled water that complies with Title 22 Regulations for customers within the South Bay region. Excess recycled water and ultraviolet disinfected secondary treated effluent is directed to the South Bay Ocean Outfall. Waste solids are directed to the Point Loma WTP through the South Metro Interceptor and Pump Station Nos. 1 and 2, for treatment and removal.

4. South Bay Ocean Outfall (SBOO)

The SBOO is jointly owned by the International Boundary and Water Commission (IBWC) and the City of San Diego. The outfall discharges wastewater from both the South Bay WRP and the IBWC International Wastewater Treatment Plant. The outfall has an average daily flow capacity of 174 MGD and a peak flow of 333 MGD. The SBOO discharges wastewater approximately 3.5 miles off the coast of the International Border at a depth of approximately 95 feet.

5. Pump Station No. 1

Pump Station No. 1 conveys wastewater from the southern portion of the Metro System through the South Metro Interceptor to Pump Station No. 2. Pump Station No. 1 has a pumping capacity of approximately 160 MGD and receives ferrous chloride for odor control.

6. Pump Station No. 2

Pump Station No. 2 receives wastewater from the north, south, and central regions of the Metro System service area and conveys all influent to the Point Loma WTP. Pump Station No. 2 also provides initial screening and chemical addition (ferric chloride for odor control and to assist in coagulation/sedimentation at the Point Loma WTP) and receives hydrogen peroxide to regenerate the iron salts. Pump Station No. 2 has a pumping capacity of approximately 432 MGD.

7. Point Loma WTP

The Point Loma WTP is a chemically-assisted primary treatment plant and is the terminal treatment plant discharging to the Point Loma Ocean Outfall (PLOO). The Facility has rated capacities of 240 MGD average annual daily flow and 432 peak wet weather flow. Treatment processes include: mechanical self-cleaning climber screens; ferric chloride addition at Parshall flumes; aerated grit removal, including grit tanks, separators, and washers; anionic synthetic polymer addition; sedimentation basins with sludge and scum removal facilities; and prototype effluent disinfection facilities providing chlorination in the effluent channel.

On November 13, 2007, the Discharger requested the ability to chlorinate to ensure compliance with all applicable receiving water objectives for bacteria. Chlorination using sodium hypochlorite was approved by the San Diego Water Board on August 13, 2008 (Addendum No. 2 to Order No. R9-2002-0025).

The treatment train at the Facility consists of five influent screens, ferric chloride injection, six aerated grit chambers, anionic polymer injection, 12 primary sedimentation basins, and sodium hypochlorite injection for chlorination.

On-site solids treatment at the Point Loma WTP consists of anaerobic sludge digestion. Dewatered solids are beneficially used as an alternate daily cover at a landfill or as a soil amendment. Digested sludge is transported via pipeline to the MBC for dewatering and disposal. Screenings, grit, and scum are trucked to a landfill for disposal.

Chlorinated advanced primary treated effluent is discharged through the PLOO to the Pacific Ocean, approximately 4.5 miles offshore. Although this is beyond the limit of State-regulated ocean waters, potential plume migration within this limit warrants joint regulation of the effluent. USEPA has primary regulatory responsibility for the discharge. However, in 1984, a Memorandum of Understanding was signed between USEPA and the State of California to jointly administer discharges that are granted modifications from secondary treatment standards. Under California's Porter-Cologne Water Quality Control Act, the San Diego Water Board issues waste discharge requirements which serve as an NPDES permit. On December 5, 2008, the USEPA and San Diego Water Board jointly proposed issuance of a draft 301(h)-modified permit incorporating both federal NPDES requirements and State Waste Discharge Requirements.

In addition to domestic sewage and industrial discharges, the Facility accepts flow and pollutants from low-flow urban runoff diversion systems and "first flush" industrial stormwater diversion systems that are routed to the sanitary sewer collection system.

B. Discharge Points and Receiving Waters

The PLOO has an average dry weather design flow of 240 MGD and a peak wet weather flow of 432 MGD. The PLOO discharges wastewater from Point Loma WTP approximately 4.5 miles off the coast of Point Loma (32° 39' 55" North; 117° 19' 25" West) at a discharge depth of approximately 310 feet (at mean lower low water - MLLW). The PLOO is 23,472 feet long and includes a wye (Y-shaped) diffuser with two 2,496 foot long diffuser legs. The diffuser has 416 discharge ports (208 on each leg).

Order No. R9-2002-0025 carried over an initial dilution value for the PLOO of 204 from previous orders for the facility. The initial dilution value of 204 was established based on the results of a modified version of the RSB model, submitted with the Discharger's 1995 ROWD and the Discharger's 1995, 2001, and 2007 301(h) applications to USEPA. This initial dilution value was predicated based on the 1995 projected end-of-permit effluent flow of 205 MGD from Point Loma WTP.

The San Diego Water Board, with assistance from the State Water Board, has established a minimum initial dilution factor for this permitting effort of 204:1, based on the projected end-of-permit flow of 205 MGD through the PLOO, as discussed in Attachment H to the permit. This minimum initial dilution value is used by the San Diego Water Board to establish water quality-based effluent limitations (WQBELs) and performance goals for Table B constituents in the Ocean Plan.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in Order No. R9-2002-0025 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order No. R9-2002-0025 are as follows:

Table F-3a. Historic Effluent Limitations and Monitoring Data (BOD_5 and TSS) Based on CWA Sections 301(h) and (j)(5)

Effluent Constituent	Units	Effluent Limitations		Monitoring Data (from January '01 to December '07)		
		Annual Average	Monthly Average	Lowest Mean Annual Percent Removal	Lowest Mean Monthly Percent Removal	Highest Monthly Average
TSS	% removal [1]	--	≥80	--	82	--
	mg/l	--	75 [4]	--	--	51
	metric tons/year	15,000 [2]	--	--	--	--
		13,599 [3]	--	--	--	--
BOD_5	% removal [1]	≥58	--	58	--	--

1. To be calculated on a system-wide basis, as provided in Addendum No. 1 to Order No. R9-2002-0025.
2. To be achieved on the permit effective date and through December 31, 2005. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico as a result of upset or shutdown and treated at and discharged from Point Loma WTP. Based on the 1995 and 2001 permit applications, the Discharger's 1997 projected annual average effluent flow rate of 195 MGD, and 80 percent removal of TSS required by law.
3. To be achieved on January 1, 2006. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico as a result of upset or shutdown and treated at and discharged from Point Loma WTP. Based on the 1995 and 2001 permit applications, the Discharger's 1997 projected annual average effluent flow rate of 195 MGD, and 80 percent removal of TSS required by law.

4 Based on average monthly performance data (1990 through 1994) for the Point Loma WTP provided by the Discharger for the 1995 permit application.

Table F-3b. Historic Effluent Limitations and Monitoring Data (Ocean Plan Parameters – Table A)

Effluent Constituent	Units	Effluent Limitations			Monitoring Data (From January '02 to December '07		
		Monthly Average (30-day)	Weekly Average (7-day)	Instantaneous Maximum	Highest Monthly Average	Highest Weekly Average	Highest Instantaneous Maximum
Oil and Grease	mg/L	25	40	75	12.8064516	15.3571429	24.4
	lbs/day[1]	34,000	68,000	130,000	--	--	--
Settleable Solids	ml/L	1.0	1.5	3.0	0.81387097	1.77142857(6/6/04-6/12/04)	7.5(6/8/04)
Turbidity	NTU	75	100	225	53.7419355	62.4285714	125
pH	pH units	--	--	6.0 – 9.0	--	--	7.87

1 Mass-effluent limitations in the amended 2002 Order were calculated using the projected end-of-permit effluent flow for the 1995 301(h) application of 205 MGD.

Table F-3c. Historic Effluent Limitations and Monitoring Data (Ocean Plan Parameters – Table B, For the Protection of Aquatic Life)

Parameter	Units[1]	Effluent Limitation			Monitoring Data (From January '02 to December '07)		
		6-Month Median	Daily Maximum	Instantaneous Maximum	Highest 6-Month Median	Highest Daily Maximum	Highest Instantaneous Maximum
Arsenic	µg/L	1,000	5,900	16,000	1.62	2.74	2.74
Cadmium	µg/L	200	800	2,100	0.5	4.45	4.45
Chromium (Hexavalent)[2]	µg/L	400	2,000	4,100	2.5	23.4	23.4
Copper	µg/L	200	2,100	5,700	76.4	325	325
Lead	µg/L	400	2,000	4,100	9	31.5	31.5
Mercury	µg/L	8.1	33	80	0.25	0.702	0.702
Nickel	µg/L	1,000	4,100	10,000	10.3	22.3	22.3
Selenium	µg/L	3,100	12,000	30,800	1.25	1.66	1.66
Silver	µg/L	100	540	1,000	3.3	19.7	19.7
Zinc	µg/L	2,500	15,000	39,400	28	81.3	81.3
Cyanide	µg/L	200	800	2,100	4	10	10
Total Chlorine Residual	µg/L	400	2,000	12,000	<0.03	<0.03	<0.03
Ammonia (as N)	µg/L	123,000	492,000	1,230,000	31,900	36,700	36,700
Acute Toxicity	TUa	--	6.5	--	--	5.3	--
Chronic Toxicity	TUc	--	205	--	--	>667	--
Phenolic Compounds (non-chlorinated)	µg/L	6,200	24,600	61,500	14.4	25.6	25.6
Chlorinated Phenolics	µg/L	200	800	2,100	<12.67	1.85	1.85
Endosulfan	µg/L	2	3.7	5.5	<0.03	<0.03	<0.03
Endrin	µg/L	0.4	0.8	1	<0.05	<0.05	<0.05
HCH	µg/L	0.8	2	2.5	0.0135	0.175	0.175
Radioactivity	pci/l	[3]			--	--	[4]

1 Concentration-based limitations in the amended 2002 Order were calculated using a minimum critical initial dilution of 204:1, based on the projected end-of-permit effluent flow for the 1995 301(h) application of 205 MGD.
2 Dischargers may at their option meet these limitations as total chromium limitations.
3 Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations. Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.
4 Highest value of Gross Beta Radiation was 38.3 pci/l; Highest value of Gross Alpha Radiation was 3.54 pci/l.

Table F-3d. Historic Effluent Limitations and Monitoring Data (Ocean Plan Parameters – Table B, For the Protection of Human Health)

Parameter	Units[1]	Effluent Limitation	Monitoring Data (From January '02 to December '07)	
		Average Monthly	Highest Average Monthly Discharge	Highest Daily Discharge
Acrolein	µg/L	45,000	<11.4	<11.4
Antimony	µg/L	250,000	75.50	83.50
Bis(2-chloroethoxy)methane	µg/L	900	<1.57	<1.57
Bis(2-chloroisopropyl)ether	µg/L	250,000	<8.95	<8.95
Chlorobenzene	µg/L	120,000	<1	<1
Chromium (III)	µg/L	39,000,000	11.145	23.4
Di-n-butyl phthalate	µg/L	720,000	<6.49	<6.49
Dichlorobenzenes	µg/L	1,000,000	1.23	1.23
Diethyl phthalate	µg/L	6,800,000	11.2	11.2
Dimethyl Phthalate	µg/L	170,000,000	<3.26	<3.26
4,6-Dinitro-2-methylphenol	µg/L	45,000	<4.29	<4.29
2,4-Dinitrophenol	µg/L	820	<6.07	<6.07
Ethylbenzene	µg/L	840,000	<1	<1
Fluoranthene	µg/L	3,100	<6.9	<6.9
Hexachlorocyclopentadiene	µg/L	12,000	ND[2]	ND[2]
Nitrobenzene	µg/L	1,000	<1.52	<1.52
Thallium	µg/L	400	< 1.8	<40
Toluene	µg/L	17,000,000	8.05	8.05
Tributyltin	µg/L	0.29	<2	<2
1,1,1-Trichloroethane	µg/L	110,000,000	<1	<1
Acrylonitrile	µg/L	21	<13.8	<13.8
Aldrin	µg/L	0.0045	<60	<60
Benzene	µg/L	1,200	<1	<1
Benzidine	µg/L	0.014	<1.52	<1.52
Beryllium	µg/L	6.8	0.3175	0.685
Bis(2-chloroethyl)ether	µg/L	9.2	<2.62	<2.62
Bis(2-ethylhexyl)phthalate	µg/L	720	49.8	49.8
Carbon tetrachloride	µg/L	180	<1	<1
Chlordane	µg/L	0.0047	0.092 (7/04)	0.092 (7/04)
Chlorodibromomethane	µg/L	1,800	2.87	2.87
Chloroform	µg/L	27,000	11.2	11.2
DDT	µg/L	0.035	<0.14	<0.14
1,4-Dichlorobenzene	µg/L	3,700	3.75	3.75
3,3'-Dichlorobenzidine	µg/L	1.7	<2.44	<2.44
1,2-Dichloroethane	µg/L	5,700	<1	<1
1,1-Dichloroethylene	µg/L	200	0.5	0.5
Dichlorobromomethane	µg/L	1,300	3.66	3.66
Dichloromethane	µg/L	92,000	6.32	6.32
1,3-Dichloropropene	µg/L	1,800	<2	<2
Dieldrin	µg/L	0.0082	<0.05	<0.05
2,4-Dinitrotoluene	µg/L	530	<1.49	<1.49
1,2-Diphenylhydrazine	µg/L	33	<2.49	<2.49
Halomethanes	µg/L	27,000	<3	<3
Heptachlor	µg/L	0.01	0.021333 (7/04)	0.044 (7/04)
Heptachlor Epoxide	µg/L	0.004	<0.03	<0.03
Hexachlorobenzene	µg/L	0.043	<4.8	<4.8
Hexachlorobutadiene	µg/L	2,900	<2.87	<2.87
Hexachloroethane	µg/L	510	<3.55	<3.55
Isophorone	µg/L	150,000	<1.93	<1.93

Parameter	Units[1]	Effluent Limitation	Monitoring Data (From January '02 to December '07)	
		Average Monthly	Highest Average Monthly Discharge	Highest Daily Discharge
N-nitrosodimethylamine	µg/L	1,500	<2.01	<2.01
N-nitrosodi-N-propylamine	µg/L	78	<1.63	<1.63
N-nitrosodiphenylamine	µg/L	510	<2.96	<2.96
PAHs	µg/L	1.8	<72.48	<72.48
PCBs	µg/L	0.0039	<4	<4
TCDD Equivalents	µg/L	0.00000080	ND	ND
1,1,2,2-Tetrachloroethane	µg/L	470	<1	<1
Tetrachloroethylene	µg/L	410	3.4	3.4
Toxaphene	µg/L	0.43	<4	<4
Trichloroethylene	µg/L	5,500	<1	<1
1,1,2-Trichloroethane	µg/L	1,900	1.13	1.13
2,4,6-Trichlorophenol	µg/L	59	1.11875	1.85
Vinyl Chloride	µg/L	7,400	<1	<1

[1] Concentration-based limitations in the amended 2002 Order were calculated using a minimum critical initial dilution of 204:1, based on the projected end-of-permit effluent flow for the 1995 301(h) application of 205 MGD.

[2] All non-detect, no MDL provided.

D. Compliance Summary

As summarized in Table F-3c, an exceedance of the chronic toxicity effluent limitation of 205 TUc was reported by the Facility on May 4, 2003 with a final effluent value of >667 TUc.

No significant compliance issues were identified during the most recent compliance evaluation inspection conducted on March 17, 2008.

E. Planned Change s

CWA Section 301(h) provides for variances from federal secondary treatment standards for POTWs discharging to marine waters, including waters beyond the outer limit of territorial seas. Among other conditions, the discharge must allow for attainment or maintenance of water quality which allows for recreational activities in and on the water beyond the zone of initial dilution, and meet State water quality standards and federal criteria established under CWA Section 304(a)(1) at the time the modification becomes effective. CWA Sections 301(h)(2) and (9); 40 CFR 125.62(d); 44 Fed. Reg. 34798-99, June 15, 1979; and 47 Fed. Reg. 53671, November 26, 1982.

For marine recreational waters beyond the outer limit of territorial seas (waters beyond 3 nautical miles), the water use is defined by the CWA Section 101(a)(2) interim goal to provide water quality for recreation in and on the water, wherever attainable. USEPA describes the "primary contact recreation" use as protective when the potential for ingestion of, or immersion in, water is likely. Activities usually include swimming, water-skiing, skin-diving, surfing, and other activities likely to result in immersion (*Water Quality Standards Handbook*, EPA-823-B-94-005a, 1994, p. 2-2.). USEPA has developed 304(a)(1) ambient water quality criteria for bacteria which are recommended to protect people from gastrointestinal illness for primary contact recreation, or similar full body contact activities, in marine recreational waters (*Ambient Water Quality Criteria* *for Bacteria—1986*, EPA 440/5-84-002, 1986, p. 16). In the vicinity of the PLOO, the Discharger has documented no federally-defined primary contact recreational activities occurring in waters beyond three nautical miles (see Volume V, Appendix G, of the 2007 301(h) application).

The State Water Board has established bacteriological standards in ocean waters of the State used for water contact recreation. Ocean waters are the territorial marine waters of the State as defined by California law (Ocean Plan, p. 26). The outer limit of territorial seas generally extends offshore to 3 nautical miles. The Ocean Plan (p. 3) specifies that "water contact recreation" is a beneficial use of ocean waters of the State that shall be protected. "Water Contact Recreation" or "REC-1" is a beneficial use of the State and is defined to include uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible; these uses include, but are not limited to, swimming, wading, water-skiing, skin and SCUBA diving, surfing, white water activities, fishing, or use of natural hot springs (San Diego Basin Plan, pp. 2-4). "REC-1" is designated as an existing beneficial use of coastal waters named the Pacific Ocean (San Diego Basin Plan, pp. 2-8, 2-12, and 2-52).

CWA Sections 303(i) and 512(21), together require the adoption of criteria for all coastal waters designated by States for use for swimming, bathing, surfing, or similar water contact activities, even if, as a factual matter, the waters designated for swimming are not frequently or typically used for swimming (69 Fed. Reg. 67219-20, 67222, November 16, 2004). Consistent with this requirement, on November 16, 2004, USEPA promulgated recreational water quality criteria for coastal waters in cases where States had failed to do so; these criteria apply where States have designated coastal waters for water contact recreation, but do not have in place USEPA-approved bacteria criteria that are as protective as USEPA's 1986 recommended 304(a) criteria for bacteria (69 Fed. Reg. 67218, November 16, 2004). This promulgation applies the criteria at 40 CFR 131.41(c)(2) to waters designated marine coastal recreational waters in California, excluding San Diego Water Board 4 (69 Fed. Reg. 67243, November 16, 2004). In 2005, the State Water Board adopted revised bacteria criteria for ocean waters of the State. Effective February 14, 2006, the revised Ocean Plan specifies within the zone bounded by the shoreline and 1,000 feet from the shoreline or the 30-foot depth contour (whichever is further) and in areas outside this zone used for water contact sports as determined by the San Diego Water Board (i.e., waters designated as REC-1), including kelp beds, the following bacterial objectives shall be maintained throughout the water column (Ocean Plan, p. 4). The initial dilution zone for wastewater outfalls is excluded (Ocean Plan, p. 5).

Table F-4. Bacterial Water Quality Objectives in the Ocean Plan for State Waters Designated REC-1

Indicator	30-day Geometric Mean (per 100 ml)	Single Sample Maximum (per 100 ml)
Total Coliform	1,000	10,000
Fecal Coliform	200	400
Total Coliform when Fecal Coliform: Total Coliform ratio > 0.1	--	1,000
Enterococcus	35	104

Volume V, Appendix G, of the 2007 301(h) application describes water contact recreational activities occurring in territorial waters off Point Loma and at shoreline, kelp bed, and offshore water quality monitoring stations. In Appendix G, Table 19 shows were water contact recreation takes place off Point Loma, based on the Discharger's record of visual observations during monitoring events and recreational use assessment.

The 4.5 mile long PLOO discharges beyond the 3 nautical mile outer limit of territorial seas. Table C-5 in Volume IV, Appendix C, of the 2007 301(h) application summarizes bacteriological data from offshore stations within State waters that are not located in the Point Loma kelp bed. As summarized, these offshore stations (at all water depths) achieve compliance with recreational water contact standards from 92 to 98 percent of the time, with exceedances typically limited to samples collected from water depths below 40 meters (130 feet).

Both the Discharger and USEPA compared maximum receiving water bacteriological concentrations from all offshore stations (at depth) with Ocean Plan water quality objectives to determine the degree of reduction in indicator organisms discharged through the PLOO that was needed to achieve 100 percent compliance with Ocean Plan water contact standards at all locations and all depths within 3 nautical miles. Based on an evaluation of this data, summarized in Table C-6 in Volume IV, Appendix C, of the 2007 301(h) application, the Discharger determined that a 2.1-logarithm (approximately 99 percent) reduction of total coliform indicator organisms would ensure that the PLOO discharge complies with bacteriological water quality standards at all locations and all depths within this area. Initial bench-scale laboratory tests conducted by the Discharger show that a 2.1-log reduction of indicator organisms in the effluent can be achieved by a sodium hypochlorite dose rate of 7 mg/1. Other studies show that this dose rate will be consumed in the PLOO and will not lead to non-compliance with other Ocean Plan Table B water quality objectives. Facilities currently exist at the Point Loma WTP site for storing and handling sodium hypochlorite.

On November 13, 2007, the Discharger submitted a request to the San Diego Water Board to initiate operation of prototype effluent disinfection facilities to achieve compliance with bacteriological water quality standards in State waters. On August 13, 2008, the San Diego Water Board approved modifications associated with operation of the Discharger's proposed prototype effluent disinfection facilities at Point Loma WTP. The Discharger's 2007 301(h) application is based on an improved discharge, as defined at 40 CFR 125.58(i), and incorporates effluent disinfection to achieve these standards prior to permit reissuance.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this Section.

A. Legal Authorities

This Order is issued pursuant to Section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the USEPA and chapter 5.5, division 7 of the California Water Code (commencing with Section 13370). It shall serve as a 301(h)-modified NPDES permit for point source discharges from this facility to surface waters, which is jointly issued by the San Diego Water Board and USEPA. This Order also serves as WDRs pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with Section 13260).

B. California Environmental Quality Act (CEQA)

Under Water Code Section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code Sections 21100 through 21177.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The San Diego Water Board adopted a Water Quality Control Plan for the San Diego Basin (hereinafter Basin Plan) on September 8, 1994 that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for the Pacific Ocean. The Basin Plan was subsequently approved by the State Water Board on December 13, 1994. Subsequent revisions to the Basin Plan have also been adopted by the San Diego Water Board and approved by the State Water Board. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Beneficial uses applicable to the Pacific Ocean are as follows:

Table F-5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Industrial service supply; navigation; contact water recreation; non-contact water recreation; commercial and sport fishing; preservation of biological habitats of special significance; wildlife habitat; rare, threatened, or endangered species; marine habitat; aquaculture; migration of aquatic organisms; spawning, reproduction, and/or early development; and shellfish harvesting.

Requirements of this Order implement the Basin Plan.

2. **California Ocean Plan.** The State Water Board adopted the *Water Quality Control Plan for Ocean Waters of California, California Ocean Plan* (Ocean Plan) in 1972 and amended it in 1978, 1983, 1988, 1990, 1997, 2000, and 2005. The State Water Board adopted the latest amendment on April 21, 2005 and it became effective on February 14, 2006. The Ocean Plan is applicable, in its entirety, to point source discharges to the ocean. The Ocean Plan identifies beneficial uses of ocean waters of the State to be protected as summarized below:

Table F-6. Ocean Plan Beneficial Uses

Discharge Point	Receiving Water	Beneficial Uses
001	Pacific Ocean	Industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish spawning and shellfish harvesting

In order to protect beneficial uses, the Ocean Plan establishes water quality objectives and a program of implementation. Requirements of this Order implement the Ocean Plan.

3. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and tribal water quality standards (WQS) become effective for CWA purposes (40 CFR § 131.21, 65 Fed. Reg. 24641 (April 27, 2000)). Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

4. **Antidegradation Policy.** 40 CFR 131.12 requires that the State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The San Diego Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of Section 131.12 and State Water Board Resolution No. 68-16.

5. **Anti-Backsliding Requirements.** CWA Sections 402(o) and 303(d)(4) and 40 CFR 122.44(l) prohibit renewal, reissuance, or modification of an existing NPDES permit that contains effluent limitations, permit conditions, or standards that are less stringent than those established in the previous permit, with limited exceptions for relaxing some requirements.

D. Impaired Water Bodies on CWA 303(d) List

On June 28, 2007, the USEPA approved the list of impaired water bodies, prepared by the State Water Board pursuant to Section 303 (d) of the CWA, which are not expected to meet applicable water quality standards after implementation of technology-based effluent limitations for point sources. The 303 (d) list includes Sections of the Pacific Ocean shoreline inside the San Diego Region as impaired for bacteria indicators. However, the receiving waters in the immediate vicinity of the Facilities' discharge point are not included on the current 303 (d) list.

This permit implements receiving water objectives for bacterial indicators.

E. Other Plan s, Polices and Regulations

1. 301(h) Waiver and Primary Treatment Requirements.

The Discharger has submitted an application for renewal of their 301(h)-modified NPDES permit for the Point Loma WTP. The Discharger requested a renewal of their variance (informally called a "waiver" or "modification") under CWA Section 301(h) and the Ocean Pollution Reduction Act of 1994, from federal secondary treatment standards contained in CWA Section 301(b)(1)(B). The Discharger has proposed alternative effluent limitations for TSS and BOD_5, described below. The 2007 301(h) application is based on an improved discharge, as defined at 40 CFR 125.58(i). The Discharger has proposed effluent disinfection (chlorination) to achieve applicable water quality standards for bacteria in State waters, prior to permit reissuance.

The administrative processing for a CWA Section 301(h) variance by USEPA generally consists of the following actions:

- Filing of a timely application by the discharger;
- Initial screening of the application by the State and USEPA;
- USEPA preparation of a Tentative Decision Document (TDD) which involves comparison of the application with criteria set forth in applicable statutes and regulations;
- Announcement of the tentative decision for the 301(h) variance by the USEPA Regional Administrator;
- Public notice of a draft 301(h)-modified permit incorporating the Regional Administrator's tentative decision and the TDD;
- Public hearings to address public interest;

- State concurrence in the granting of a 301(h) variance through State and USEPA joint issuance of a 301(h)-modified NPDES permit, or denial by the State and/or the Regional Administrator;
- Processing of appeals in accordance with 40 CFR 124.

The Discharger has proposed the following alternative effluent limitations for TSS and BOD_5. The Discharger's percent removal limitations for TSS and BOD_5 are computed on a "system-wide" basis, whereby the Discharger receives credit for removal achieved as part of water reclamation operations in the Metro System service area which ultimately connect to Point Loma WTP and discharge through the PLOO.

Table F-7. Effluent Limitations Based on CWA Sections 301(h) and (j)(5)

Effluent Constituent	Units	Annual Average	Monthly Average
TSS	% removal[1]	---	≥80
	mg/l	---	75[4]
	metric tons/year	15,000[2]	---
		13,598[3]	---
BOD5	% removal[1]	≥58	---

[1] To be calculated on a system-wide basis, as provided in Addendum No. 1 to Order No. R9-2002-0025.
[2] To be achieved on permit effective date through December 31, 2013. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[3] To be achieved on January 1, 2014. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[4] Based on average monthly performance data (1990 through 1994) for the Point Loma WTP provided by the Discharger for the 1995 301(h) application.

A POTW applying for a 301(h) variance must demonstrate satisfactorily to USEPA that the modified discharge will meet the following CWA Section 301(h) requirements:

- The modified discharge will comply with all applicable water quality standards and the State has determined that the modified discharge will comply with State law;
- The modified discharge, alone or in combination with other sources, will not interfere with the attainment or maintenance of water quality that assures the protection of public water supplies; assures the protection and propagation of a balanced indigenous population of fish, shellfish, and wildlife; and allows for recreational activities;
- A monitoring program has been established by the applicant to monitor the impact of the modified discharge, including biological, water quality, and effluent monitoring;
- The modified discharge will not result in additional requirements on other point and nonpoint sources of pollutants and the State had determined that the modified discharge will not result in any such additional requirements;

- An applicant serving a population of 50,000 or more that receives toxic pollutants from industrial sources must demonstrate they have complied with urban area pretreatment requirements at the time the permit is approved;
- An applicant must make a demonstration that pretreatment requirements for industrial sources introducing wastes into the treatment works will be enforced;
- An applicant must demonstrate that a schedule of activities has been established to minimize the introduction of toxic substances from non-industrial sources onto the treatment works, including the development and implementation of programs for public education and non-industrial source control;
- An applicant must demonstrate that the modified discharge will not result in new or substantially increased discharges of the waived pollutants above the discharge specified in the 301(h)-modified permit. Projections of effluent volumes and mass emission rates for pollutants to which the modification applies must be provided in 5-year increments for the design life of the facility;
- The modified discharge must receive at least primary or equivalent treatment and must meet CWA Section 304(a)(1) criteria, in accordance with 40 CFR 125.62(a). Variances are prohibited for discharges into waters that contain significant amounts of previously discharged effluent from the treatment works, or into saline estuarine waters that do not support a balanced indigenous population, do not allow recreation, or which violate water quality standards or criteria beyond the zone of initial dilution.

Under 40 CFR 125.59(b) no 301(h)-modified permit may be issued for:

- Discharges that do not comply with 40 CFR Parts 122 and 125, Subpart G;
- Discharges of sewage sludge;
- Discharges that would not be in compliance with applicable provisions of State, local, or other federal laws and Executive Orders; or
- Discharges that enter the New York Bight Apex.

In addition, the Discharger must meet the following requirements under the Ocean Pollution Reduction Act of 1994, CWA Section 301(j)(5):

- 80 percent removal of TSS based on a system-wide monthly average;
- 58 percent removal of BOD_5 based on a system-wide annual average;
- 45 MGD of water reclamation by the year 2010; and
- Reduction of TSS discharged into the ocean during the period of the permit modification.

During the term of the 1995 permit, the Discharger implemented a reclamation program with a system capacity of 45 MGD of reclaimed water, thereby meeting the requirement for reclaimed water capacity of 45 MGD in CWA Section 301(j)(5). On a system-wide basis, the Discharger will be able to remove not less than 80 percent of TSS (on a monthly average) and not less than 58 percent of BOD_5 (on an annual average) in the discharge to which the 2007 301(h) application applies. The Discharger will be able to decrease suspended solids mass emissions during the permit term. Reductions in TSS loadings to the marine environment during the term of the modification are shown in Figure II.A-1 of Volume III of the 2007 301(h) application.

USEPA has drafted a 301(h) Tentative Decision Document (TDD) evaluating the Discharger's proposed improved discharge and effluent limitations for TSS and BOD_5, the projected annual average end-of-permit effluent flow rate of 202 MGD (annual average daily flow), and 2002 through 2007 effluent concentrations for TSS and BOD_5, as provided in the updated 2007 301(h) application. The 2008 TDD concludes that the Discharger's 301(h) application satisfies CWA Sections 301(h) and 301(j)(5). Based on this information, it is the Regional Administrator's tentative decision to grant the Discharger's variance request for TSS and BOD_5, in accordance with the terms, conditions, and limitations of the TDD. In accordance with this decision and the 1984 301(h) Memorandum of Understanding between the State and USEPA, the San Diego Water Board and USEPA have jointly proposed issuance of a draft 301(h)-modified permit incorporating both federal NPDES requirements and State Waste Discharge Requirements. The final permit will be issued without prejudice to the rights of any party to address the legal issue of the applicability of Section 1311(j)(5) of the Act to the Discharger's future NPDES permits.

The Discharger's permit renewal of the variance from federal secondary treatment standards, pursuant to CWA Sections 301(h) and (j)(5), is contingent upon:

- Determination by the California Coastal Commission that the proposed discharge is consistent with the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1451 *et seq.*);

- Determination by the U.S. Fish and Wildlife Service and the NOAA National Marine Fisheries Service that the proposed discharge is consistent with the federal Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*);

- Determination by the NOAA National Marine Fisheries Service that the proposed discharge is consistent with the Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 U.S.C. 1801, *et seq.*);

- Determination by the San Diego Water Board that the discharge will not result in additional treatment pollution control, or other requirement, on any other point or nonpoint sources (40 CFR 125.64);

- The San Diego Water Board's certification/concurrence that the discharge will comply with water quality standards for the pollutants which the 301(h) variance is requested (40 CFR 125.61) (i.e., TSS and BOD_5). The joint issuance of a NPDES permit which incorporates both the 301(h) variance and State waste discharge requirements will serve as the State's concurrence; and

- The USEPA Regional Administrator's final decision regarding the Discharger's CWA Section 301(h) variance request.

2. **Storm Water.** Sewage treatment works with a design flow of 1.0 MGD or greater are required to comply with Water Quality Order No. 97-03-DWQ (NPDES General Permit No. CAS000001), WDRs for Dischargers of Storm Water Associated with Industrial Activity, Excluding Construction Activities. The Discharger shall file a Notice of Intent within 60 days of adoption of this Order (unless already submitted under the previous Order) and comply with Order No. 97-03-DWQ or the Discharger shall provide certification to the San Diego Water Board and USEPA that all storm water is captured and treated on-site and no storm water is discharged or allowed to run off-site from the facility.

3. **Pretreatment.** Federal requirements at 40 CFR 403 establish pretreatment requirements for POTWs which receive pollutants from nondomestic users. This Order contains pretreatment requirements pursuant to 40 CFR 403.

4. **Collection System.** Publicly-owned collection systems are subject to coverage under State Water Board Order No. 2006-0003-DWQ, the Statewide General WDR For Collection System Agencies. The Discharger owns and operates a publicly-owned collection system and must retain coverage under the Statewide General WDR For Collection System Agencies.

   In addition, the previsions of this permit prohibit discharges from any point other than the authorized discharge point. Therefore, any discharges from the collection system are prohibited. Moreover, the collection system is part of the publicly-owned treatment works and, therefore, must comply with the provisions of this permit requiring reports of any noncompliance (40 CFR 122.44(l)(6) and (7)), proper operation and maintenance (40 CFR 122.41(e)), and duty to mitigate sewage spills (40 CFR 12.41(d)).

5. **Biosolids.** On February 19, 1993, the USEPA issued a final rule for the use and disposal of sewage sludge (40 CFR 503). This regulation requires that producers of sewage sludge meet certain handling, disposal, and monitoring requirements. The USEPA, not the San Diego Water Board, will oversee compliance with 40 CFR 503.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: Section 122.44(a) requires that permits include applicable technology-based limitations and standards; and Section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

A. Discharge Prohibitions

Discharge Prohibitions A.1, A.2, and A.3 have been carried over from Order No. R9-2002-0025 in Section III of this Order. Discharge Prohibitions A.4 and A.5 have been carried over as Discharge Provisions in Section VI.A.2 of this Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at Section 122.44, title 40 of the Code of Federal Regulations, require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards.

As previously described, the Discharger has requested a renewal of its variance under Section 301(h) of the CWA, 33 U.S.C. Section 1311(h), and the Ocean Pollution Reduction Act of 1994, 33 U.S.C. Section 1311(j)(5), from the federal secondary treatment standards contained in Section 301(b)(1)(B) of the CWA, U.S.C. Section 1311(b)(1)(B), for the pollutants TSS and BOD_5. A modification for pH was not requested. The effluent limitations for TSS and BOD_5, based on CWA Sections 301(h) and (j)(5), are previously described in this fact sheet. The technology based effluent limitation for pH, required by 40 CFR 133, continues to apply to the discharge which must be maintained within the limits of 6.0 to 9.0 pH units, at all times.

Table A of the Ocean Plan establishes technology based effluent limitations for publicly-owned treatment works. Table A requirements are summarized, below:

Table F-8. Summary of Technology-based Effluent Limitations from Table A of the Ocean Plan

Parameter	Unit	Average Monthly	Average Weekly	Instantaneous Maximum
Grease and Oil	mg/L	25	40	75
Suspended Solids[1]	mg/L	--	--	--
Settleable Solids	ml/L	1.0	1.5	3.0
Turbidity	NTU	75	100	225
pH	standard units	--	--	[2]

[1] Dischargers shall, as a 30-day average, remove 75 percent of suspended solids from the influent stream to the Facility before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L.

[2] Within limit of 6.0 to 9.0 at all times.

2. Applicable Technology-Based Effluent Limitations

The Facility consistently met the removal requirements for BOD_5 and TSS established in Order No. R9-2002-0025. System-wide monthly average removal rates for BOD_5 from January 2002 through December 2007 ranged from 59 percent to 71 percent; and annual removal averages ranging from 61 percent to 68 percent. System-wide monthly average removal rates for TSS from January 2002 through December 2007 ranged from 83 percent to 92.6 percent. Based on CWA Sections 301(h) and (j)(5), the percent removal requirements of BOD_5 and TSS remain appropriate and are carried over from Order No. R9-2002-0025. TSS and BOD_5 removal is computed on a "system-wide" basis to avoid double-counting of return solids and centrate streams.

Table A of the Ocean Plan contains a percent removal requirement of 75 percent. This requirement is not computed on a system-wide basis and applies directly to the Point Loma WTP influent and effluent waste streams. It is established in this Order as an effluent limitation based on Table A of the Ocean Plan.

The mass emission limitations for TSS in the existing permit are based on the effluent limitations requested by the Discharger in the 2007 301(h) application which were evaluated by USEPA in the 2008 TDD.

The effluent limitation for TSS of 75 mg/l was contained in the 1995 and 2003 permits. It continues to be an effluent limitation requested by the Discharger in the 2007 301(h) application. The San Diego Water Board and USEPA reviewed influent TSS data for January 2002 through December 2007. For this time period, the average effluent TSS concentration is 39.6 mg/l. Thus, the Discharger is expected to comply with the proposed effluent limitation for TSS of 75 mg/l.

40 CFR 122.45(f) requires NPDES permits to contain mass-based effluent limitations and 40 CFR 122.45(b) specifies that mass limits for POTWs shall be calculated based on design flow. The annual average design flow rate for the Point Loma WTP is 240 MGD. The previous Orders have contained mass-based effluent limitations for oil and grease calculated using the Discharger's projected end-of-permit annual average flow rate of 205 MGD, taken from the 1995 301(h) application. During the term of the existing permit, the Discharger's actual annual average flow rate ranged from 169 in 2002, to 161 in 2007. The Discharger has maintained compliance with effluent limitations for mass emissions calculated using 205 MGD. In the 2007 301(h) application, the Discharger's projected flow rates for the 5-year permit term range from 191 MGD in 2008, to 202 MGD in 2014. USEPA has not evaluated the impact of the PLOO discharge and compliance with CWA Section 301(h) decision criteria at an oil and grease mass emission rate associated with a PLOO discharge of 240 MGD. Based on the 2007 301(h) application, mass emission rate effluent limits continue to be based on the flow rate of 205 MGD, as they were in the 1995 and 2003 permits.

A summary of the applicable technology-based effluent limitations is provided below:

Summary of Technology-based Effluent Limitations
Discharge Point No. 001

Table F-9a. Summary of Technology-based Effluent Limitations Based on CWA Sections 301(h) and (j)(5)

Effluent Constituent	Units	Annual Average	Monthly Average
TSS	% removal[1]	---	≥80
	mg/l	---	75[4]
	metric tons/year	15,000[2]	---
		13,598[3]	---
BOD5	% removal[1]	≥58	---

[1] To be calculated on a system-wide basis, as provided in Addendum No. 1 to Order No. R9-2002-0025.
[2] To be achieved on permit effective date through December 31, 2013. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[3] To be achieved on January 1, 2014. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[4] Based on average monthly performance data (1990 through 1994) for the Point Loma WTP provided by the Discharger for the 1995 301(h) application.

Table F-9b. Summary of Technology-based Effluent Limitations Based on the Ocean Plan

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Total Suspended Solids	% removal	--	[1]	--	--	--
Oil and Grease	mg/L	25	40	--	--	75
	lbs/day	42,743	68,388	---	--	128,228
Settleable Solids	ml/L	1.0	1.5	--	--	3.0
Turbidity	NTU	75	100	--	--	225
pH	Standard unit	--	--	--	6.0	9.0

[1] The Discharger shall, as a 30-day average, remove 75 percent of suspended solids from the influent stream to the Facility before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 301(b) of the CWA and 40 CFR 122.44(d) require that NPDES permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that cause, have the reasonable potential to cause, or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA Section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided in Section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs is intended to protect the designated uses of the receiving water as specified in the Basin Plan and Ocean Plan, and achieve applicable water quality objectives and criteria that are contained in the Ocean Plan.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan and Ocean Plan designate beneficial uses, establish water quality objectives, and contain implementation programs and policies to achieve these objectives for all waters.

a. **Basin Plan.** The beneficial uses specified in the Basin Plan applicable to the Pacific Ocean are summarized in Section III.C.1 of this Fact Sheet. The Basin Plan includes water quality objectives for dissolved oxygen and pH applicable to the receiving water.

   The Basin Plan states, "The terms and conditions of the State Board's "*Water Quality Control Plan for Ocean Waters of California*" (Ocean Plan), "*Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*" (Thermal Plan), and any revisions thereto are incorporated into this Basin Plan by reference. The terms and conditions of the Ocean Plan and Thermal Plan apply to the ocean waters within this Region."

b. Ocean Plan. The beneficial uses specified in the Ocean Plan for the Pacific Ocean are summarized in Section III.C.2 of this Fact Sheet. The Ocean Plan also includes water quality objectives for ocean receiving waters for bacterial characteristics, physical characteristics, chemical characteristics, biological characteristics, and radioactivity.

Table B of the Ocean Plan includes the following water quality objectives for toxic pollutants and whole effluent toxicity:

i. 6-month median, daily maximum, and instantaneous maximum objectives for 21 chemicals and chemical characteristics, including total residual chlorine and chronic toxicity, for the protection of marine aquatic life;

ii. 30-day average objectives for 20 non-carcinogenic chemicals for the protection of human health;

iii. 30-day average objectives for 42 carcinogenic chemicals for the protection of human health; and

iv. Daily maximum objectives for acute and chronic toxicity.

3. Determining the Need for WQBELs

Order No. R9-2002-0025 contained effluent limitations for non-conventional and toxic pollutant parameters in Table B of the 1997 Ocean Plan. For Order No. R9-2009-0001, the need for effluent limitations based on water quality objectives in Table B of the Ocean Plan was re-evaluated in accordance with 40 CFR 122.44(d) and guidance for statistically determining the "reasonable potential" for a discharged pollutant to exceed an objective, as outlined in the revised *Technical Support Document for Water Quality-based Toxics Control* (TSD; EPA/505/2-90-001, 1991) and the Ocean Plan Reasonable Potential Analysis (RPA) Amendment that was adopted by the State Water Board on April 21, 2005. The statistical approach combines knowledge of effluent variability (as estimated by a coefficient of variation) with the uncertainty due to a limited amount of effluent data to estimate a maximum effluent value at a high level of confidence. This estimated maximum effluent value is based on a lognormal distribution of daily effluent values. Projected receiving water values (based on the estimated maximum effluent value or the reported maximum effluent value and minimum probable initial dilution), can then be compared to the appropriate objective to determine the potential for an exceedance of that objective and the need for an effluent limitation.

According to the Ocean Plan amendment, the RPA can yield three endpoints: 1) Endpoint 1, an effluent limitation is required and monitoring is required; 2) Endpoint 2, an effluent limitation is not required and the San Diego Water Board may require monitoring; 3) Endpoint 3, the RPA is inconclusive, monitoring is required, and an existing effluent limitation may be retained or a permit re-opener clause may be included to allow inclusion of an effluent limitation if future monitoring warrants the inclusion. Endpoint 3 is typically the result when there are fewer than 16 data points and all are censored data (i.e., below quantitation or method detection levels for an analytical procedure). If no data was provided for a parameter, and a RPA could not be conducted for that parameter, reasonable potential for that parameter was carried over to this Order based on the requirements of federal and State anti-backsliding regulations.

Reasonable Potential (Endpoint 1) to exceed water quality objectives contained within the Ocean Plan was determined for chronic toxicity, chlordane, and heptachlor, thus effluent limitations for chronic toxicity, chlordane, and heptachlor have been established in Order No. R9-2009-0001 based on the revised initial dilution results.

Using the RPcalc2.0 software tool developed by the State Water Board for conducting reasonable potential analyses and the revised minimum probable initial dilution value (Dm) of 204, the San Diego Water Board has determined that the constituents listed under Table F-16, when discharged through Discharge Point No. 001, do not have the reasonable potential to exceed their Ocean Plan Table B objectives (i.e., Endpoint 2), or do not require effluent limitations due to inconclusive evidence to establish reasonable potential (i.e., Endpoint 3), in accordance with 40 CFR 122.44(d). Instead, a narrative limit statement to comply with all Ocean Plan objectives and requirements is specified this Order.

This Order includes desirable maximum effluent concentrations for constituents that do not have reasonable potential, referred to as "performance goals" that were derived using the effluent limitations procedures described below. The Discharger is required to monitor for these constituents as stated in the MRP (Attachment E) to gather data used in reasonable potential analyses for the permit and assist in the demonstrations and evaluations required by CWA Section 301(h) and 40 CFR 125, Subpart G.

The removal of WQBELs based on the results of the RPA comply with the CWA and Ocean Plan. For waters where water quality equals or exceeds that which is needed to protect beneficial uses and otherwise comply with water quality standards, WQBELs may be revised if consistent with USEPA and State antidegradation policies. The constituents for which numeric WQBELs are proposed to be removed have no reasonable potential to exceed numeric water quality standards. As discussed in more detail below (see Section IV.E.2) existing water quality is expected to be maintained for these constituents. Therefore, removal of WQBELs for these constituents is consistent with USEPA and State antidegradation policies.

The discharge has received approval by the San Diego Water Board to implement effluent chlorination using sodium hypochlorite. Based on a review of bench-scale testing, total chlorine residual and the resulting halogenated organic chemical compounds associated with chlorination are not expected to exceed Ocean Plan Table B objectives (see Volume IV, Appendix D, of the 2007 301(h) application). However, based on best professional judgment, USEPA and the San Diego Water

Board have determined that the operation of effluent disinfection using chlorination at Point Loma WTP constitutes reasonable potential for the effluent discharge to exceed Table B objectives for these constituents. Based on this determination, WQBELs for the following constituents are included in the Order: total chlorine residual, phenolic compounds, chlorinated phenolics, chlorodibromomethane, chloroform, 1,4-dichlorobenzene, dichlorobromomethane, dichloromethane (methylene chloride), and halomethanes. In addition, the permit contains a condition requiring continuous compliance monitoring for total chlorine residual.

Conventional pollutants were not a part of the reasonable potential analysis. Effluent limitations for these pollutants are included in this Order as described in Section IV.B. above.

Effluent data provided in the Discharger's monitoring reports from January 2005 to December 2007 were used in the analyses. A minimum probable initial dilution of 204 was considered in these evaluations.

A summary of the RPA results is provided below:

Table F-10. RPA Results Summary

Parameter (µg/L)	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA End Point[8]
Arsenic	319	2.74	8[3]	3[6]	2
Cadmium	319	4.45	1[3]	0	2
Chromium (VI)	318	23.4	2[3]	0	2
Copper	136	72	3[3]	2[6]	2
Lead	136	5.3	2[3]	0	2
Mercury	136	0.139	0.004[3]	0.0005[6]	2
Nickel	136	21.1	5[3]	0	2
Selenium	136	1.6	15[3]	0	2
Silver	136	0.91	0.7[3]	0.16[6]	2
Zinc	136	65.8	20[3]	8[6]	2
Cyanide	135	0.004	1[3]	0	2
Total Residual Chlorine	4	<0.03	2[3]	0	1[7]
Ammonia	136	36.7	600[3]	0	2
Acute Toxicity	11	5.3	0.3[4]	0	2
Chronic Toxicity	157	>667	1[4]	0	1
Phenolic Compounds	136	25.6	30	0	1[7]
Chlorinated Phenolics	136	1.85	1	0	1[7]
Endosulfan (ng/L)	136	0.7	9[3]	0	2
Endrin	136	<0.05	0.002[3]	0	2
HCH (ng/L)	136	72.5	4[3]	0	2
Acrolein	136	<11.4	220[5]	0	2
Antimony	136	<2.9	1,200[5]	0	2
Bis(2-chloroethoxyl)methane	37	<1.57	4.4[5]	0	2
Bis(2-chloroisopropyl)ether	37	<8.95	1,200[5]	0	2
Chlorobenzene	36	<1	570[5]	0	2
Chromium (III)	136	23.4	190,000[5]	0	2
Di-n-butyl phthalate	37	<6.49	3,500[5]	0	2
Dichlorobenzenes	64	3.49	5,100[5]	0	2
Diethyl phthalate	37	11.2	33,000[5]	0	2

Parameter (µg/L)	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA End Point[8]
Dimethyl phthalate	37	<3.26	820,000[5]	0	2
4,6-Dinitro-2-methylphenol	136	<4.29	220[5]	0	2
2,4-Dinitrophenol	136	<6.07	4[5]	0	2
Ethylbenzene	36	<1	4,100[5]	0	2
Fluoranthene	37	<6.9	15	0	2
Hexachlorocyclopentadiene	64	All non-detect, no MDL provided, assumed End Point 3			
Nitrobenzene	37	<1.52	4.9[5]	0	2
Thallium	53	<1.806	2[5]	0	2
Toluene	36	3.54	85,000[5]	0	2
Tributyltin	12	<1	0.0014	0	2
1,1,1-Trichloroethane	36	<1	540,000[5]	0	2
Acrylonitrile	36	<13.8	0.1[5]	0	2
Aldrin	36	<60	0.000022[5]	0	2
Benzene	36	<1	5.9[5]	0	2
Benzidine	35	<1.02	0.000069[5]	0	2
Beryllium	136	<0.04	0.033[5]	0	2
Bis(2-chloroethyl) ether	37	<2.62	0.045[5]	0	2
Bis(2-ethylhexyl) phthalate	33	<10.43	3.5[5]	0	2
Carbon tetrachloride	36	<1	0.9[5]	0	2
Chlordane (ng/L)	136	92	0.023	0	1
Chlorodibromomethane	36	2.87	8.6[5]	0	1[7]
Chloroform	36	<1	130[5]	0	1[7]
DDT (ng/L)	136	<140	0.17[5]	0	2
1,4-Dichlorobenzene	64	3.49	18[5]	0	1[7]
3,3-Dichlorobenzidine	35	<2.43	0.0081[5]	0	2
1,2-Dichloroethane	36	<1	28[5]	0	2
1,1-Dichloroethylene	36	<1	0.9[5]	0	2
Dichlorobromomethane	36	3.66	6.2[5]	0	1[7]
Dichloromethane	36	6.32	450[5]	0	1[7]
1,3-Dichloropropene	35	<2	8.9[5]	0	2
Dieldrin (ng/L)	136	<50	0.04[5]	0	2
2,4-Dinitrotoluene	37	<1.49	2.6[5]	0	2
1,2-Diphenylhydrazine	37	<2.49	0.16[5]	0	2
Halomethanes	36	<3	130[5]	0	1[7]
Heptachlor (ng/L)	136	44	0.05[5]	0	1
Heptachlor Epoxide (ng/L)	136	<20	0.02[5]	0	3
Hexachlorobenzene	37	<4.8	0.00021[5]	0	3
Hexachlorobutadiene	37	<2.87	14[5]	0	2
Hexachloroethane	37	<3.55	2.5[5]	0	2
Isophorone	37	<1.93	730[5]	0	2
N-nitrosodimethylamine	37	<2.01	7.3[5]	0	2
N-nitrosodi-N-propylamine	37	<1.16	0.38[5]	0	2
N-nitrosodiphenylamine	37	<2.96	2.5[5]	0	2
PAHs	37	<72.48	0.0088[5]	0	3
PCBs (ng/L)	135	<18.360	0.019[5]	0	3
TCDD equivalents		All ND's, C>MDL, thus automatic End Point 3			
1,1,2,2-Tetrachoroethane	36	<1	2.3[5]	0	2
Tetrachloroethylene	36	3.4	2	0	2
Toxaphene (ng/L)	136	<4,000	0.21[5]	0	3
Trichloroethylene	36	<1	27[5]	0	2
1,1,2-Trichloroethane	36	1.13	9.4[5]	0	2

Parameter (µg/L)	n[1]	MEC[2]	Most Stringent Criteria	Background	RPA End Point[8]
2,4,6-Trichlorophenol	136	<1.75	0.29[5]	0	2
Vinyl Chloride	36	<1	36[5]	0	2

1 Number of data points available for the RPA.
2 If there is a detected value, the highest reported value is summarized in the table. If there are no detected values, the lowest MDL is summarized in the table.
3 Based on the 6-Month Median in the Table B of the Ocean Plan.
4 Based on the Daily Maximum in Table B of the Ocean Plan.
5 Based on 30-Day Average in Table B of the Ocean Plan.
6 Background concentrations contained in Table C of the Ocean Plan.
7 Based on BPJ due to operations at the Facility.
8 End Point 1 – Reasonable potential determined, limit required, monitoring required.
End Point 2 – Discharger determined not to have RP, monitoring may be established.
End Point 3 – RPA was inconclusive, carry over previous limits if applicable, establish monitoring.

4. WQBEL Calculations

a. Effluent limitations and performance goals for pollutants with Ocean Plan Table B water quality objectives, except for acute toxicity (if applicable) and radioactivity, were calculated according to the following equation:

Ce = Co + Dm (Co – Cs) where,
Ce = the effluent limitation (µg/L)
Co = the water quality objective to be met at the completion of initial dilution (ug/L)
Cs = background seawater concentration
Dm = minimum probable initial dilution expressed as parts seawater per part wastewater

The performance goal for acute toxicity is calculated according to the following equation where all variables are as previously indicated. This equation applies only when Dm > 24:

Ce = Co + (0.1) Dm (Co – Cs)

The Dm is based on observed waste flow characteristics, receiving water density structure, and the assumption that no currents of sufficient strength to influence the initial dilution process flow across the discharge structure.

b. The State Water Board had accepted the minimum initial dilution factor, Dm, for the PLOO to be 204 to 1. This determination is based on the results of a modified version of the RSB model, submitted with the Discharger's 1995 ROWD and the Discharger's 1995 301(h) application to USEPA.

Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge. For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally, or when the plume surfaces.

c. Table C of the Ocean Plan establishes background concentrations for some pollutants to be used when determining reasonable potential (represented as "Cs"). In accordance with Table B implementing procedures, Cs equals zero for all pollutants where background concentrations are not established in Table C. The background concentrations provided in Table C are summarized below:

Table F-11. Pollutants Having Background Concentrations

Pollutant	Background Seawater Concentration
Arsenic	3 µg/L
Copper	2 µg/L
Mercury	0.0005 µg/L
Silver	0.16 µg/L
Zinc	8 µg/L

d. As examples, performance goals for copper and lead are determined as follows:

Water quality objectives from the Ocean Plan for copper and lead are:

Table F-12. Example Parameter Water Quality Objectives

Pollutant	6-Month Median	30-Day Average	Daily Maximum	Instantaneous Maximum
Copper (µg/L)	3	--	12	30
Chlordane (µg/L)	--	0.000023	--	--

Using the equation, Ce = Co + Dm (Co – Cs), effluent limitations/performance goals are calculated as follows before rounding to two significant digits.

Copper

Ce = 3 + 204 (3 – 2) = 207 µg/L (6-Month Median)
Ce = 12 + 204 (12 – 2) = 2,052 µg/L (Daily Maximum)
Ce = 20 + 204 (20 – 2) = 3,692 µg/L (Instantaneous Maximum)

Chlordane

Ce = 0.000023 + 204 (0.000023 – 0) = 4.7E-03 µg/L (30-Day Average)

Based on the implementing procedures described above, effluent limitations or performance goals have been calculated for all Table B pollutants from the Ocean Plan and incorporated into Order No. R9-2009-0001.

e. Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration.

Mass-based effluent limitations were calculated using the following equation, based on projected end-of-permit of 205 MGD:

Lbs/day = Projected End-of-Permit Flow (MGD) x Pollutant Concentration (mg/L) x 8.34

f. A summary of the WQBELs established in Order No. R9-2009-0001 is provided below:

**Summary of Water Quality-based Effluent Limitations
Discharge Point No. 001**

Table F-13. Summary of Water Quality-based Effluent Limitations

Parameter	Unit	Water Quality-Based Effluent Limitations			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
BASED ON OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE					
Chronic Toxicity[1]	TUc	--	205	--	--
Total Chlorine Residual	µg/L	4.1E+02	1.6E+03	1.2E+04	--
	lbs/day	7.0E+02	2.8E+03	2.1E+04	--
Phenolic Compounds (non-chlorinated)	µg/L	6.2E+03	2.5E+04	6.2E+04	--
	lbs/day	1.1E+04	4.2E+04	1.1E+05	--
Chlorinated Phenolics	µg/L	2.1E+02	8.2E+02	2.1E+03	--
	lbs/day	3.5E+02	1.4E+03	3.5E+03	--
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS					
Chlordane[2]	µg/L	--	--	--	4.7E-03
	lbs/day	--	--	--	8.1E-03
Chlorodibromomethane	µg/L	--	--	--	1.8E+03
	lbs/day	--	--	--	3.0E+03
Chloroform	µg/L	--	--	--	2.7E+04
	lbs/day	--	--	--	4.6E+04
1,4-Dichlorobenzene	µg/L	--	--	--	3.7E+03
	lbs/day	--	--	--	6.3E+03
Dichlorobromomethane	µg/L	--	--	--	1.3E+03
	lbs/day	--	--	--	2.2E+03
Dichloromethane	µg/L	--	--	--	9.2E+04
	lbs/day	--	--	--	1.6E+05
Halomethanes[3]	µg/L	--	--	--	2.7E+04
	lbs/day	--	--	--	4.6E+04
Heptachlor	µg/L	--	--	--	1.0E-02
	lbs/day	--	--	--	1.8E-02

1 Chronic toxicity is expressed as Chronic Toxicity Units (TUc) = 100/NOEL, where NOEL (No Observed Effect Level) is expressed as the maximum percent effluent that causes no observable effect on a test organism.

2 Chlordanes represent the sum of chlordane-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

3 Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

g. A summary of the performance goals established in Order No. R9-2009-0001 is provided in Table F-16 of this Fact Sheet.

5. Whole Effluent Toxicity (WET)

a. Implementing provisions at Section III.C of the Ocean Plan require chronic toxicity monitoring for ocean waste discharges with minimum initial dilution factor between 100 and 350. RPA results based on procedures specified in the Ocean Plan indicate that the effluent has the reasonable potential to exceed the chronic toxicity water quality objective. Based on methods contained in the Ocean Plan, a maximum daily effluent limitation of 205 TU_c is established in this Order and monthly monitoring is carried over from Order No. R9-2002-0025. New permit conditions for quality assurance and test review are added based on USEPA guidance for whole effluent toxicity programs.

b. Implementing provisions at Section III.C of the Ocean Plan allow for the establishment of acute toxicity testing, in addition to chronic, for ocean waste discharges with minimum initial dilution factors between 100 and 350. A performance goal for acute toxicity of 6.42 TUa is established based on "Equation 2" provided in Section III.C.3.b of the Ocean Plan. Semi-annual acute toxicity monitoring is carried over from Order No. R9-2002-0025. New permit conditions for quality assurance and test review are added based on USEPA guidance for whole effluent toxicity testing programs.

D. Final Effluent Limitations

The following tables list the effluent limitations established by Order No. R9-2009-0001. Where Order No. R9-2009-0001 establishes mass emission limitations, these limitations have been derived based on a flow of 205 MGD.

Table F-14.a. Effluent Limitations Based on CWA Sections 301(h) and (j)(5)

Effluent Constituent	Units	Annual Average	Monthly Average
TSS	% removal[1]	---	≥80
	mg/l	---	75[4]
	metric tons/year	15,000[2]	---
		13,598[3]	---
BOD5	% removal[1]	≥58	---

[1] To be calculated on a system-wide basis, as provided in Addendum No. 1 to Order No. R9-2002-0025.
[2] To be achieved on permit effective date through December 31, 2013. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[3] To be achieved on January 1, 2014. Applies only to TSS discharges from POTWs owned and operated by the Discharger and the Discharger's wastewater generated in the Metro System service area; does not apply to wastewater (and the resulting TSS) generated in Mexico which, as a result of upset or shutdown, is treated at and discharged from Point Loma WTP.
[4] Based on average monthly performance data (1990 through 1994) for the Point Loma WTP provided by the Discharger for the 1995 301(h) application.

Table F-14.b. Effluent Limitations Based on Advanced Primary Treatment and Table A of the Ocean Plan

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Oil and Grease	mg/L	25	40	--	--	75
	lbs/day	42,743	68,388	---	--	128,228
Total Suspended Solids	% removal	[1]	--	--	--	--
Settleable Solids	ml/L	1.0	1.5	--	--	3.0
Turbidity	NTU	75	100	--	--	225
pH	Standard unit	--	--	--	6.0	9.0

[1] The Discharger shall, as a 30-day average, remove 75% of suspended solids from the influent stream to the Facility before discharging wastewaters to the ocean, except that the effluent limitation to be met shall not be lower than 60 mg/L.

Table F-15. Effluent Limitations Based on Table B of the Ocean Plan

Parameter	Unit	Water Quality-Based Effluent Limitations			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
BASED ON OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE					
Chronic Toxicity[1]	TUc	--	205	--	--
Total Chlorine Residual	µg/L	4.1E+02	1.6E+03	1.2E+04	--
	lbs/day	7.0E+02	2.8E+03	2.1E+04	--
Phenolic Compounds (non-chlorinated)	µg/L	6.2E+03	2.5E+04	6.2E+04	--
	lbs/day	1.1E+04	4.2E+04	1.1E+05	--
Chlorinated Phenolics	µg/L	2.1E+02	8.2E+02	2.1E+03	--
	lbs/day	3.5E+02	1.4E+03	3.5E+03	--
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – CARCINOGENS					
Chlordane[2]	µg/L	--	--	--	4.7E-03
	lbs/day	--	--	--	8.1E-03
Chlorodibromomethane	µg/L	--	--	--	1.8E+03
	lbs/day	--	--	--	3.0E+03
Chloroform	µg/L	--	--	--	2.7E+04
	lbs/day	--	--	--	4.6E+04
1,4-Dichlorobenzene	µg/L	--	--	--	3.7E+03
	lbs/day	--	--	--	6.3E+03
Dichlorobromomethane	µg/L	--	--	--	1.3E+03
	lbs/day	--	--	--	2.2E+03
Dichloromethane	µg/L	--	--	--	9.2E+04
	lbs/day	--	--	--	1.6E+05
Halomethanes[3]	µg/L	--	--	--	2.7E+04
	lbs/day	--	--	--	4.6E+04

Parameter	Unit	Water Quality-Based Effluent Limitations			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
Heptachlor	µg/L	--	--	--	1.0E-02
	lbs/day	--	--	--	1.8E-02

[1] Chronic toxicity is expressed as Chronic Toxicity Units (TUc) = 100/NOEL, where NOEL (No Observed Effect Level) is expressed as the maximum percent effluent that causes no observable effect on a test organism.
[2] Chlordanes represent the sum of chlordane-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.
[3] Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

E. Performanc e Goals

Constituents that do not have reasonable potential are assigned performance goals in this Order. Performance goals serve to maintain existing treatment levels and effluent quality and support State and federal antidegradation policies. Where WQBELs have not been established in accordance with Ocean Plan RPA procedures, performance goals provide all interested parties with information regarding the Ocean Plan regulatory levels that effluent pollutants need to achieve in order to protect ocean water quality. An exceedance of a performance goal may prompt the San Diego Water Board or USEPA to re-open and amend the permit to incorporate WQBELs based on 40 CFR 122.44(d)(1), in accordance with 40 CFR 122.62.

The following table lists the performance goals established by Order No. R9-2009-0001. A minimum probable initial dilution factor of 204 was used in establishing the performance goals.

Table F-16. Performance Goals Based on the Ocean Plan.

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
BASED ON OBJECTIVES FOR PROTECTION OF MARINE AQUATIC LIFE					
Arsenic, Total Recoverable	µg/L	1.0E+03	5.9E+03	1.6E+04	--
	lbs/day	1.8E+03	1.0E+04	2.7E+04	--
Cadmium, Total Recoverable	µg/L	2.1E+02	8.2E+02	2.1E+03	--
	lbs/day	3.5E+02	1.4E+03	3.5E+03	--
Chromium VI, Total Recoverable[2]	µg/L	4.1E+02	1.6E+03	4.1E+03	--
	lbs/day	7.0E+02	2.8E+03	7.0E+03	--
Copper, Total Recoverable	µg/L	2.1E+02	2.1E+03	5.7E+03	--
	lbs/day	3.5E+02	3.5E+03	9.8E+03	--
Lead, Total Recoverable	µg/L	4.1E+02	1.6E+03	4.1E+03	--
	lbs/day	7.0E+02	2.8E+03	7.0E+03	--
Mercury, Total Recoverable[11]	µg/L	8.1	3.3E+01	8.2E+01	--
	lbs/day	1.4E+01	5.6E+01	1.4E+02	--
Nickel, Total Recoverable	µg/L	1.0E+03	4.1E+03	1.0E+04	--

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
	lbs/day	1.8E+03	7.0E+03	1.8E+04	--
Selenium, Total Recoverable	µg/L	3.1E+03	1.2E+04	3.1E+04	--
	lbs/day	5.3E+03	2.1E+04	5.3E+04	--
Silver, Total Recoverable	µg/L	1.1E+02	5.4E+02	1.4E+03	--
	lbs/day	1.9E+02	9.3E+02	2.4E+03	--
Zinc, Total Recoverable	µg/L	2.5E+03	1.5E+04	3.9E+04	--
	lbs/day	4.2E+03	2.5E+04	6.7E+04	--
Cyanide, Total Recoverable [3]	µg/L	2.1E+02	8.2E+02	2.1E+03	--
	lbs/day	3.5E+02	1.4E+03	3.5E+03	--
Ammonia (expressed as nitrogen)	µg/L	1.2E+05	4.9E+05	1.2E+06	--
	lbs/day	2.1E+05	8.4E+05	2.1E+06	--
Acute Toxicity	TUa	NA	6.42	NA	--
Endosulfan[10]	µg/L	1.8	3.7	5.5	--
	lbs/day	3.2	6.3	9.5	--
Endrin	µg/L	0.41	0.82	1.2	--
	lbs/day	0.7	1.4	2.1	--
HCH[4]	µg/L	0.82	1.6	2.5	--
	lbs/day	1.4	2.8	4.2	--
Radioactivity	pci/l	Not to exceed limits specified in Title 17, Division 1, Chapter 5, Subchapter 4, Group 3, Article 3, Section 30253 of the California Code of Regulations, Reference to Section 30253 is prospective, including future changes to any incorporated provisions of federal law, as the changes take effect.			
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH – NONCARCINOGENS					
Acrolein	µg/L	--	--	--	4.5E+04
	lbs/day	--	--	--	7.7E+04
Antimony	µg/L	--	--	--	2.5E+05
	lbs/day	--	--	--	4.2E+05
Bis(2-chloroethoxy) Methane	µg/L	--	--	--	9.0E+02
	lbs/day	--	--	--	1.5E+03
Bis(2-chloroisopropyl) ether	µg/L	--	--	--	2.5E+05
	lbs/day	--	--	--	4.2E+05
Chlorobenzene	µg/L	--	--	--	1.2E+05
	lbs/day	--	--	--	2.0E+05
Chromium (III), Total Recoverable[2]	µg/L	--	--	--	3.9E+07
	lbs/day	--	--	--	6.7E+07
Di-n-butyl Phthalate	µg/L	--	--	--	7.2E+05
	lbs/day	--	--	--	1.2E+06
Dichlorobenzenes[5]	µg/L	--	--	--	1.0E+06

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
	lbs/day	--	--	--	1.8E+06
Diethyl Phthalate	µg/L	--	--	--	6.8E+06
	lbs/day	--	--	--	1.2E+07
Dimethyl Phthalate	µg/L	--	--	--	1.7E+08
	lbs/day	--	--	--	2.9E+08
4,6-dinitro-2-methylphenol	µg/L	--	--	--	4.5E+04
	lbs/day	--	--	--	7.7E+04
2,4-dinitrophenol	µg/L	--	--	--	8.2E+02
	lbs/day	--	--	--	1.4E+03
Ethylbenzene	µg/L	--	--	--	8.4E+05
	lbs/day	--	--	--	1.4E+06
Fluoranthene	µg/L	--	--	--	3.1E+03
	lbs/day	--	--	--	5.3E+03
Hexachlorocyclopentadiene	µg/L	--	--	--	1.2E+04
	lbs/day	--	--	--	2.0E+04
Nitrobenzene	µg/L	--	--	--	1.0E+03
	lbs/day	--	--	--	1.7E+03
Thallium, Total Recoverable	µg/L	--	--	--	4.1E+02
	lbs/day	--	--	--	7.0E+02
Toluene	µg/L	--	--	--	1.7E+07
	lbs/day	--	--	--	3.0E+07
Tributyltin	µg/L	--	--	--	2.9E-01
	lbs/day	--	--	--	4.9E-01
1,1,1-trichloroethane	µg/L	--	--	--	1.1E+08
	lbs/day	--	--	--	1.9E+08
BASED ON OBJECTIVES FOR PROTECTION OF HUMAN HEALTH - CARCINOGENS					
Acrylonitrile	µg/L	--	--	--	21
	lbs/day	--	--	--	35
Aldrin	µg/L	--	--	--	4.5E-03
	lbs/day	--	--	--	7.7E-03
Benzene	µg/L	--	--	--	1.2E+03
	lbs/day	--	--	--	2.1E+03
Benzidine	µg/L	--	--	--	1.4E-02
	lbs/day	--	--	--	2.4E-02
Beryllium	µg/L	--	--	--	6.8
	lbs/day	--	--	--	1.2E+01
Bis(2-chloroethyl) Ether	µg/L	--	--	--	9.2
	lbs/day	--	--	--	1.6E+01

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
Bis(2-ethlyhexyl) Phthalate	µg/L	--	--	--	7.2E+02
	lbs/day	--	--	--	1.2E+03
Carbon Tetrachloride	µg/L	--	--	--	1.8E+02
	lbs/day	--	--	--	3.2E+02
DDT[6]	µg/L	--	--	--	3.5E-02
	lbs/day	--	--	--	6.0E-02
3,3'-dichlorobenzidine	µg/L	--	--	--	1.7
	lbs/day	--	--	--	2.8
1,2-dichloroethane	µg/L	--	--	--	5.7E+03
	lbs/day	--	--	--	9.8E+03
1,1-dichloroethylene	µg/L	--	--	--	1.8E+02
	lbs/day	--	--	--	3.2E+02
1,3-dichloropropene	µg/L	--	--	--	1.8E+03
	lbs/day	--	--	--	3.1E+03
Dieldrin	µg/L	--	--	--	8.2E-03
	lbs/day	--	--	--	1.4E-02
2,4-dinitrotoluene	µg/L	--	--	--	5.3E+02
	lbs/day	--	--	--	9.1E+02
1,2-diphenylhydrazine	µg/L	--	--	--	3.3E+01
	lbs/day	--	--	--	5.6E+01
Heptachlor Epoxide	µg/L	--	--	--	4.1E-03
	lbs/day	--	--	--	7.0E-03
Hexachlorobenzene	µg/L	--	--	--	4.3E-02
	lbs/day	--	--	--	7.4E-02
Hexachlorobutadiene	µg/L	--	--	--	2.9E+03
	lbs/day	--	--	--	4.9E+03
Hexachloroethane	µg/L	--	--	--	5.1E+02
	lbs/day	--	--	--	8.8E+02
Isophorone	µg/L	--	--	--	1.5E+05
	lbs/day	--	--	--	2.6E+05
N-nitrosodimethylamine	µg/L	--	--	--	1.5E+03
	lbs/day	--	--	--	2.6E+03
N-nitrosodi-N-propylamine	µg/L	--	--	--	7.8E+01
	lbs/day	--	--	--	1.3E+02
N-nitrosodiphenylamine	µg/L	--	--	--	5.1E+02
	lbs/day	--	--	--	8.8E+02
PAHs[7]	µg/L	--	--	--	1.8
	lbs/day	--	--	--	3.1

Parameter	Unit	Performance Goals[1]			
		6-Month Median	Maximum Daily	Instantaneous Maximum	30-Day Average
PCBs[8]	µg/L	--	--	--	3.9E-03
	lbs/day	--	--	--	6.7E-03
TCDD equivalents[9]	µg/L	--	--	--	8.0E-07
	lbs/day	--	--	--	1.4E-06
1,1,2,2-tetrachloroethane	µg/L	--	--	--	4.7E+02
	lbs/day	--	--	--	8.1E+02
Tetrachloroethylene	µg/L	--	--	--	4.1E+02
	lbs/day	--	--	--	7.0E+02
Toxaphene	µg/L	--	--	--	4.3E-02
	lbs/day	--	--	--	7.4E-02
Trichloroethylene	µg/L	--	--	--	5.5E+03
	lbs/day	--	--	--	9.5E+03
1,1,2-trichloroethane	µg/L	--	--	--	1.9E+03
	lbs/day	--	--	--	3.3E+03
2,4,6-trichlorophenol	µg/L	--	--	--	5.9E+01
	lbs/day	--	--	--	1.0E+02
Vinyl Chloride	µg/L	--	--	--	7.4E+03
	lbs/day	--	--	--	1.3E+04

1 Scientific "E" notation is used to express certain values. In scientific "E" notation, the number following "E" indicates the position of the decimal point in the value. Negative numbers after the "E" indicate that the value is less than 1, and positive numbers after the "E" indicate that the value is greater than 1. In this notation a value of 6.1E-02 represents 6.1×10^{-2} or 0.061, 6.1E+02 represents 6.1×10^{2} or 610, and 6.1E+00 represents 6.1×10^{0} or 6.1.

2 Dischargers may, at their option, meet this limitation (or apply this performance goal) as a total chromium limitation (or performance goal).

3 If a Discharger can demonstrate to the satisfaction of the San Diego Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by (or performance goals may be evaluated with) the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136, as revised May 14, 1999.

4 HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

5 Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.

6 DDD (dichlorodiphenyldichloroethane), DDE (dichlorodiphenyldichloroethylene), and DDT (dichlorodiphenyltrichloroethane) represent the sum of 4,4'DDT; 2,4'DDT; 4,4'DDE; 2,4'DDE; 4,4'DDD; and 2,4'DDD.

7 PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenapthylene; anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo[k]fluoranthene; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[a,h]anthracene; fluorene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene.

8 PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

[9] TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 1613 shall be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

[10] Endosulfan shall mean the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.
[11] USEPA Method 1631E, with a quantitation level of 0.5 ppt (0.5 ng/L), shall be used to analyze total mercury.

1. Satisfaction of Anti-Backsliding Requirements

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of the parameters summarized in Table F-16, for which performance goals have been established in the place of effluent limitations.

Effluent limitations from Order No. R9-2002-0025 are not retained for constituents where RPA results indicated Endpoint 2 or Endpoint 3; instead, performance goals have been established for these constituents. In the 1995 and 2003 permits, WQBELs for Table B constituents were established using Ocean Plan procedures in effect at that time. CWA 402(o)(2) allows relaxation of WQBELs in certain situations, but does not apply to "new information" that includes revised regulations. Moreover, new information can only be used when the revised WQBELs will result in a net reduction in pollutant loading. Relaxation of WQBELs can be authorized under CWA Sections 402(o)(1)/303(d)(4) for attainment waters, but only if consistent with antidegradation policies and existing Ocean Plan WQS are protected (CWA Section 402(o)(3)).

The MRP for this Order is designed to obtain additional information to determine if reasonable potential exists for these constituents and assist in the demonstration and evaluation of CWA Section 301(h) criteria.

This permit complies with all applicable statutory and regulatory federal and State anti-backsliding requirements.

2. Satisfaction of Antidegradation Policy

Waste Discharge Requirements for the Discharger must conform with federal and State antidegradation policies provided at 40 CFR 131.12 and in State Water Board Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California.* These antidegradation policies require beneficial uses and the water quality necessary to maintain those uses to be maintained and protected in waters receiving the discharge. Moreover, if existing water quality is better than the quality required to maintain beneficial uses, then existing water quality must be maintained and protected, unless the San Diego Water Board determines that allowing a lowering of existing water quality is necessary to accommodate important economic and social development, or consistent with maximum benefit to the people of California. Satisfaction of these policies is explained, below.

a. The Technology-based Effluent Limitations

The effluent limitations based on CWA Sections 301(h) and (j)(5) and technology-based effluent limitations taken from Ocean Plan Table A requirements are as stringent as those in the previous permit and no lowering of existing water quality is expected beyond the zone of initial dilution, consistent with applicable water quality standards.

b. Water Quality-based Effluent Limitations

The water quality-based effluent limitations contained in this Order have been modified from previous NPDES permits for the Discharger, including Order No. R9-2002-0025, due removal of effluent limitations after a RPA. In accordance with the State Water Board's Administrative Procedures Update, the San Diego Water Board assessed the potential impact of the modified effluent limitations on existing water quality and the need for an antidegradation analysis as follows:

i. PLOO Initial Dilution Factor

As discussed elsewhere in this Fact Sheet, the initial dilution factor of 204, Dm, was carried over for this permit renewal.

ii. Removal of Effluent Limitations after a RPA

Although the 1995 and 2003 permits included WQBELs for all Ocean Plan Table B constituents, following Ocean Plan procedures in place at the time, this permit only includes WQBELs for those Table B constituents found to cause, have the reasonable potential to cause, or contribute to an excursion above water quality standards, in accordance with 40 CFR 122.44(d) and RPA procedures in the 2006 Ocean Plan. For Table B constituents without WQBELs, this permit includes performance goals which will indicate the levels of discharge that protect water quality standards. The removal of WQBELs is not expected to cause a change in the chemical nature of the effluent discharge, impact beneficial uses, or lower existing receiving water quality.

Coupled with the inclusion of performance goals, toxics mass emission benchmarks from previous permits, and retention of the monitoring and reporting program, existing water quality is expected to be maintained by the discharge. For these reasons, the San Diego Water Board has determined that an antidegradation analysis is not needed.

3. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD_5, TSS, oil and grease, settleable solids, turbidity, and pH. Restrictions on these pollutants are discussed in Section IV.B of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. These limitations are not more stringent than required by the CWA.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. The scientific procedures for calculating individual water quality-based effluent limitations are taken from the Ocean Plan which was approved by USEPA on February 14, 2006. All beneficial uses and water quality objectives contained in the Basin Plan were approved under State law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR 131.21(c)(1). The limitations and restrictions on individual parameters are not more stringent than required by the CWA.

F. Toxic Mass Emission Benchmarks

Order No. 95-106 and Order No. R9-2002-0025 contained toxics mass emission benchmarks for effluent discharged through the PLOO. These benchmarks were established to address the uncertainty due to projected increases in toxic pollutant loadings from the Point Loma WTP to the marine environment during the 5-year 301(h) variance, and to establish a framework for evaluating the need for an antidegradation analysis to determine compliance with water quality standards at the time of permit reissuance. The benchmarks contained in Order No. R9-2002-0025 are retained for this permit.

The annual mass emission benchmarks for the 1995 permit were determined using 1990 through April 1995 n-day average monthly performance (95^{th} percentile) of the Point Loma WTP and the Discharger's projected end-of-permit effluent flow of 205 MGD for the 1995 301(h) application. For the 2003 permit, mass emission benchmarks for copper and selenium were recalculated using the 1994 n-day average monthly performance (95^{th} percentile) and 205 MGD and the mass emission benchmark for cyanide was corrected. Average monthly performance was calculated as outlined in Appendix E of *Technical Support Document for Water Quality-based Toxics Control* (EPA/5005/2-90-001, 1991; TSD).

These mass emission benchmarks are not water quality-based effluent limitations and are not enforceable, as such. The mass emission threshold values may be re-evaluated and modified during the permit term, or the permit may be modified to incorporate water quality-based effluent limits, in accordance with the requirements set forth at 40 CFR 122.62 and 124.5. The following effluent mass emission benchmarks for toxic and carcinogenic materials apply to the undiluted effluent from Point Loma WTP discharged to the PLOO:

Table F-17. Effluent Mass Emission Benchmarks

Effluent Constituent	Units	Annual Mass Emission
Arsenic	mt/yr	0.88
Cadmium	mt/yr	1.4
Chromium (hexavalent)	mt/yr	14.2
Copper	mt/yr	26
Lead	mt/yr	14.2
Mercury[10]	mt/yr	0.19
Nickel	mt/yr	11.3
Selenium	mt/yr	0.44
Silver	mt/yr	2.8
Zinc	mt/yr	18.3
Cyanide[1]	mt/yr	1.57
Ammonia (as N)	mt/yr	8018
Phenolic compounds (non-chlorinated)	mt/yr	2.57
Chlorinated phenolics	mt/yr	1.73
Endosulfan[9]	mt/yr	0.006
Endrin	mt/yr	0.008
HCH[2]	mt/yr	0.025
Acrolein	mt/yr	17.6
Antimony	mt/yr	56.6
Bis(2-chloroethoxy) methane	mt/yr	1.5
Bis(2-chloroisopropyl) ether	mt/yr	1.61
Chlorobenzene	mt/yr	1.7
Di-n-butyl phthalate	mt/yr	1.33
Dichlorobenzenes[3]	mt/yr	2.8
Diethyl phthalate	mt/yr	6.23
Dimethyl phthalate	mt/yr	1.59
4,6-dinitro-2-methylphenol	mt/yr	6.8
2,4-dinitrophenol	mt/yr	11.9
Ethylbenzene	mt/yr	2.04
Flouranthene	mt/yr	0.62
Nitrobenzene	mt/yr	2.07
Thallium	mt/yr	36.8
Toluene	mt/yr	3.31
Tributyltin	mt/yr	0.001

Effluent Constituent	Units	Annual Mass Emission
1,1,1-trichloroethane	mt/yr	2.51
Acrylonitrile	mt/yr	5.95
Aldrin	mt/yr	0.006
Benzene	mt/yr	1.25
Benzidine	mt/yr	12.5
Beryllium	mt/yr	1.42
Bis(2-chloroethyl) ether	mt/yr	1.61
Bis(2-ethylhexyl) phthalate	mt/yr	2.89
Carbon tetrachloride	mt/yr	0.79
Chlordane[5]	mt/yr	0.014
Chloroform	mt/yr	2.19
DDT[4]	mt/yr	0.043
1,4-dichlorobenzene	mt/yr	1.25
3,3'-dichlorobenzidine	mt/yr	4.67
1,2-dichloroethane	mt/yr	0.79
1,1-dichloroethylene	mt/yr	0.79
Dichloromethane	mt/yr	13.7
1,3-dichloropropene	mt/yr	1.42
Dieldrin	mt/yr	0.011
2,4-dinitrotoluene	mt/yr	1.61
1,2-diphenylhydrazine	mt/yr	1.52
Halomethanes[6]	mt/yr	5.86
Heptachlor	mt/yr	0.001
Heptachlor epoxide	mt/yr	0.024
Hexachlorobenzene	mt/yr	0.54
Hexachlorobutadiene	mt/yr	0.54
Hexachloroethane	mt/yr	1.13
Isophorone	mt/yr	0.71
N-nitrosodimethylamine	mt/yr	0.76
N-nitrosodiphenylamine	mt/yr	1.47
PAHs[7]	mt/yr	15.45
PCBs[8]	mt/yr	0.275
1,1,2,2-tetrachloroethane	mt/yr	1.95
Tetrachloroethylene	mt/yr	4
Toxaphene	mt/yr	0.068
Trichloroethylene	mt/yr	1.56
1,1,2-trichloroethane	mt/yr	1.42
2,4,6-trichlorophenol	mt/yr	0.96
Vinyl chloride	mt/yr	0.4

1 If a Discharger can demonstrate to the satisfaction of the San Diego Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by (or performance goals may be evaluated with) the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR 136, as revised May 14, 1999.

2 HCH (hexachlorocyclohexane) represents the sum of the alpha, beta, gamma (lindane), and delta isomers of hexachlorocyclohexane.

3 Dichlorobenzenes represent the sum of 1,2- and 1,3-dichlorobenzene.

[4] DDD (dichlorodiphenyldichloroethane), DDE (dichlorodiphenyldichloroethylene), and DDT (dichlorodiphenyltrichloroethane) represent the sum of 4,4'DDT; 2,4'DDT; 4,4'DDE; 2,4'DDE; 4,4'DDD; and 2,4'DDD.

[5] Chlordanes represent the sum of chlordane-alpha, chlordane-gamma, nonachlor-alpha, nonachlor-gamma, and oxychlordane.

[6] Halomethanes represent the sum of bromoform, bromomethane (methyl bromide), and chloromethane (methyl chloride).

[7] PAHs (polynuclear aromatic hydrocarbons) represent the sum of acenapthylene; anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo[k]fluoranthene; 1,12-benzoperylene; benzo[a]pyrene; chrysene; dibenzo[a,h]anthracene; fluorene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene.

[8] PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

[9] Endosulfan shall mean the sum of alpha-endosulfan, beta-endosulfan, and endosulfan sulfate.

[10] USEPA Method 1631E, with a quantitation level of 0.5 ppt (0.5 ng/L), shall be used to analyze total mercury

G. Interim Effluent Limitations – Not Applicable

H. Land Discharge Specifications – Not Applicable

I. Reclamation Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Receiving water limitations of this Order are derived from the water quality objectives for ocean waters established by the Basin Plan and the Ocean Plan.

Receiving water limits for enterococcus in ocean waters beyond the outer limit of the territorial seas are based on CWA Section 304(a) water quality criteria and must be achieved beyond the zone of initial dilution in areas where primary contact recreation, as defined in USEPA guidance, occurs. USEPA describes the "primary contact recreation" use as protective when the potential for ingestion of, or immersion in, water is likely. Activities usually include swimming, water-skiing, skin-diving, surfing, and other activities likely to result in immersion. (*Water Quality Standards Handbook*, EPA-823-B-94-005a, 1994, p. 2-2.) The nature and extent of primary contact recreational use in federal waters is noted and reported during offshore monitoring.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code Sections 13267 and 13383 authorizes the San Diego Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and State requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

Influent monitoring is required to determine the effectiveness of pretreatment and non-industrial source control programs, to assess the performance of treatment facilities, and to evaluate compliance with effluent limitations.

Influent monitoring requirements have been carried over from the previous Order.

B. Effluent Monitoring

Effluent monitoring is required to determine compliance with the permit conditions and to identify operational problems and improve plant performance. Effluent monitoring also provides information on wastewater characteristics and flows for use in interpreting water quality and biological data.

Effluent monitoring requirements have been carried over from the previous Order. In addition, weekly monitoring for total coliform, fecal coliform, and enterococcus has been established to determine if the effluent is contributing to exceedances of water quality objectives for these parameters. Further, continuous monitoring for total residual chlorine has been established due to the Facility's plans to implement chlorination.

C. Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity testing (acute and chronic) have been established to determine compliance with the effluent limitation for chronic toxicity, and the performance goal for acute toxicity.

D. Receiving Water Monitoring

1. Core Monitoring Program for Surface Water

A monitoring program at the current discharge site has existed since 1991 and has focused on physical, chemical, and biological patterns in the region. The monitoring program underwent significant revision in 2003 to reallocate the level of effort that was in place at the time, in order to address crucial processes not addressed by earlier monitoring programs and provide a regional framework for interpreting discharge-related effects. The existing monitoring program reflects the principles expressed in the "Model Monitoring Program for Large Ocean Dischargers in Southern California" (SCCWRP, 2002). Since 2003, the following three components have constituted the Discharger's receiving water monitoring program: (1) Core Monitoring; (2) Strategic Process Studies; and (3) Regional Monitoring. These three components are needed to evaluate compliance with the permit, federal 301(h) decision criteria, and State water quality standards; and to assess the effects of the discharge on the marine environment.

There are five components to the Core Monitoring Program: general water quality monitoring; bacteriological monitoring of shoreline, kelp bed, and offshore waters; sediment monitoring for grain size, chemistry, and benthic infauna community structure; monitoring for fish and megabenthic invertebrate communities, and contaminant body burdens of fishes; and monitoring of kelp bed canopy cover.

a. General Water Quality

The offshore and kelp bed water quality sampling program is designed to help evaluate the fate of the wastewater plume under various conditions and to determine if the water quality objectives contained in the Ocean Plan are being achieved in the receiving water.

Salinity, temperature, density, pH, transmissivity, dissolved oxygen, and chlorophyll a are monitored throughout the entire water column quarterly at 36 offshore stations and five times per month at eight kelp bed stations. Ammonium is monitored at those stations which are located within State jurisdictional waters, on a quarterly basis and at the same discrete depths specified for bacterial monitoring.

General water quality monitoring requirements have been carried over from the previous Order.

b. Microbiological

Bacteria indicator sampling is required to help track the wastewater plume in federal and State offshore waters and evaluate compliance with recreational water quality standards in State waters within three nautical miles of the shoreline. In federal and State offshore waters, the nature and extent of primary contact recreational use in federal waters is noted and reported. A grid of 36 offshore stations is monitored quarterly for enterococcus. Eight kelp bed stations and eight shoreline stations are monitored five times per month for enterococcus, total coliform, and fecal coliform. At offshore and kelp bed stations, these parameters are monitored in the water column at fixed intervals. At shoreline stations, these parameters are monitored in the surf zone using grab samples.

General microbiological monitoring requirements have been carried over from the previous Order.

c. Sediment

The physical and chemical properties of sediments and the biological communities that live in or on these sediments are monitored to evaluate potential effects of the PLOO discharge and compliance with narrative water quality standards in the Ocean Plan. The core sediment monitoring program is designed to assess spatial and temporal trends. A core set of 12 to 22 stations are monitored twice each year, in January and July, using grab samples. Twelve primary stations are located along the 98-meter depth contour and 10 secondary stations are located along the 88-meter and 116-meter depth contours. The requirement for sampling at the secondary stations can be relaxed by the San

Diego Water Board and USEPA to allow the Discharger to participate in Bight-wide regional monitoring efforts. For sediment chemistry, monitored parameters include sediment grain size, metals, PCBs and chlorinated pesticides, and PAHs. Benthic community structure is evaluated using separate grab samples, in January and July.

General sediment monitoring requirements have been carried over from the previous Order.

d. Fish and Invertebrate

Epibenthic trawls at four trawl zone stations are used to assess the structure of demersal fish and megabenthic invertebrate communities and to evaluate compliance with narrative water quality standards in the Ocean Plan. Chemical analyses of fish tissues are performed annually on target species collected at or near the four trawl and two rig fishing stations. Species targeted for analysis are selected based on their ecological and/or commercial importance. Liver tissue is monitored at trawl stations to assess general fish health. Muscle tissue is monitored at rig fishing stations to assess the uptake of pollutants in fish species commonly consumed by humans in the region. Fish tissues are monitored for lipids, metals, PCBs, and chlorinated pesticides.

General fish and invertebrate monitoring has been carried over from the previous Order.

e. Kelp Bed Canopy

Annual kelp bed surveys are intended to assess the extent to which the discharge of wastes may affect the aerial extent and health of coastal kelp beds. This monitoring effort is conducted with other ocean dischargers in the San Diego Region and covers the entire San Diego Region coastline, from the international boundary to the San Diego Region/Santa Ana Region boundary. In each annual survey, the aerial extent of the various kelp beds are photographed and compared to previous surveys; further investigation is required if significant losses are observed to persist for more than one year.

Kelp bed monitoring has been carried over from the previous Order.

E. Strategic Process Studies and Regional Monitoring Requirements

In addition to Core Monitoring activities, the Discharger is required to conduct Strategic Process Studies and participate in Regional Monitoring activities coordinated by the Southern California Coastal Water Research Project (SCCWRP).

Strategic Process Studies are an integral part of the permit monitoring program and differ from other elements of the monitoring program (e.g., core monitoring, regional monitoring, other permit special studies). They are intended to be short-term and are designed to address specific research or management issues related to receiving water monitoring that are not addressed by core and regional monitoring elements. The scope of special studies is determined by the Discharger, in coordination with the San Diego Water Board Executive Officer and USEPA. Each year, the Discharger is required to submit proposals for strategic process studies for the following year's effort. Detailed scopes of work for each study are provided by the Discharger and approved by the Executive Officer and USEPA, prior to study implementation.

The intent of Regional Monitoring activities is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and best utilize the pooled scientific resources of the region. During these coordinated large-scale sampling efforts, the Discharger's sampling and analytical effort may be reallocated to provide a regional assessment of the impact of the discharge of municipal wastewater to the Southern California Bight. Anticipated modifications to the monitoring program will be coordinated so as to provide a more comprehensive picture of the ecological and statistical significance of monitoring results and determine cumulative impacts of various pollution sources. Under previous permits, the Discharger participated in regional monitoring efforts in 1994, 1998, 2003, and 2008. The Discharger provides its level of effort for Regional Monitoring for Executive Officer and USEPA approval, following the procedures and schedule established for approval of Strategic Process Studies.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard conditions that apply to all NPDES permits, in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of NPDES permits, in accordance with 40 CFR 122.42, are provided in Attachment D to this Order.

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits and must be incorporated into a permit either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the permit. 40 CFR 123.25(a)(12) allows the State to omit or modify federal provisions to impose more stringent State requirements. In accordance with 40 CFR 123.25(a)(12), the State-issued permit omits provisions at 40 CFR 122.41(j)(5) and 40 CFR 122.41(k)(2); in lieu of these provisions, the State permit references California Water Code section 13387(e) because enforcement under the Water Code is the more stringent requirement. However standard provisions at 40 CFR 122.41(j)(5) and 40 CFR 122.41(k)(2) are incorporated into the federal permit as standard provisions VI.D and VI.E.

B. Special Provisions

1. Re-opener Provisions

Order No. R9-2009-0001 may be re-opened and modified, revoked and reissued, or terminated, in accordance with 40 CFR Parts 122, 123, 124, and 125. The San Diego Water Board and USEPA may re-open the permit to modify conditions or requirements. Causes for modification include, but are not limited to, promulgation of new regulations by the State Water Board, San Diego Water Board, or USEPA, and revisions to the Basin Plan. Also, specific re-opener conditions are contained in the permit (e.g., for whole effluent toxicity, toxics mass emission benchmarks, regional monitoring, antidegradation, etc.).

2. Special Studies and Additional Monitoring Requirements

a. Whole Effluent Toxicity (WET)

i. Implementing provisions at Section III.C of the Ocean Plan require chronic toxicity monitoring for ocean waste discharges with minimum initial dilution factors between 100 and 350. In addition, the RPA results for this discharge show that the effluent has the reasonable potential to exceed the water quality objective for chronic toxicity. On May 4, 2003 chronic toxicity tests exceeded the existing permit limit of 205 TUc. Based on procedures in the Ocean Plan, a maximum daily limit of 205 TUc is established in the Order and monthly monitoring is carried over from the previous permit.

ii. Implementing provisions at Section III.C of the Ocean Plan allow for the establishment of acute toxicity monitoring, in addition to chronic, for ocean waste discharges with minimum initial dilution factors between 100 and 350. A performance goal for acute toxicity of 6.42 TUa is established based on "Equation 2" in Section III.C.3.b of the Ocean Plan. Semi-annual acute toxicity monitoring is carried over from the previous permit.

iii. Th e previous permit required the Discharger to submit a Toxicity Reduction Evaluation (TRE) workplan to the San Diego Water Board and USEPA, 180 days after the permit effective date. This Order requires the Discharger to maintain an up-to-date TRE workplan and to submit an updated workplan to the San Diego Water Board and USEPA, 90 days after the effective date of this Order. The TRE workplan describes steps the Discharger intends to follow if the effluent limitation for chronic toxicity (205 TUc) or the performance goal for acute toxicity (6.42 TUa) is exceeded.

iv. Similar to the existing permit, this Order provides for accelerated toxicity testing upon an exceedance of the chronic toxicity effluent limit, or an excursion above the acute toxicity performance goal. If toxicity is observed in any of the additional toxicity tests, the Discharger is required to conduct a TRE/TIE, as directed by the San Diego Water Board Executive Officer or USEPA.

b. Antidegradation Analysis

In the 1995 and 2003 permits, USEPA and the San Diego Water Board established annual mass based performance goals for Ocean Plan Table B parameters based on Point Loma WTP effluent data from 1990 through April

1995. For most Table B parameters, the numerical benchmarks are set below the levels prescribed for water quality based effluent limits. The benchmarks are designed to provide an early measure of changes in effluent quality which may substantially increase the mass of toxic pollutants discharged to the marine environment. Consistent with State and federal antidegradation policies, these benchmarks are intended to serve as triggers for antidegradation analyses during renewal of the permit.

Under 40 CFR 131.12, State antidegradation polices and implementation practices must ensure that: (1) existing uses and the level of water quality necessary to protect such uses are maintained and protected (Tier I requirement); and (2) where water quality is better than necessary to support the propagation of fish, shellfish, and wildlife and recreation in and on the water, the level of water quality shall be maintained and protected unless the permitting authority finds that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located; existing uses are fully protected; and the highest statutory and regulatory requirements are achieved for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control (Tier II requirement).

An analysis of compliance with the mass emission benchmarks in the existing permit is presented in Volume II, Part 3, of the application. During 2002 through 2006, the City achieved compliance with all benchmarks except for phenol (2.57 MT/yr) which was exceeded by about eight percent. Phenol is regularly detected in the Point Loma WTP effluent. According to the Discharger, phenol is a common chemical used in industrial and non-industrial applications as solvents, disinfectants and cleaning compounds; it is also a constituent in paints, inks, and photographic chemicals. Phenol has a variety of household uses including medical and household disinfectants, pharmaceuticals, solvents and cleaners, paints, inks, and photo supplies. It is identified by the Discharger as a pollutant of concern, but does not have an existing local pretreatment limit. Industrial discharges of phenols to the sewer system are regulated by the City. Federal categorical industrial dischargers, hospitals, and laboratories are regulated by the applicant's "toxic organic management plans". Electroplating and metal finishing industries are regulated by federal total toxic organics limits. The Discharger states that these existing practices are effective in limiting industrial discharges of phenol from electroplating and metal finishing industries, hospitals, laboratories, and other significant industrial users.

Point Loma WTP influent and effluent data presented in Table 2-5, in Volume II, Part 3, of the application, demonstrate that the upward trend in phenol mass emissions is consistent and not an artifact of a few high concentrations in a limited number of samples. Historical annual average mass emissions for phenol are: 2.2 MT/yr (1990-1995), 3.3 MT/yr (1996-2001), and 2.7 MT/yr (2002-2006). During these periods, the average percent removal for phenol has improved: 17 percent (1990-1995), 20 percent (1996-2001), and 27 percent (2002-2006).

During these periods, the average concentrations for phenol in the effluent are: 8.2 ug/l (1990-1995), 13.4 ug/l (1996-2001), and 11.5 ug/l (2002-2006). The Discharger has not requested changes to the mass emission benchmark or the water quality based effluent limits for phenolic compounds in the existing permit.

Based on this information, USEPA and the San Diego Water Board have concluded that a full antidegradation analysis justifying the continued increase in effluent loading of phenolic compounds (non-chlorinated) to a Tier II waterbody may be necessary. For phenolic compounds (non-chlorinated), the Discharger shall conduct a thorough analysis of the projected effluent load above the mass emission benchmark level, the resulting impact to receiving water quality of the total effluent load, and opportunities for effluent load reduction through additional treatment or controls and pollution prevention. If this analysis shows that the total effluent load for phenolic compounds (non-chlorinated) produces either (1) a receiving water concentration at the boundary of the zone of initial dilution that is less than ten percent above the ambient (farfield) concentration, or (2) the receiving water concentration at the boundary of the zone of initial dilution is less than 50 percent of the Ocean Plan water quality objectives for phenolic compounds (non-chlorinated), then the resulting impact to water quality is not considered "significant" and further analysis is not required at this time. However, if the change in receiving water quality is found to be "significant" upon review by USEPA and the San Diego Water Board, then the Discharger must conduct a socioeconomic analysis considering the full benefits and costs of the increased effluent loading of phenolic compounds (non-chlorinated), including environmental impacts.

3. **Best Management Practices and Pollution Prevention – Not Applicable**

4. **Construction, Operation, and Maintenance Specifications – Not Applicable**

5. **Special Provisions for Municipal Facilities (POTWs Only)**

   a. **Treatment Plant Capacity**

   Order No. R9-2009-0001 establishes a requirement for a treatment plant capacity study which serves as an indicator to the San Diego Water Board and USEPA of the Facility's hydraulic capacity and potential growth in the service area.

   b. **Biosolids.** The use and disposal of biosolids is regulated under federal and State laws and regulations at 40 CFR 503. This permit incorporates biosolids requirements under 40 CFR 503. USEPA, not the San Diego Water Board, will oversee compliance with 40 CFR 503.

   Title 27, CCR, Division 2, Subdivision 1, Section 20005 establishes approved methods for the disposal of collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes. Requirements to ensure the Discharger disposes of solids in compliance with State and federal regulations has been included in this Order.

c. Pretreatment Requirements

CWA Section 307 and 40 CFR 403 establish pretreatment requirements for publicly-owned treatment works which receive pollutants from non-domestic users. This Order contains pretreatment program requirements pursuant to 40 CFR 403 that are applicable to the Discharger. Also, the Order incorporates conditions for implementing urban area pretreatment program requirements under CWA Section 301(h) and 40 CFR 125.

d. Collection System. The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on May 2, 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans (SSMPs) and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions.

Furthermore, the General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating sanitary sewer overflows. Inasmuch that the Discharger's collection system is part of the publicly-owned treatment works or Facility that is subject to this Order, certain standard provisions are applicable as specified in Provisions, Section VI.C.5. For instance, the 24-hour reporting requirements in this Order are not included in the General Order. The Discharger must comply with both the General Order and this Order. The Discharger and public agencies that are discharging wastewater into the facility were required to obtain enrollment for regulation under the General Order by December 1, 2006.

6. Other Special Provisions

a. Continuous Monitoring of Residual Chlorine. On November 13, 2007, the Discharger requested the ability to use sodium hypochlorite for effluent disinfection to ensure compliance with applicable State water quality standards for bacteria indicators. To ensure compliance with WQBELs for total chlorine residual, continuous monitoring is required. Within 180 days of the effective date of this permit, the Discharger shall begin continuous monitoring for total chlorine residual. Until that time, at least four grab samples per day, representative of the daily discharge, shall be collected immediately prior to entering the PLOO and analyzed for total chlorine residual.

7. Compliance Schedules - Not Applicable

VIII. PUBLIC PARTICIPATION

The San Diego Water Board and USEPA Region IX are jointly issuing a notice of proposed actions under the Clean Water Act and Division 7 of the California Water Code, and regulations thereunder. The San Diego Water Board and USEPA are proposing to jointly reissue Waste Discharge Requirements and an NPDES permit to the City of San Diego for the E.W. Blom Point Loma Metropolitan Wastewater Treatment Plant. The NPDES permit and Waste Discharge Requirements are based on a variance from federal secondary treatment standards at 40 CFR 133, as provided for improved discharges under CWA Section 301(h) and 40 CFR 125, Subpart G. The San Diego Water Board's participation in the reissuance of a 301(h)-modified NPDES permit will ensure that all applicable State water quality standards are satisfied, and as such, the San Diego Water Board intends that issuance of the permit with USEPA will serve as its certification of the federal permit under CWA Section 401. The San Diego Water Board and USEPA encourage public participation in this reissuance process.

A. Notification of Interested Parties

The San Diego Water Board and USEPA have notified the Discharger, interested agencies, and the public of the proposed actions, joint public hearing, and the opportunity to provide comments. Notification was provided through the San Diego Union Tribune on December 5, 2008.

B. Written Comments

The proposed actions are tentative. Beginning December 5, 2008, interested persons are invited to submit written comments concerning the Administrative Record, including the draft Order and 301(h)-modified NPDES permit and fact sheet, comments received, 301(h) permit application and ROWD, USEPA's 301(h) Tentative Decision Document, and other relevant documents. Interested persons may submit written comments during the public comment period, either in person or by mail, to the San Diego Water Board and USEPA addresses, below:

Executive Officer
San Diego Regional Water Quality Control Board
Regional Board Meeting Room
9174 Sky Park Court, Suite 100
San Diego, California

Robyn Stuber
U.S. Environmental Protection Agency, Region IX
NPDES Permits Office (WTR-5)
75 Hawthorne Street
San Francisco, CA 94105

To facilitate consideration by the San Diego Water Board and USEPA at the public hearing, written comments should be received at the San Diego Water Board and USEPA offices by 5:00 p.m., on January 7, 2009. All written comments must be received by 5:00 p.m., on January 28, 2009.

C. Public Hearing

The San Diego Water Board and USEPA will conduct a joint public hearing on these proposed actions during the Board meeting on the following date, time, and location:

Date:	**January 21, 2009**
Time:	**9:00 a.m.**
Location:	**San Diego Regional Water Quality Control Board** **9174 Sky Park Court, Suite 100** **San Diego, California**

Interested persons are invited to attend. At the joint public hearing, the San Diego Water Board and USEPA Hearing Officer will hear testimony on the proposed actions. Although oral testimony will be heard, for record accuracy, important testimony should be in writing.

The San Diego Water Board will not be acting on the NPDES permit at the January 21, 2009 hearing, but will formally act on the tentative Order at a subsequent Board meeting. Upon issuance of the final Order and 301(h)-modified NPDES permit decision and response to comments, the San Diego Water Board and USEPA will notify the Discharger and persons who submitted written comments, or requested notice of the final decision.

Please be aware that dates and venues may change. The San Diego Water Board's Web address is http:/www.swrcb.ca.gov/rwqcb9 where the current agenda for changes in Board meeting dates and locations can be accessed.

D. Information and Copying

The documents, above, are available for public inspection at the San Diego Water Board and USEPA office locations, Monday through Friday, between 8:30 a.m. and 4:30 p.m. Copying of documents may be arranged by calling the San Diego Water Board at (858) 467-2952, or USEPA at (415) 972-3524.

E. Register of Inter ested Persons

Information and Copying": "Any person interested in being placed on the mailing list for information regarding these proposed actions should contact the San Diego Water Board and USEPA, reference this facility, and provide a name, address, and phone number.

F. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resource Control Board to review the decision of the Regional Board regarding the final Waste Discharge Requirements. The petition must be submitted within 30 days of the San Diego Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
PO Box 100, 1001 I Street
Sacramento, CA 95812-0100

G. Appeal of Federal Permit

When a final 301(h)-modified NPDES permit is issued by USEPA, it will become effective 33 days following the date it is mailed to the Discharger, unless a request for review is filed. If a request for review is filed, only those permit conditions which are uncontested will go into effect pending deposition of the request for review. Requests for review must be filed within 33 days following the date the final permit is mailed and must meet the requirements of 40 CFR 124.19. All requests for review should be addressed to the Environmental Appeals Board (EAB) as follows. Requests sent through the U.S. Postal Service (except by Express Mail) must be addressed to the EAB's mailing address, which is:

U.S. Environmental Protection Agency
Clerk of the Board
Environmental Appeals Board (MC 1103B)
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460-0001

All filings delivered by hand or courier, including Federal Express, UPS, and U.S. Postal Express Mail, should be directed to the following address:

Environmental Appeals Board
U.S. Environmental Protection Agency
Colorado Building
1341 G Street, N.W., Suite 600
Washington, D.C. 20460

Those persons filing a request for review must have filed comments on the tentative decision and draft permit, or participated in the public hearing, except as provided in 40 CFR 124.19. Otherwise, any such request for review may be filed only to the extent of changes from the draft permit to the final permit decision.

H. Additional Information

Requests for additional information or questions regarding this order should be directed to Melissa Valdovinos of the San Diego Water Board at (858) 467-2724 and Robyn Stuber of USEPA at (415) 972-3524.

Attachment G - Summary of Discharge Prohibitions contained in the Ocean Plan and Basin Plan

I. Ocean Plan Discharge Prohibitions

A. The Discharge of any radiological, chemical, or biological warfare agent or high-level radioactive waste into the ocean is prohibited.

B. Waste shall not be discharged to designated Areas of Special Biological Significance except as provided in Chapter III.E. of the Ocean Plan.

C. Pipeline discharge of sludge to the ocean is prohibited by federal law; the discharge of municipal and industrial waste sludge directly to the ocean, or into a waste stream that discharges to the ocean, is prohibited. The discharge of sludge digester supernatant directly to the ocean, or to a waste stream that discharges to the ocean without further treatment, is prohibited.

D. The by-passing of untreated wastes containing concentrations of pollutants in excess of those of Table A or Table B [of the Ocean Plan] is prohibited.

II. Basin Plan Discharge Prohibitions

A. The discharge of waste to waters of the State in a manner causing, or threatening to cause a condition of pollution, contamination or nuisance as defined in Water Code Section 13050, is prohibited.

B. The discharge of waste to land, except as authorized by WDRs or the terms described in Water Code Section 13264 is prohibited.

C. The discharge of pollutants or dredged or fill material to waters of the United States except as authorized by an NPDES permit or a dredged or fill material permit (subject to the exemption described in Water Code Section 13376) is prohibited.

D. Discharges of recycled water to lakes or reservoirs used for municipal water supply or to inland surface water tributaries thereto are prohibited, unless this San Diego Water Board issues a NPDES permit authorizing such a discharge; the proposed discharge has been approved by the State Department of Public Health and the operating agency of the impacted reservoir; and the discharger has an approved fail-safe long-term disposal alternative.

E. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited. Allowances for dilution may be made at the discretion of the San Diego Water Board. Consideration would include streamflow data, the degree of treatment provided and safety measures to ensure reliability of facility performance. As an example, discharge of secondary effluent would probably be permitted if streamflow provided 100:1 dilution capability.

F. The discharge of waste in a manner causing flow, ponding, or surfacing on lands not owned or under the control of the discharger is prohibited, unless the discharge is authorized by the San Diego Water Board.

G. The dumping, deposition, or discharge of waste directly into waters of the State, or adjacent to such waters in any manner which may permit its being transported into the waters, is prohibited unless authorized by the San Diego Water Board.

H. Any discharge to a storm water conveyance system that is not composed entirely of storm water is prohibited unless authorized by the San Diego Water Board. [The federal regulations, 40 CFR 122.26(b)(13), define storm water as storm water runoff, snow melt runoff, and surface runoff and drainage. 40 CFR 122.26(b)(2) defines an illicit discharge as any discharge to a storm water conveyance system that is not composed entirely of storm water except discharges pursuant to a NPDES permit and discharges resulting from fire fighting activities.] [Section 122.26 amended at 56 FR 56553, November 5, 1991; 57 FR 11412, April 2, 1992].

I. The unauthorized discharge of treated or untreated sewage to waters of the State or to a storm water conveyance system is prohibited.

J. The discharge of industrial wastes to conventional septic tank/ subsurface disposal systems, except as authorized by the terms described in Water Code Section 13264, is prohibited.

K. The discharge of radioactive wastes amenable to alternative methods of disposal into the waters of the State is prohibited.

L. The discharge of any radiological, chemical, or biological warfare agent into waters of the State is prohibited.

M. The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the San Diego Water Board.

N. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities which cause deleterious bottom deposits, turbidity or discoloration in waters of the State or which unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.

O. The discharge of treated or untreated sewage from vessels to Mission Bay, Oceanside Harbor, Dana Point Harbor, or other small boat harbors is prohibited.

P. The discharge of untreated sewage from vessels to San Diego Bay is prohibited.

Q. The discharge of treated sewage from vessels to portions of San Diego Bay that are less than 30 feet deep at MLLW is prohibited.

R. The discharge of treated sewage from vessels, which do not have a properly functioning USCG-certified Type 1 or Type II marine sanitation device, to portions of San Diego Bay that are greater than 30 feet deep at MLLW, is prohibited.

Attachment H - Dilution Model Summary

Initial dilution for the Point Loma Ocean Outfall (PLOO) was assessed using an U.S. Environmental Protection Agency (USEPA) modeling application, Visual Plumes (UM3). UM3 is an acronym for the three-dimensional Updated Merge model for simulating single and multi-port submerged discharges. The USEPA Visual Plumes website is located at:

<http://www.epa.gov/ceampubl/swater/vplume/index.htm>.

The diffuser is a simple wye diffuser. The PLOO is 2,472 feet long and includes a wye (Y-shaped) diffuser with two 2,496 feet long diffuser legs. The diffuser has 416 discharge ports (208 on each leg).

A. Dilution

Initial dilution is defined in the Ocean Plan as follows:

> *"The process which results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge.*
>
> *For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from the submarine outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally."*

Initial dilution, as defined by the Ocean Plan, is interpreted to be when the effluent plume either surfaces or reaches its initial trapping level (level at which the density of the effluent equals that of the ambient background and the effluent no longer has upward momentum based solely on buoyancy).

Dilution is a function of various characteristics of the diffuser, effluent, and ambient background. Dilution of an effluent plume into a receiving water is dependent on the flow of effluent, the momentum of the effluent flow into the receiving water (highly dependent on the effluent flow, shape, size, and number of diffuser ports), the buoyancy of the effluent within the receiving water (highly dependent between the delta between effluent and the ambient background of salinity and temperature), the placement of diffuser ports (space between diffuser ports and directional settings of each port), and the available volume and boundaries of the receiving water.

To effectively model dilution, Visual Plumes breaks data entry into the modeling system into three main components:

1. Diffuser and Effluent Characteristics

2. An Ambient Profile

3. Special Settings

   A summary of each of these components and the assumptions for each of these components while conducting the modeling effort is provided below.

B. Diffuser and Effluent Characteristics

Diffuser and effluent characteristics are necessary to determine the momentum of the effluent as it enters the receiving water, and the density of the effluent (which will affect it's buoyancy in the receiving water).

The input fields for the model are listed below with applicable explanations for the input into each field:

1. Port Diameter

   In the Report of Waste Discharge (ROWD) the Discharger provided a summary of the diffuser set up, including the number of ports and their respective diameters. Visual Plumes data entry limitations include only allowing a single input for "Port Diameter". Thus, a single port diameter must be determined. This was done by taking an average port size (as cm^2) of all the ports as summarized below:

Port area for each leg

Number of Ports	Diameter (cm)	Radius (cm)	Area for port	Total Area per size
84	9.53	4.77	71.33	5991.76
70	10.8	5.40	91.61	6412.61
54	12.07	6.04	114.42	6178.71

Total # of Ports (per leg) = 208 **Total Area per leg =** 18583.09

Total Area of ports in wye = Total Area per leg X 2 = 37166.1724

Port area for single diffuser head just prior to wye

Number of Ports	Diameter (cm)	Radius (cm)	Area for port	Total Area
1	5.08	2.54	20.27	20.27

Total Area per Port = Total Area of ports in wye + Total Area (for single diffuser head just prior to wye) = 37186.44

Average area per port = Total Area per Port/(Total # of Ports (for each leg) X 2 + 1) = 89.18

Average radius per port = square root of (Area/3.14159)
Average radius per port = square root of (28.3856 cm)
Average radius per port = 5.328 cm
Average diameter per port = 10.6556 cm

A port diameter of 10.66 cm was entered.

2. Port Elevation

The port elevation (or height of the port from the sea bed) was not specified in the ROWD. Diffuser drawings were provided by the facility upon request. On October 27, 2008 the Discharger provided a report on dilution indicating that the elevation of the ports was 7 feet. Based on this information, a port elevation of 7 feet was entered.

3. Vertical Angle

The vertical angle is defined in the Visual Plumes manual (4th Edition) as the discharge angle relative to the horizontal with zero being horizontal, 90 being vertical upward, and -90 being vertically downward. The ROWD indicates that the ports are located on the diffuser facing opposing directions, 180 degrees away from each other. A data entry limitation of Visual Plumes is that only one vertical angle may be entered. The Visual Plumes manual suggests that a fairly simple and accurate approach to modeling such a situation is to treat the diffuser as if all ports are on one side with half the spacing. In the October 27, 2008 report the Discharger contends that modeling all the ports on one side and reducing the spacing in half over simplifies the modeling for the PLOO and results in the combined outfall plume from all outfall ports being squeezed into a significantly reduced volume. The Discharger further states that because the Ocean Plan requires initial dilution be assessed on the basis of zero ocean currents and the PLOO's high horizontal discharge velocities, no cross-merging of the plumes from either side of the diffuser will occur prior to initial dilution. Using UM3 modeling the Discharger demonstrates that the plume does not cross the diffuser centerline (which would indicate merging). A single vertical angle of 0 was used in the model.

Because the plumes from each side of the diffuser do not merge, a single representative side of the diffuser can be modeled and assumed for each individual plume on each side of the diffuser. To accurately calculate proper effluent velocity, the total flow through the diffuser must be reduced in half to accurately represent flow through a single side of the diffuser. An effluent flow of 120 MGD was used.

4. Horizontal Angle

The horizontal angle is defined in the Visual Plumes manual as the angle of the diffuser relative to the x-coordinate. Assuming that the default units (degrees) are used, zero is in the direction of the x-coordinate (flow towards the east) and 90 in the direction of the y-coordinate (flow towards the north). The ROWD indicates that the two legs of the wye diffuser extend approximately 150 degrees in separate directions (roughly one towards 255 degrees and one towards 75 degrees). A data entry limitation of Visual Plumes is that only one vertical angle may be entered. A middle direction was chosen, 180 degrees was entered into the data field. This field is important when considering currents and stream flow, both of which are not considered when modeling for ocean discharges to which the Ocean Plan is applicable. Thus, this data entry field was not expected to have an effect on the final initial dilution.

5. Number of Ports

   Based on the number of ports specified in the ROWD (and summarized in the Port Diameter portion of this Attachment), 208 was entered into the data field to account for each side of the diffuser.

6. Port Spacing

   The ROWD indicated that the ports were approximately 7.33 meters apart. This value did not include an additional discharge port located on the diffuser just upstream of the wye structure. Thus using the total distance of the length of the diffuser on which the ports are located, the port spacing was recalculated and determined to be 7.3 meters.

7. Acute Mix Zone/Chronic Mix Zone

   This value is not relevant to the final initial dilution calculations.

8. Port Depth

   The ROWD indicates that the length of diffuser on which diffuser ports are located, is between 93.3 meter to 95.5 meters deep under the ocean surface. An average between these two values was taken, and 94.35 meters was entered into the data field.

9. Effluent Flow

   The maximum monthly average flow permitted for the Discharger is 240 million gallons per day (MGD). The Discharger currently discharges a monthly average flow significantly below this value which would result in a greater (and less conservative) dilution value. Because the Discharger will continue to be capable of discharging up to 240 MGD, and this is the most conservative value to use while calculating dilution, 240 MGD was considered to be the applicable discharge volume through the outfall. Due to the modeling limitations explained in Section B.3 of this summary, half the flow was used to represent the appropriate effluent flow from each side of the diffuser.

10. Effluent Conductivity

Conductivity data was available from January 2002 through December 2007. Higher levels of salinity in the effluent result in a less buoyant effluent. The highest monthly average conductivity was used, 3.125 mmho/cm was entered into the data field.

11. Effluent Temperature

Temperature data was available from January 2002 through December 2007. The smaller the Δ between the effluent and receiving water, the less dilution is likely to occur. Receiving water temperatures are significantly lower than the effluent temperature at Discharge Point No. 001. Thus, a lower effluent temperature is likely to result in lower dilution. The lowest monthly average temperature of 21.1 °C was entered into the data field.

12. Effluent Concentration

This data field is for calculating "effective dilution" and does not have an effect on the final initial dilution calculated. However a value must be entered into this field for the model to run, so "20 ppm" was chosen.

C. Ambient Profile

An ambient profile is a conservative profile of the receiving water. This profile includes components of density (temperature and salinity), current (which is always set to zero when running models for the Ocean Plan), and a far-field diffusion coefficient. The ambient profile takes into consideration the natural stratification of the receiving waters, allowing for the entry of various data points at varying depths. The model is capable (and this feature was utilized during the modeling effort for Point Loma Ocean Outfall) of extrapolating data for the depths that were not entered based on the data that is entered.

Receiving water monitoring of temperature and salinity was established during the current permit term at the following monitoring locations which are representative of the receiving water at the point of discharge:

- F-029
- F-030
- F-031

Monitoring was conducted quarterly (January, April, July, October).

Part C.3.d of the Ocean Plan states:

"For the purpose of this Plan, minimum initial dilution is the lowest average initial dilution within any single month of the year."

Using data from 2003 through 2007, the most conservative monthly profile was determined to be January. In the October 27, 2008 report from the Discharger, the Discharger provided additional depth data for January 2003, 2004, 2005, 2006, and 2007. The following dilutions for January were calculated by the Discharger using Visual Plumes and all available data:

Year	Dilution
January 2003	228.3
January 2004	249.8
January 2005	244.1
January 2006	241.1
January 2007	225.5

Based on the Discharger's results, the ambient profile for January 2007 was the most conservative. The following ambient profile for January 2007 was used to calculate the final initial dilution by the San Diego Water Board using Visual Plumes:

Depth (m)	Temperature (°C)	Density (sigma theta)
1	14.86	24.88
7	14.85	24.89
13	14.80	24.89
19	14.74	24.91
25	14.57	24.94
31	14.27	25.00
37	13.67	25.11
43	13.25	25.22
49	12.95	25.29
55	12.59	25.39
61	12.29	25.45
67	11.88	25.51
73	11.77	25.55
75	11.75	25.55
81	11.60	25.61
87	11.46	25.70
93	11.29	25.77
97	11.03	25.86

Data was extrapolated for depths at which no data was available.

1. Far-field Diffusion Coefficient

   The Visual Plumes manual recommends the use of 0.0003 m0.67/s2. This value was used in the data field as a constant (not extrapolated as the ambient temperature and density were).

D. Special Settings

1. UM3 Tidal Pollutant Buildup Parameters

   This field is used to calculate "effective dilution", which was irrelevant to the PLOO modeling effort.

2. Diffuser Port Contraction Coefficient

   The shape of the diffuser ports was not specified in the ROWD. Upon request the Discharger indicated that the diffuser ports are sharp-edged cylinders. Thus, a diffuser port contraction coefficient of 0.61 was used as recommended in the Visual Plumes manual.

3. Standard Light Adsorption Coefficient

   The value of 0.16 is recommended in the Visual Plumes manual as a conservative value. This is not relevant to final initial dilution, and is for the Mancini bacteria model applications of the model.

4. Far-field Increment (m)

   This value controls the number of lines output by the Brooks far-field algorithm. A small value produces more lines and graphic output than large values. A value between 100 to 1000 m is recommended by the Visual Plumes manual. This field has little effect on the final calculated initial dilution, a value of 100 m was used in the data field.

5. UM3 Aspiration Coefficient

   This is the rate at which ambient fluid is entrained (diluted) into the plume. The default value of 0.1 is an average that is rarely changed. A larger value causes more rapid plume spreading and affects other characteristics, like plume rise. The default value of 0.1 was used in the data field.

6. Far-field Diffusivity Option

As recommended by the Visual Plumes manual, a 4/3 Power Diffusivity was chosen for this field because the discharge is occurring in open water.

E. Final Resu lts

Four model runs were conducted using the data input specified above, one for each ambient profile (January, April, July, and October). This provided seasonal dilution values (expressed as trapping levels) when considering worst case scenarios (most conservative – high flow, high effluent salinity, low effluent temperature, etc.)

A summary of the modeling result is included below and has been copied directly from the Visual Plumes text output.

The local maximum height of rise for January 2007 was calculated to be 227.2:1 (as compared to 225.5 provided by the Discharger). The dilution provided in Order No. R9-2002-0025 is 204:1. The Discharger has recommended retaining the previously applied initial dilution value of 204:1 as more appropriate and representative of PLOO minimum month initial dilution. Because the Discharger has not requested additional dilution, a dilution of 204:1 is applied to the Discharger from PLOO without consideration of additional dilution.

Should the State determine, pursuant to 40 CFR 124.55, that a more stringent initial dilution value is appropriate to assure compliance with water quality standards, the final federal permit will be revised to reflect that initial dilution value.

JANUARY 2007

UM3. 11/14/2008 12:14:13 PM
Case 1; ambient file C:\Plumes\January additional data.001.db; Diffuser table record 2: ----------------------------------

Ambient Table:

Depth	Amb-cur	Amb-dir	Amb-den	Amb-tem	Amb-pol	Decay	Far-spd	Far-dir	Disprsn	Density
m	m/s	deg	psu	C	kg/kg	s-1	m/s	deg	m0.67/s2	sigma-T
0.0	0.0	0.0	32.65	14.86	10.0	2.0	2.0	40.0	0.0003	24.22
1.0	0.0	0.0	32.66	14.86	10.0	2.0	2.0	40.0	0.0003	24.22
7.0	0.0	0.0	32.67	14.85	10.0	2.0	2.0	40.0	0.0003	24.23
13.0	0.0	0.0	32.67	14.8	10.0	2.0	2.0	40.0	0.0003	24.24
19.0	0.0	0.0	32.69	14.74	10.0	2.0	2.0	40.0	0.0003	24.28
25.0	0.0	0.0	32.73	14.57	10.0	2.0	2.0	40.0	0.0003	24.34
31.0	0.0	0.0	32.81	14.27	10.0	2.0	2.0	40.0	0.0003	24.46
37.0	0.0	0.0	32.95	13.67	10.0	2.0	2.0	40.0	0.0003	24.7
43.0	0.0	0.0	33.09	13.25	10.0	2.0	2.0	40.0	0.0003	24.89
49.0	0.0	0.0	33.18	12.95	10.0	2.0	2.0	40.0	0.0003	25.02
55.0	0.0	0.0	33.31	12.59	10.0	2.0	2.0	40.0	0.0003	25.19
61.0	0.0	0.0	33.39	12.29	10.0	2.0	2.0	40.0	0.0003	25.31
67.0	0.0	0.0	33.47	11.88	10.0	2.0	2.0	40.0	0.0003	25.45
73.0	0.0	0.0	33.52	11.77	10.0	2.0	2.0	40.0	0.0003	25.51
75.0	0.0	0.0	33.52	11.75	10.0	2.0	2.0	40.0	0.0003	25.51
81.0	0.0	0.0	33.6	11.6	10.0	2.0	2.0	40.0	0.0003	25.6
87.0	0.0	0.0	33.71	11.46	10.0	2.0	2.0	40.0	0.0003	25.71
93.0	0.0	0.0	33.8	11.29	10.0	2.0	2.0	40.0	0.0003	25.82
97.0	0.0	0.0	33.92	11.03	10.0	2.0	2.0	40.0	0.0003	25.95

Diffuser table:

P-dia	P-elev	V-angle	H-angle	Ports	Spacing	AcuteMZ	ChrncMZ	P-depth	Ttl-flo	Eff-con	Temp	Polutnt
(cm)	(ft)	(deg)	(deg)	()	(m)	(m)	(m)	(m)	(MGD)	(mmho/cm)	(C)	(ppm)
10.66	7.0	0.0	180.0	208.0	7.3	400.0	400.0	94.35	120.0	3.125	22.6	20.0

Simulation:

Froude number: 31.49; effleunt density (sigma-T) -0.827; effleunt velocity 4.643(m/s);

Step	Depth (m)	Amb-cur (m/s)	P-dia (cm)	Polutnt (ppm)	4/3Eddy (ppm)	Dilutn ()	x-posn (m)	y-posn (m)
0	94.35	0.0	8.326	20.0	20.0	1.0	0.0	0.0; stream limit reached;
20	94.35	0.0	12.2	3.626E+6	3.626E+6	1.473	-0.0977	0.0;
40	94.35	0.0	18.07	6.205E+6	6.205E+6	2.176	-0.244	0.0;
60	94.35	0.0	26.8	8.072E+6	8.072E+6	3.221	-0.461	0.0;
80	94.34	0.0	39.77	9.350E+6	9.350E+6	4.774	-0.784	0.0;
100	94.32	0.0	59.0	1.001E+7	1.001E+7	7.082	-1.264	0.0;
120	94.25	0.0	87.3	1.017E+7	1.017E+7	10.51	-1.974	0.0;
140	94.02	0.0	127.5	1.018E+7	1.018E+7	15.59	-2.996	0.0;
160	93.58	0.0	167.4	1.013E+7	1.013E+7	21.24	-4.044	0.0;
180	92.91	0.0	203.4	1.012E+7	1.012E+7	27.53	-5.037	0.0;
200	91.81	0.0	243.0	1.014E+7	1.014E+7	36.27	-6.113	0.0;
220	89.8	0.0	299.3	1.019E+7	1.019E+7	51.64	-7.415	0.0;
240	86.73	0.0	379.1	1.019E+7	1.019E+7	76.73	-8.754	0.0;
260	82.64	0.0	492.1	1.012E+7	1.012E+7	114.0	-10.03	0.0;
280	77.09	0.0	680.2	-9.058E+14	-9.058E+14	169.4	-11.41	0.0;
281	76.76	0.0	693.5	4.435E+15	4.435E+15	172.8	-11.49	0.0; trap level;
284	75.73	0.0	737.6	-7.016E+17	-7.016E+17	183.4	-11.73	0.0; merging;
300	69.22	0.0	1402.1	-1.040E+33	-1.040E+33	225.1	-13.6	0.0;
301	69.1	0.0	1445.7	3.961E+33	3.961E+33	225.5	-13.65	0.0; begin overlap;
320	68.05	0.0	2153.4	-3.741E+37	-3.741E+37	227.1	-14.17	0.0;
340	67.73	0.0	2782.0	-1.321E+24	-1.321E+24	227.1	-14.44	0.0;
360	67.59	0.0	3293.5	5.591E+6	5.591E+6	227.2	-14.6	0.0;

```
380   67.53   0.0  3670.1 1.000E+7 1.000E+7   227.2  -14.73    0.0;
400   67.5    0.0  3898.7 1.000E+7 1.000E+7   227.2  -14.83    0.0;
418   67.49   0.0  3971.5 1.000E+7 1.000E+7   227.2  -14.92    0.0; local maximum rise or fall;
420   67.49   0.0  3971.8 1.000E+7 1.000E+7   227.2  -14.93    0.0;
440   67.51   0.0  3888.3 1.000E+7 1.000E+7   227.2  -15.02    0.0;
460   67.54   0.0  3653.7 1.000E+7 1.000E+7   227.2  -15.13    0.0;
480   67.62   0.0  3279.6 1.000E+7 1.000E+7   227.2  -15.26    0.0;
500   67.78   0.0  2784.2 1.000E+7 1.000E+7   227.2  -15.43    0.0;
520   68.14   0.0  2192.9 1.000E+7 1.000E+7   227.3  -15.7     0.0;
540   69.32   0.0  1553.6 1.001E+7 1.001E+7   228.8  -16.25    0.0;
545   70.04   0.0  1407.3 1.007E+7 1.007E+7   231.3  -16.5     0.0; end overlap;
560   78.67   0.0  1207.8-9.409E+20-9.409E+20   273.4  -18.55    0.0; trap level;
567   82.43   0.0  1785.2 3.555E+28 3.555E+28   291.9  -19.45    0.0; begin overlap;
580   83.22   0.0  2673.0-5.295E+31-5.295E+31   292.9  -19.75    0.0;
600   83.55   0.0  3850.3-1.317E+16-1.317E+16   292.9  -19.93    0.0;
605   83.58   0.0  4118.3-8.117E+12-8.117E+12   292.9  -19.96    0.0; bottom hit;
620   83.66   0.0  4851.8 3.657E+6 3.657E+6   293.0  -20.03    0.0;
640   83.71   0.0  5647.2 1.000E+7 1.000E+7   293.0  -20.1     0.0;
660   83.73   0.0  6209.4 1.000E+7 1.000E+7   293.0  -20.15    0.0;
680   83.74   0.0  6519.6 1.000E+7 1.000E+7   293.0  -20.2     0.0;
692   83.74   0.0  6580.5 1.000E+7 1.000E+7   293.0  -20.23    0.0; local maximum rise or fall;
4/3 Power Law.  Farfield dispersion based on wastefield width of     582.63 m
   conc  dilutn   width distnce    time
  (ppm)            (m)     (m)    (hrs) (kg/kg)  (s-1)  (m/s)(m0.67/s2)
 1.00E+7   294.3   583.8   100.0  0.0111   10.0    2.0    2.0 3.00E-4
 1.00E+7   294.0   585.3   200.0  0.025    10.0    2.0    2.0 3.00E-4
 1.00E+7   293.9   586.8   300.0  0.0389   10.0    2.0    2.0 3.00E-4
 1.00E+7   293.8   588.4   400.0  0.0527   10.0    2.0    2.0 3.00E-4
count: 4
 ;
12:14:16 PM. amb fills: 2
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SAN DIEGO REGION

9174 Sky Park Court, Suite 100, San Diego, CA 92123-4340
Phone (858) 467-2952 • Fax (858) 571-6972
http://www.waterboards.ca.gov/sandiego/

ORDER NO. R9-2010-0012
NPDES NO. CA0108952

WASTE DISCHARGE REQUIREMENTS
FOR THE SWEETWATER AUTHORITY
RICHARD A. REYNOLDS DESALINATION FACILITY
DISCHARGE TO THE LOWER SWEETWATER RIVER BASIN
SAN DIEGO COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	Sweetwater Authority
Name of Facility	Richard A. Reynolds Desalination Facility
Facility Address	3066 North Second Avenue
	Chula Vista, CA 91910
	San Diego County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a minor discharge.	

The discharge by the Sweetwater Authority from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Locations

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001a	Demineralization Brine (Existing Location)	32 º 39’ 34” N	117 º 05’ 00” W	Tidal Prism of San Diego Bay via Upper Paradise Creek Flood Control Channel
001b	Demineralization Brine (Proposed Relocation)	32 º 39’19.98” N	117 º 05’26.22” W	Tidal Prism of San Diego Bay via Lower Sweetwater River
002	Storm Water Runoff, Chlorine Contact-Tank Overflow, Plant Feed-Water Dump, Groundwater Well-purge Water (San Diego Formation Wells [SDFs] No. 1, No. 2, and No. 6)	32 º 39’ 31” N	117 º 05’ 02” W	Tidal Prism of San Diego Bay via Upper Paradise Creek Flood Control Channel
003	Well-purge Water (SDF No. 3)	32 º 39’ 29” N	117 º 04’ 41” W	Lower Sweetwater River
004	Well-purge Water (SDF No. 4	32 º 39’ 26” N	117 º 04’ 36” W	Lower Sweetwater River
005	Well-purge Water (SDF No. 5)	32 º 39’ 25” N	117 º 04’ 31” W	Lower Sweetwater River
006	Well-purge Water (SDF No. 7)	32˚39’ 12.38”N	117˚ 04’ 50.48”W	Lower Sweetwater River
007	Well-purge Water (SDF No. 8)	32˚38’ 57.71”N	117˚ 05’ 29.22”W	San Diego Bay
008	Well-purge Water (SDF No. 9)	32˚38’ 16.51”N	117˚ 05’ 02.37”W	San Diego Bay
009	Well-purge Water (SDF No. 10)	32˚38’ 15.59”N	117˚ 04’ 30.03”W	San Diego Bay
010	Well-purge Water (SDF No. 11)	32˚38’ 27.84”N	117˚ 05’ 02”W	San Diego Bay

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**May 12, 2010**
This Order shall become effective on:	**July 1, 2010**
This Order shall expire on:	**July 1, 2015**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**180 days prior to the Order expiration date**

I, David W. Gibson, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on May 12, 2010.

David W. Gibson
Executive Officer

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List of Attachments

I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	**Sweetwater Authority**
Name of Facility	**Lower Sweetwater River Basin, Groundwater Demineralization Plant**
Facility Address	**3066 North Second Avenue**
	Chula Vista, CA
	San Diego County
Facility Contact, Title, and Phone	**Don Thomson, Director of Water Quality, Sweetwater Authority, (619) 409-6802**
Mailing Address	**Post Office Box 2328** **Chula Vista, CA 91912-2328**
Type of Facility	**Groundwater Demineralization Plant**
Facility Design Flow	**0.8 millions gallons per day (MGD) at 001a (existing discharge)** **1.0 MGD during the months of December – May at 001a** **or** **2.5 MGD at 001b (upon relocation)**

II. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Water Board), finds:

A. Background. Sweetwater Authority, (hereinafter Discharger) is currently discharging up to 0.8 MGD pursuant to Order No. R9-2004-0111 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0108952. The Discharger submitted a Report of Waste Discharge, dated December 22, 2008 and applied for a NPDES permit renewal to discharge up to 1.0 MGD under existing conditions and up to 2.5 MGD, upon relocation, of demineralization brine and miscellaneous groundwater discharges from the Richard A. Reynolds Desalination Facility**,** hereinafter Facility. Supplemental information was submitted on January 21, 2009 and June 26, 2009. The application was deemed complete on June 26, 2009.

Note: For the purposes of this Order, references to the “discharger” or “permittee” in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Facility Description. The Discharger owns and operates a groundwater demineralization plant. Plant feed water is currently drawn from six San Diego Formation wells. Five additional wells will be constructed allowing the plant to draw from a total of eleven San Diego Formation Wells._The demineralization process includes cartridge filtration and reverse osmosis. The main waste stream is a brine concentrate that is discharged through Discharge Point No. 001, redesignated 001a (see table on cover page), to the Tidal Prism of the San Diego Bay via Upper Paradise Creek Flood Control Channel.

The Facility currently discharges a maximum of 0.8 MGD. This Order has been revised to allow the Discharger to increase the flow at point 001a from 0.8 MGD to 1.0 MGD (only) during the months of December through May. The Discharger proposes to relocate the Discharge further downstream, designated Discharge Point No. 001b, as mitigation for a proposed increase in flow to 2.5 MGD. Intermittent flows of well purge water, plant feed dump water, and chlorine contact tank water are discharged through Discharge Point No. 002 to the Tidal Prism of the San Diego Bay via Upper Paradise Creek Flood Control Channel. Well purge water is discharged through Discharge Point Nos. 003, 004, 005, and 006 to the Lower Sweetwater River. Well purge water from Discharge Points No.’s 007, 008, 009, and 010 will be discharged to San Diego Bay. The Upper Paradise Creek Flood Control Channel, the Tidal Prism of the San Diego Bay, the Lower Sweetwater River, and San Diego Bay are all waters of the United States, within the San Diego Bay Watershed. Attachment B provides a map of the area around the facility. Attachment C provides a flow schematic of the facility.

C. **Legal Authorities.** This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the USEPA and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. **Background and Rationale for Requirements.** The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through F are also incorporated into this Order.

E. **California Environmental Quality Act (CEQA).** Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177. The Discharger has, however, prepared an Environmental Impact Report for the proposed expansion which was certified on February 24, 2010.

F. **Technology-based Effluent Limitations.** Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations[1], require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

G. **Water Quality-Based Effluent Limitations.** Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

H. Water Quality Control Plans. The Regional Water Board adopted a Water Quality Control Plan for the San Diego Region (hereinafter Basin Plan) on September 8, 1994, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. The tidal prism portion of the Sweetwater River is an exception noted in the Basin Plan. Beneficial uses applicable to the Lower Sweetwater River and the Tidal Prism of the San Diego Bay are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001a, 002	Tidal Prism of the San Diego Bay via Upper Paradise Creek Flood Control Channel and Sweetwater River	Industrial service supply (IND), navigation (NAV), contact water recreation (REC1), non-contact water recreation (REC2), commercial and sport fishing (COMM), biological habitats of special significance (BIOL), estuarine habitat (EST), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), marine habitat (MAR), migration of aquatic organisms (MIGR), spawning (SPWN), and shellfish harvesting (SHELL).
001b	Tidal Prism of the San Diego Bay via Lower Sweetwater River	Industrial service supply (IND), navigation (NAV), contact water recreation (REC1), non-contact water recreation (REC2), commercial and sport fishing (COMM), biological habitats of special significance (BIOL), estuarine habitat (EST), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), marine habitat (MAR), migration of aquatic organisms (MIGR), spawning (SPWN), and shellfish harvesting (SHELL).
003, 004, 005, and 006	Lower Sweetwater River	Existing: Industrial service supply (IND), non-contact water recreation (REC2), warm freshwater habitat (WARM), wildlife habitat (WILD). Potential: Contact water recreation (REC1)
007, 008, 009, and 010	San Diego Bay	Industrial service supply (IND), navigation (NAV), contact water recreation (REC1), non-contact water recreation (REC2), commercial and sport fishing (COMM), biological habitats of special significance (BIOL), estuarine habitat (EST), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), marine habitat (MAR), migration of aquatic organisms (MIGR), spawning (SPWN), and shellfish harvesting (SHELL).

Requirements of this Order implement the Basin Plan.

The State Water Board adopted the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for surface waters. Requirements of this Order implement the Thermal Plan.

The State Board adopted the *Water Quality Control Policy for Enclosed Bays and Estuaries of California* (*Bays and Estuaries Policy*) on May 16, 1974. The *Bays and Estuaries Policy* establishes principles for management of water quality, quality requirements for waste discharges, discharge prohibitions, and general provisions to prevent water quality degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. These principles, requirements, prohibitions, and provisions have been incorporated into this Order.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR). USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

J. State Implementation Policy. On March 2, 2000, the State Water Board adopted the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. Compliance Schedules and Interim Requirements. Section 2.1 of the SIP provides that, based on a Discharger's request and demonstration that it is infeasible for an existing Discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or May 18, 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may also be granted to allow time to implement a new or revised water quality objective. This Order does not contain a compliance schedule for the SIP.

State Water Resources Control Board Resolution No. 2008-0025, *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits*, authorizes a Water Board to include a compliance schedule in a permit for an existing Discharger to implement a new, revised or newly interpreted water quality objective or criterion in a water quality standard that results in a permit limitation more stringent that the limitation previously imposed where the Water Board determines that the Discharger has complied with the application requirements of Resolution No. 2008-0025 and has demonstrated that the discharger needs additional time to implement actions to comply with the limitation. These actions may include, but are not limited to, designing and constructing facilities or implementing new or significantly expanded programs and securing financing, if necessary, to comply with a permit limitation specified to implement the standard. This Order contains a compliance schedule in accordance with Resolution No. 2008-0025.

L. Alaska Rule. On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes. (40 CFR. § 131.21; 65 Fed. Reg. 24641 (April 27, 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000 may be used for CWA purposes, whether or not approved by USEPA.

M. Stringency of Requirements for Individual Pollutants. This Order contains both technology based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations applied in the Order consist of restrictions on oil and grease, settleable solids, turbidity, and pH as specified in Table A of the Ocean Plan and for total suspended solids based on BPJ. A discussion of technology-based restrictions is discussed in section IV.B of the Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to section 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR-SIP, which was approved by USEPA on May 18, 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

N. Antidegradation Policy. Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law.

Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provision of section 131.12 and State Water Board Resolution No. 68-16.

O. Anti-Backsliding Requirements. Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Some effluent limitations in this Order are less stringent that those in the previous Order. As discussed in detail in the Fact Sheet this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

P. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Q. Monitoring and Reporting. Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

R. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.

Section 13263.3 of the California Water Code states that pollution prevention should be the first step in the hierarchy for reducing pollution and managing wastes. Further, section 13300.3 (d)(1) states that a Regional Water Board may require a Discharger to complete and implement a pollution prevention plan if the Board determines pollution prevention is necessary to achieve a water quality objective. The results of a reasonable potential analysis and other evaluations of effluent data detailed in section IV.C.3 of Attachment F to this Order (Fact Sheet) indicate the Discharger has potential to contribute to exceedances of water quality objectives. This Order requires the Discharger to develop and implement a pollution prevention plan for copper, nickel, selenium, total nitrogen, and total phosphorus in brine discharges at Discharge Point No. 001a and 001b; and copper in well purge water and plant feed dump water at Discharge Point No. 002 and to help reduce pollutants in the wastewaters to levels below water quality criteria and obtain consistent compliance with effluent limitations.

S. Provisions and Requirements Implementing State Law. The provisions/requirements in subsections VI.C. of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

T. Notification of Interested Parties. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

U. Consideration of Public Comment. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet of this Order.

THEREFORE, IT IS HEREBY ORDERED, that Order No. R9-2004-0111 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

A. Compliance with the waste discharge prohibitions contained in the Basin Plan and listed in *Attachment B* hereto is required as a condition of this Order.

B. Discharges of wastes in a manner or to a location which have not been specifically authorized by this Order and for which valid waste discharge requirements are not in force are prohibited.

C. Wastes shall not be discharged into or adjacent to areas where the protection of beneficial uses requires spatial separation from waste fields.

D. The discharge of municipal and industrial waste sludge and untreated sludge digester supernatant, centrate, or filtrate to San Diego Bay, or into a waste stream that discharges to San Diego Bay is prohibited.

E. The deposition of rubbish or refuse into San Diego Bay or at any place where they would be eventually transported to San Diego Bay is prohibited. Rubbish and refuse include any cans, bottles, paper, plastic, vegetable matter, or dead animals or dead fish deposited or caused to be deposited by man.

F. The discharge or bypassing of untreated waste to San Diego Bay is prohibited.

G. New discharges of municipal wastewaters and industrial process waters (exclusive of cooling water discharges) to San Diego Bay which are not consistently treated and discharged in a manner that would enhance the quality of receiving waters above that which would occur in the absence of the discharge, are prohibited.

H. The discharges of reverse osmosis brine concentrate to San Diego Bay in excess of a monthly average flow rate of 0.8 MGD (June thru November) and 1.0 MGD (December thru May) at it's current location (001a) or 2.5 MGD upon relocation of the discharge (001b) is prohibited unless the Discharger obtains revised waste discharge requirements authorizing an increased flow rate.

I. The discharge of wastes to the Upper Paradise Creek Flood Control Channel, to the tidal prism of the Lower Sweetwater River (part of San Diego Bay), and the Sweetwater River containing concentrations of pollutants in excess of those identified in Section IV.A.1 – A.6 *Effluent Limitations* of this Order are prohibited.

J. Odors, vectors, and other nuisances of waste origin beyond the limits of the property controlled by Discharger are prohibited.

K. The discharges of waste, exclusive of reverse osmosis brine concentrate, groundwater well-purge water, plant feed-water dump, and chlorine contact tank discharges as discussed in the Findings of this Order or the Fact Sheet for this Order, are prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations

1. Interim Effluent Limitations – Discharge Point No. 001a (June through November)

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001a, with compliance measured at Monitoring Location EFF-001a as described in the attached MRP:

Table 6a. Interim Effluent Limitations – Brine at Discharge Point No. 001a (June through November)

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow Rate	MGD	0.8	--	--	--
Oils and Grease	mg/l	25			75
Total Suspended Solids	mg/l	30			50
Settleable Solids	mg/l	1.0			3.0
Turbidity	NTU	75			225
pH	standard units	--	--	6.0	9.0
Salinity	ppt[2]	8-11	--	--	--
Nitrate Nitrogen, Total (as N)	mg/L	--	5	--	--
	lbs/day[1]	--	33	--	--
Nitrogen, Total (as N)	mg/L	--	1.0	--	--
	lbs/day[1]	--	6.7	--	--
Phosphorus, Total (as P)	mg/L	--	0.1	--	--
	lbs/day[1]	--	0.67	--	--
Copper, Total Recoverable	µg/L	2.9	5.8	--	--
	lbs/day[1]	0.019	0.039	--	--
Nickel, Total Recoverable	µg/L	6.6	14	--	--
	lbs/day[1]	0.044	0.09	--	--
Selenium, Total Recoverable	µg/L	4.1	8.2	--	--
	lbs/day[1]	0.027	0.055	--	--

1. Based on a flow of 0.8 MGD
2. ppt = parts per thousand

b. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

c. The discharge of waste to the Lower Sweetwater River and the Tidal Prism of the San Diego Bay shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or other aquatic life.

2. Interim Effluent Limitations – Discharge Point No. 001a (December through May)

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001a, with compliance measured at Monitoring Location EFF-001a as described in the attached MRP:

Table 6b. Interim Effluent Limitations – Brine at Discharge Point No. 001a (December through May)

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow Rate	MGD	1.0	--	--	--
Oils and Grease	mg/l	25			75
Total Suspended Solids	mg/l	30			50
Settleable Solids	mg/l	1.0			3.0
Turbidity	NTU	75			225
pH	standard units	--	--	6.0	9.0
Salinity	ppt[2]	8-11	--	--	--
Nitrate Nitrogen, Total (as N)	mg/L	--	5	--	--
	lbs/day[1]	--	42	--	--
Nitrogen, Total (as N)	mg/L	--	1.0	--	--
	lbs/day[1]	--	8.3	--	--
Phosphorus, Total (as P)	mg/L	--	0.10	--	--
	lbs/day[1]	--	.83	--	--
Copper, Total Recoverable	µg/L	2.9	5.8	--	--
	lbs/day[1]	0.024	0.048	--	--
Nickel, Total Recoverable	µg/L	6.6	14	--	--
	lbs/day[1]	0.055	0.12	--	--
Selenium, Total Recoverable	µg/L	4.1	8.2	--	--
	lbs/day[1]	0.034	0.068	--	--

1. Based on a flow of 1.0 MGD
2. ppt = parts per thousand

b. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

c. The discharge of waste to the Lower Sweetwater River and the Tidal Prism of the San Diego Bay shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or other aquatic life.

3. Final Effluent Limitations – Discharge Point No. 001b

a. Effluent Limitations for Discharge Point 001b shall become effective in accordance with the dates specified in the Compliance Schedule in Section VI.C.6 of this Order. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001b, with compliance measured at Monitoring Location EFF-001b as described in the attached MRP:

Table 6c. Final Effluent Limitations – Brine at Discharge Point No. 001b

Parameter	Units	Effluent Limitations			
		Average Monthly	**Maximum Daily**	**Instantaneous Minimum**	**Instantaneous Maximum**
Flow Rate	MGD	2.5	--	--	--
Oils and Grease	mg/l	25			75
Total Suspended Solids	mg/l	30	--	--	50
Settleable Solids	mg/l	1.0			3.0
Turbidity	NTU	75			225
pH	standard units	--	--	6.0	9.0
Salinity	ppt[2]	8-11	--	--	--
Nitrate Nitrogen, Total (as N)	mg/L	--	5.0	--	--
	lbs/day[1]	--	100	--	--
Nitrogen, Total (as N)	mg/L	--	1.0	--	--
	lbs/day[1]	--	21	--	--
Phosphorus, Total (as P)	mg/L	--	0.1	--	--
	lbs/day[1]	--	2.1	--	--
Copper, Total Recoverable	µg/L	2.9	5.8	--	--
	lbs/day[1]	0.060	0.12	--	--
Nickel, Total Recoverable	µg/L	6.6	14	--	--
	lbs/day[1]	0.14	0.29	--	--
Selenium, Total Recoverable	µg/L	4.1	8.2	--	--
	lbs/day[1]	0.085	0.17	--	--

1. Based on a flow of 2.5 MGD
2. ppt = parts per thousand

b. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

c. The discharge of waste to the Lower Sweetwater River and the Tidal Prism of the San Diego Bay shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or other aquatic life.

4. Final Effluent Limitations – Discharge Point No. 2

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 002, with compliance measured at EFF-002, as described in the attached MRP.

Table 7a. Effluent Limitations for Well Purge Water from SDF No.1, SDF No.2, SDF No.6, SDF, and Plant Feed-Water at Discharge Point No. 002

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	6.0	9.0
Copper, Total Recoverable	µg/L	2.1	5.8	--	--

b. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 002, with compliance measured at INT-002, as described in the attached MRP.

Table 7b. Effluent Limitations for Chlorine Contactor at Monitoring Location INT-001

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	standard units	--	6.0	9.0
Chlorine, Total Residual	mg/L	--	0[1]	--	--

[1] No detectable concentration.

5. Final Effluent Limitations – Discharge Point Nos. 003, 004, 005, and 006.

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point Nos. 003, 004, 005, and 006 with compliance measured at Monitoring Location EFF-003, EFF-004, EFF-005, and EFF-006 respectively, as described in the attached MRP.

Table 8. Effluent Limitations for Well Purge at Discharge Point Nos. 003, 004, 005, and 006.

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	6.0	9.0

6. Final Effluent Limitations – Discharge Points Nos. 007, 008, 009, and 010

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point Nos. 007, 008, 009, and 010 with compliance measured at Monitoring Location EFF-007, EFF-008, EFF-009, and EFF-010 respectively, as described in the attached MRP.

Table 9. Effluent Limitations for Well Purge at Discharge Point Nos. 007, 008, 009, and 010.

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	6.0	9.0

7. Performance Goals at Discharge Point No. 001a and 001b

Constituents that do not have reasonable potential or had inconclusive reasonable potential analysis results are referred to as performance goal constituents and are assigned the performance goals listed in the following table. Performance goal constituents shall be monitored at EFF-001a and EFF-001b, but the results will be used for informational purposes only, not compliance determination.

Table 10. Performance Goals Based on the CTR/NTR Criteria.

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR THE PROTECTION OF AQUATIC LIFE				
Antimony, Total Recoverable	µg/L	4.30E+03	8.63E+03	--
	lbs/day[2]	2.87E+01	5.76E+01	--
	lbs/day[3]	8.97E+01	1.80E+02	--
Arsenic, Total Recoverable	µg/L	2.95E+01	5.91E+01	--
	lbs/day[2]	1.97E-01	3.95E-01	--
	lbs/day[3]	6.15E-01	1.23E+00	--
Cadmium, Total Recoverable	µg/L	7.66E+00	1.54E+01	--
	lbs/day[2]	5.11E-02	1.03E-01	--
	lbs/day[3]	1.60E-01	3.20E-01	--
Chromium III, Total Recoverable[3]	µg/L	5.27E+02	1.06E+03	--
	lbs/day[2]	3.52E+00	7.06E+00	--
	lbs/day[3]	1.10E+01	2.21E+01	--
Chromium VI, Total Recoverable	µg/L	4.12E+01	8.27E+01	--
	lbs/day[2]	2.75E-01	5.52E-01	--
	lbs/day[3]	8.60E-01	1.72E+00	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Cyanide, Total Recoverable[4]	µg/L	4.98E-01	1.00E+00	--
	lbs/day[2]	3.33E-03	6.67E-03	--
	lbs/day[3]	1.04E-02	2.09E-02	--
Lead, Total Recoverable	µg/L	6.97E+00	1.40E+01	--
	lbs/day[2]	4.65E-02	9.33E-02	--
	lbs/day[3]	1.45E-01	2.92E-01	--
Mercury, Total Recoverable	µg/L	5.10E-02	1.02E-01	--
	lbs/day[2]	3.40E-04	6.83E-04	--
	lbs/day[3]	1.06E-03	2.13E-03	--
Silver, Total Recoverable	µg/L	1.11E+00	2.24E+00	--
	lbs/day[2]	7.43E-03	1.49E-02	--
	lbs/day[3]	2.32E-02	4.66E-02	--
Zinc, Total Recoverable	µg/L	4.74E+01	9.51E+01	--
	lbs/day[2]	3.16E-01	6.35E-01	--
	lbs/day[3]	9.89E-01	1.98E+00	--
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH				
2,3,7,8 TCDD	µg/L	1.40E-08	2.81E-08	--
	lbs/day[2]	9.34E-11	1.87E-10	--
	lbs/day[3]	2.92E-10	5.86E-10	--
TCDD Equivalents[5]	µg/L	1.40E-08	2.81E-08	--
	lbs/day[2]	9.34E-11	1.87E-10	--
	lbs/day[3]	2.92E-10	5.86E-10	--
Acrolein	µg/L	7.80E+02	1.56E+03	--
	lbs/day[2]	5.20E+00	1.04E+01	--
	lbs/day[3]	1.63E+01	3.26E+01	--
Acrylonitrile	µg/L	6.60E-01	1.32E+00	--
	lbs/day[2]	4.40E-03	8.83E-03	--
	lbs/day[3]	1.38E-02	2.76E-02	--
Benzene	µg/L	7.10E+01	1.42E+02	--
	lbs/day[2]	4.74E-01	9.50E-01	--
	lbs/day[3]	1.48E+00	2.97E+00	--
Bromoform	µg/L	3.60E+02	7.22E+02	--
	lbs/day[2]	2.40E+00	4.82E+00	--
	lbs/day[3]	7.51E+00	1.51E+01	--
Carbon Tetrachloride	µg/L	4.40E+00	8.83E+00	--
	lbs/day[2]	2.94E-02	5.89E-02	--
	lbs/day[3]	9.17E-02	1.84E-01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Chlorobenzene	µg/L	2.10E+04	4.21E+04	--
	lbs/day[2]	1.40E+02	2.81E+02	--
	lbs/day[3]	4.38E+02	8.78E+02	--
Chlorodibromomethane	µg/L	3.40E+01	6.82E+01	--
	lbs/day[2]	2.27E-01	4.55E-01	--
	lbs/day[3]	7.09E-01	1.42E+00	--
Dichlorobromomethane	µg/L	4.60E+01	9.23E+01	--
	lbs/day[2]	3.07E-01	6.16E-01	--
	lbs/day[3]	9.59E-01	1.92E+00	--
1,2-Dichloroethane	µg/L	9.90E+01	1.99E+02	--
	lbs/day[2]	6.61E-01	1.33E+00	--
	lbs/day[3]	2.06E+00	4.14E+00	--
1,1-Dichloroethylene	µg/L	3.20E+00	6.42E+00	--
	lbs/day[2]	2.14E-02	4.28E-02	--
	lbs/day[3]	6.67E-02	1.34E-01	--
1,2-Dichloropropane	µg/L	3.90E+01	7.82E+01	--
	lbs/day[2]	2.60E-01	5.22E-01	--
	lbs/day[3]	8.13E-01	1.63E+00	--
1,3-Dichloropropylene	µg/L	1.70E+03	3.41E+03	--
	lbs/day[2]	1.13E+01	2.28E+01	--
	lbs/day[3]	3.54E+01	7.11E+01	--
Ethylbenzene	µg/L	2.90E+04	5.82E+04	--
	lbs/day[2]	1.93E+02	3.88E+02	--
	lbs/day[3]	6.05E+02	1.21E+03	--
Methyl Bromide	µg/L	4.00E+03	8.02E+03	--
	lbs/day[2]	2.67E+01	5.35E+01	--
	lbs/day[3]	8.34E+01	1.67E+02	--
Methylene Chloride	µg/L	1.60E+03	3.21E+03	--
	lbs/day[2]	1.07E+01	2.14E+01	--
	lbs/day[3]	3.34E+01	6.69E+01	--
1,1,2,2-Tetrachloroethane	µg/L	1.10E+01	2.21E+01	--
	lbs/day[2]	7.34E-02	1.47E-01	--
	lbs/day[3]	2.29E-01	4.60E-01	--
Tetrachloroethylene	µg/L	8.85E+00	1.78E+01	--
	lbs/day[2]	5.90E-02	1.18E-01	--
	lbs/day[3]	1.85E-01	3.70E-01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Toluene	µg/L	2.00E+05	4.01E+05	--
	lbs/day[2]	1.33E+03	2.68E+03	--
	lbs/day[3]	4.17E+03	8.37E+03	--
1,2-Trans-Dichloroethylene	µg/L	1.40E+05	2.81E+05	--
	lbs/day[2]	9.34E+02	1.87E+03	--
	lbs/day[3]	2.92E+03	5.86E+03	--
1,1,2-Trichloroethane	µg/L	4.20E+01	8.43E+01	--
	lbs/day[2]	2.80E-01	5.62E-01	--
	lbs/day[3]	8.76E-01	1.76E+00	--
Trichloroethylene	µg/L	8.10E+01	1.63E+02	--
	lbs/day[2]	5.40E-01	1.08E+00	--
	lbs/day[3]	1.69E+00	3.39E+00	--
Vinyl Chloride	µg/L	5.25E+02	1.05E+03	--
	lbs/day[2]	3.50E+00	7.03E+00	--
	lbs/day[3]	1.09E+01	2.20E+01	--
2-Chlorophenol	µg/L	4.00E+02	8.02E+02	--
	lbs/day[2]	2.67E+00	5.35E+00	--
	lbs/day[3]	8.34E+00	1.67E+01	--
2,4-Dichlorophenol	µg/L	7.90E+02	1.58E+03	--
	lbs/day[2]	5.27E+00	1.06E+01	--
	lbs/day[3]	1.65E+01	3.30E+01	--
2,4-Dimethylphenol	µg/L	2.30E+03	4.61E+03	--
	lbs/day[2]	1.53E+01	3.08E+01	--
	lbs/day[3]	4.80E+01	9.62E+01	--
4,6-dinitro-o-cresol (aka2-methyl-4,6-Dinitrophenol)	µg/L	7.65E+02	1.53E+03	--
	lbs/day[2]	5.10E+00	1.02E+01	--
	lbs/day[3]	1.60E+01	3.20E+01	--
2,4-Dinitrophenol	µg/L	1.40E+04	2.81E+04	--
	lbs/day[2]	9.34E+01	1.87E+02	--
	lbs/day[3]	2.92E+02	5.86E+02	--
Pentachlorophenol	µg/L	6.47E+00	1.30E+01	--
	lbs/day[2]	4.32E-02	8.66E-02	--
	lbs/day[3]	1.35E-01	2.71E-01	--
Phenol	µg/L	4.60E+06	9.23E+06	--
	lbs/day[2]	3.07E+04	6.16E+04	--
	lbs/day[3]	9.59E+04	1.92E+05	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
2,4,6-Trichlorophenol	µg/L	6.50E+00	1.30E+01	--
	lbs/day[2]	4.34E-02	8.70E-02	--
	lbs/day[3]	1.36E-01	2.72E-01	--
Acenaphthene	µg/L	2.70E+03	5.42E+03	--
	lbs/day[2]	1.80E+01	3.61E+01	--
	lbs/day[3]	5.63E+01	1.13E+02	--
Anthracene	µg/L	1.10E+05	2.21E+05	--
	lbs/day[2]	7.34E+02	1.47E+03	--
	lbs/day[3]	2.29E+03	4.60E+03	--
Benzidine	µg/L	5.40E-04	1.08E-03	--
	lbs/day[2]	3.60E-06	7.23E-06	--
	lbs/day[3]	1.13E-05	2.26E-05	--
Benzo(a)Anthracene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Benzo(a)Pyrene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Benzo(b)Fluoranthene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Benzo(k)Fluoranthene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Bis(2-Chloroethyl)Ether	µg/L	1.40E+00	2.81E+00	--
	lbs/day[2]	9.34E-03	1.87E-02	--
	lbs/day[3]	2.92E-02	5.86E-02	--
Bis(2-Chloroisopropyl)Ether	µg/L	1.70E+05	3.41E+05	--
	lbs/day[2]	1.13E+03	2.28E+03	--
	lbs/day[3]	3.54E+03	7.11E+03	--
Bis(2-Ethylhexyl)Phthalate	µg/L	5.90E+00	1.18E+01	--
	lbs/day[2]	3.94E-02	7.90E-02	--
	lbs/day[3]	1.23E-01	2.47E-01	--
Butylbenzyl Phthalate	µg/L	5.20E+03	1.04E+04	--
	lbs/day[2]	3.47E+01	6.96E+01	--
	lbs/day[3]	1.08E+02	2.18E+02	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
2-Chloronaphthalene	µg/L	4.30E+03	8.63E+03	--
	lbs/day[2]	2.87E+01	5.76E+01	--
	lbs/day[3]	8.97E+01	1.80E+02	--
Chrysene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Dibenzo(a,h)Anthracene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
1,2-Dichlorobenzene	µg/L	1.70E+04	3.41E+04	--
	lbs/day[2]	1.13E+02	2.28E+02	--
	lbs/day[3]	3.54E+02	7.11E+02	--
1,3-Dichlorobenzene	µg/L	2.60E+03	5.22E+03	--
	lbs/day[2]	1.73E+01	3.48E+01	--
	lbs/day[3]	5.42E+01	1.09E+02	--
1,4-Dichlorobenzene	µg/L	2.60E+03	5.22E+03	--
	lbs/day[2]	1.73E+01	3.48E+01	--
	lbs/day[3]	5.42E+01	1.09E+02	--
3,3 Dichlorobenzidine	µg/L	7.70E-02	1.54E-01	--
	lbs/day[2]	5.14E-04	1.03E-03	--
	lbs/day[3]	1.61E-03	3.22E-03	--
Diethyl Phthalate	µg/L	1.20E+05	2.41E+05	--
	lbs/day[2]	8.01E+02	1.61E+03	--
	lbs/day[3]	2.50E+03	5.02E+03	--
Dimethyl Phthalate	µg/L	2.90E+06	5.82E+06	--
	lbs/day[2]	1.93E+04	3.88E+04	--
	lbs/day[3]	6.05E+04	1.21E+05	--
Di-n-Butyl Phthalate	µg/L	1.20E+04	2.41E+04	--
	lbs/day[2]	8.01E+01	1.61E+02	--
	lbs/day[3]	2.50E+02	5.02E+02	--
2,4-Dinitrotoluene	µg/L	9.10E+00	1.83E+01	--
	lbs/day[2]	6.07E-02	1.22E-01	--
	lbs/day[3]	1.90E-01	3.81E-01	--
1,2-Diphenylhydrazine	µg/L	5.40E-01	1.08E+00	--
	lbs/day[2]	3.60E-03	7.23E-03	--
	lbs/day[3]	1.13E-02	2.26E-02	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Fluoranthene	µg/L	3.70E+02	7.42E+02	--
	lbs/day[2]	2.47E+00	4.95E+00	--
	lbs/day[3]	7.71E+00	1.55E+01	--
Fluorene	µg/L	1.40E+04	2.81E+04	--
	lbs/day[2]	9.34E+01	1.87E+02	--
	lbs/day[3]	2.92E+02	5.86E+02	--
Hexachlorobenzene	µg/L	7.70E-04	1.54E-03	--
	lbs/day[2]	5.14E-06	1.03E-05	--
	lbs/day[3]	1.61E-05	3.22E-05	--
Hexachlorobutadiene	µg/L	5.00E+01	1.00E+02	--
	lbs/day[2]	3.34E-01	6.69E-01	--
	lbs/day[3]	1.04E+00	2.09E+00	--
Hexachlorocyclopentadiene	µg/L	1.70E+04	3.41E+04	--
	lbs/day[2]	1.13E+02	2.28E+02	--
	lbs/day[3]	3.54E+02	7.11E+02	--
Hexachloroethane	µg/L	8.90E+00	1.79E+01	--
	lbs/day[2]	5.94E-02	1.19E-01	--
	lbs/day[3]	1.86E-01	3.72E-01	--
Indeno(1,2,3-cd)Pyrene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Isophorone	µg/L	6.00E+02	1.20E+03	--
	lbs/day[2]	4.00E+00	8.03E+00	--
	lbs/day[3]	1.25E+01	2.51E+01	--
Nitrobenzene	µg/L	1.90E+03	3.81E+03	--
	lbs/day[2]	1.27E+01	2.54E+01	--
	lbs/day[3]	3.96E+01	7.95E+01	--
N-Nitrosodimethylamine	µg/L	8.10E+00	1.63E+01	--
	lbs/day[2]	5.40E-02	1.08E-01	--
	lbs/day[3]	1.69E-01	3.39E-01	--
N-Nitrosodi-n-Propylamine	µg/L	1.40E+00	2.81E+00	--
	lbs/day[2]	9.34E-03	1.87E-02	--
	lbs/day[3]	2.92E-02	5.86E-02	--
N-Nitrosodiphenylamine	µg/L	1.60E+01	3.21E+01	--
	lbs/day[2]	1.07E-01	2.14E-01	--
	lbs/day[3]	3.34E-01	6.69E-01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Pyrene	μg/L	1.10E+04	2.21E+04	--
	lbs/day[2]	7.34E+01	1.47E+02	--
	lbs/day[3]	2.29E+02	4.60E+02	--
Aldrin	μg/L	1.40E-04	2.81E-04	--
	lbs/day[2]	9.34E-07	1.87E-06	--
	lbs/day[3]	2.92E-06	5.86E-06	--
alpha-BHC	μg/L	1.30E-02	2.61E-02	--
	lbs/day[2]	8.67E-05	1.74E-04	--
	lbs/day[3]	2.71E-04	5.44E-04	--
beta-BHC	μg/L	4.60E-02	9.23E-02	--
	lbs/day[2]	3.07E-04	6.16E-04	--
	lbs/day[3]	9.59E-04	1.92E-03	--
gamma-BHC	μg/L	6.30E-02	1.26E-01	--
	lbs/day[2]	4.20E-04	8.43E-04	--
	lbs/day[3]	1.31E-03	2.64E-03	--
Chlordane	μg/L	5.90E-04	1.18E-03	--
	lbs/day[2]	3.94E-06	7.90E-06	--
	lbs/day[3]	1.23E-05	2.47E-05	--
4,4'-DDT	μg/L	5.90E-04	1.18E-03	--
	lbs/day[2]	3.94E-06	7.90E-06	--
	lbs/day[3]	1.23E-05	2.47E-05	--
4,4'-DDE	μg/L	5.90E-04	1.18E-03	--
	lbs/day[2]	3.94E-06	7.90E-06	--
	lbs/day[3]	1.23E-05	2.47E-05	--
4,4'-DDD	μg/L	8.40E-04	1.69E-03	--
	lbs/day	5.60E-06	1.12E-05	--
	lbs/day[3]	1.75E-05	3.51E-05	--
Dieldrin	μg/L	1.40E-04	2.81E-04	--
	lbs/day[2]	9.34E-07	1.87E-06	--
	lbs/day[3]	2.92E-06	5.86E-06	--
alpha-Endosulfan	μg/L	2.40E+02	4.81E+02	--
	lbs/day[2]	1.60E+00	3.21E+00	--
	lbs/day[3]	5.00E+00	1.00E+01	--
beta-Endolsulfan	μg/L	2.40E+02	4.81E+02	--
	lbs/day[2]	1.60E+00	3.21E+00	--
	lbs/day[3]	5.00E+00	1.00E+01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Endosulfan Sulfate	µg/L	2.40E+02	4.81E+02	--
	lbs/day[2]	1.60E+00	3.21E+00	--
	lbs/day[3]	5.00E+00	1.00E+01	--
Endrin	µg/L	8.10E-01	1.63E+00	--
	lbs/day[2]	5.40E-03	1.08E-02	--
	lbs/day[3]	1.69E-02	3.39E-02	--
Endrin Aldehyde	µg/L	8.10E-01	1.63E+00	--
	lbs/day[2]	5.40E-03	1.08E-02	--
	lbs/day[3]	1.69E-02	3.39E-02	--
Heptachlor	µg/L	2.10E-04	4.21E-04	--
	lbs/day[2]	1.40E-06	2.81E-06	--
	lbs/day[3]	4.38E-06	8.78E-06	--
Heptachlor Epoxide	µg/L	1.10E-04	2.21E-04	--
	lbs/day[2]	7.34E-07	1.47E-06	--
	lbs/day[3]	2.29E-06	4.60E-06	--
PCBs sum[6]	µg/L	1.70E-04	3.41E-04	--
	lbs/day[2]	1.13E-06	2.28E-06	--
	lbs/day[3]	3.54E-06	7.11E-06	--
Toxaphene	µg/L	7.50E-04	1.50E-03	--
	lbs/day[2]	5.00E-06	1.00E-05	--
	lbs/day[3]	1.56E-05	3.14E-05	--

1 Scientific "E" notation is used to express certain values. In scientific "E" notation, the number following the "E" indicates that position of the decimal point in the value. Negative numbers after the "E" indicate that the value is less than 1, and positive numbers after the "E" indicate that the value is greater than 1. In this notation a value of 6.1E-02 represents 6.1 x 10^{-2} or 0.061, 6.1E+02 represents 6.1 x 10^{2} or 610, and 6.1E+00 represents 6.1 x 10^{0} or 6.1.

2 Based on a flow of 0.8 MGD at Discharge Point No. 001a.

3 Based on a flow of 2.5 MGD at Discharge Point No. 001b.

4 If a Discharger can demonstrate to the satisfaction of the Regional Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by (or performance goals may be evaluated with) the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In Order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR Part 136, as revised May 14, 1999.

5 TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

6 PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

Table 11. Performance Goals For Whole Effluent Toxicity

Parameter	Performance Goals			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Acute Toxicity	Pass/Fail	[1]		
Chronic Toxicity	TUc	[2]	--	1.6

1. Discharges shall achieve a rating of "Pass" for acute toxicity with compliance determined as specified in Section VII.J of this Order.
2. One or more test results with a calculated median value of 1.0 TUc

8. The Discharger shall not cause pollution, contamination, or nuisance, as those terms are defined in CWC 13050, as a result of the treatment or discharge of wastes.

9. All waste treatment, containment and disposal facilities shall be protected against 100-year peak stream flows as defined by the San Diego County flood control agency.

10. All waste treatment, containment and disposal facilities shall be protected against erosion, overland runoff and other impacts resulting from a 100-year frequency 24-hour storm.

11. Collected screenings, sludges, and other solids removed from liquid wastes, shall be disposed of in a manner approved by this Regional Water Board.

12. The discharge of substances for which effluent limitations are not established in this Order shall be prevented, or, if the discharge cannot be prevented, minimized.

B. Interim Effluent Limitations—Not Applicable

C. Land Discharge Specifications – Not Applicable

D. Reclamation Specifications – Not Applicab

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitation

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in the Tidal Prism of the San Diego Bay.

1. Physical Characteristics

a. Waters shall not contain oils, greases, waxes, or other materials in concentrations which result in a visible film or coating on the surface of the water or on objects in the water, or which cause nuisance or which otherwise adversely affect beneficial uses.

b. Waters shall not contain floating material, including solids, liquids, foams, and scum in concentrations which cause nuisance or adversely affect beneficial uses.

c. The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

d. Waters shall not contain suspended and settleable solids in concentrations of solids that cause nuisance or adversely affect beneficial uses.

e. Waters shall not contain taste or odor producing substances at concentrations which cause a nuisance or adversely affect beneficial uses.

f. Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. In addition, within the Tidal Prism of the San Diego Bay the transparency of bay waters, insofar as it may be influenced by any controllable factor, either directly or through induced conditions, shall not be less than 8 feet in more than 20 percent of the readings in any zone, as measured by a standard Secchi disk. Wherever the water is less than 10 feet deep, the Secchi disk reading shall not be less than 80 percent of the depth in more than 20 percent of the readings in any zone. Within the Lower Sweetwater River, the Turbidity shall not exceed 20 NTU more than 10 percent of the time during any one year period.

2. Chemical Characteristics

a. The dissolved oxygen concentration shall not at any time be less than 5.0 mg/L. The annual mean dissolved oxygen concentration shall not be less than 7 mg/L more than 10% of the time.

b. Within the Tidal Prism of the San Diego Bay, the pH shall not be changed at any time more than 0.2 units from normal ambient pH. The pH shall not be depressed below 7.0 nor raised above 9.0.

c. The Lower Sweetwater River and the Tidal Prism of the San Diego Bay shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses.

d. The discharge of wastes shall not cause concentrations of un-ionized ammonia (NH3) to exceed 0.025 mg/l (as N) in the Tidal Prism of the San Diego Bay or the Lower Sweetwater River.

e. No individual pesticide or combination of pesticides shall be present in the water column, sediments or biota at concentration(s) that adversely affect beneficial uses. Pesticides shall not be present at levels which will bioaccumulate in aquatic organisms to levels which are harmful to human health, wildlife or aquatic organisms.

3. Radioactivity

Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.

4. Toxicity

All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.

5. Temperature

a. The maximum temperature of waste shall not exceed the natural temperature of the receiving waters by more than 20°F.

B. Groundwater Limitations– Not Applicable

VI. PROVISIONS

A. Standard Provisions

1. **Federal Standard Provisions.** The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.

2. **Regional Water Board Standard Provisions.** The Discharger shall comply with the following provisions:

   a. The Discharger shall comply with all requirements and conditions of this Order. Any permit non-compliance constitutes a violation of the CWA and/or of the CWC and is grounds for enforcement action, permit termination, revocation and reissuance, or modification, or for denial of an application for permit renewal, modification, or reissuance.

   b. The Discharger shall comply with all applicable federal, state, and local laws and regulations for handling, transport, treatment, or disposal of waste or the discharge of waste to waters of the State in a manner which causes or threatens to cause a condition of pollution, contamination or nuisance as those terms are defined in CWC 13050.

   c. The Porter-Cologne Water Quality Control Act provides for civil and criminal penalties comparable to, and in some cases greater than, those provided for under the CWA.

   d. Any noncompliance with this Order is a violation of the CWC and/or the CWA and is grounds for denial of an application for Order renewal or modification.

   e. No discharge of waste into waters of the State, whether or not the discharge is made pursuant to WDRs, shall create a vested right to continue the discharge. All discharges of wastes into waters of the State are privileges, not rights.

   f. For purposes of this Order, the term "permittee" used in parts of 40 CFR incorporated into this Order by reference and/or applicable to this Order shall have the same meaning as the term "Discharger" used elsewhere in this Order.

   g. This Order expires on July 1, 2015, after which, the terms and conditions of this permit are automatically continued pending issuance of a new Order, provided that all requirements of USEPA's NPDES regulations at 40 CFR 122.6 and the State's regulations at CCR Title 23, section 2235.4 regarding the continuation of expired Orders and waste discharge requirements are met.

h. Except as provided for in 40 CFR 122.7, no information or documents submitted in accordance with or in application for this permit will be considered confidential, and all such information and documents shall be available for review by the public at the office of the Regional Water Board.

i. A copy of this Order shall be maintained on-site at the Facility and shall be available to Regional Water Board, State Water Board, and USEPA personnel and/or their authorized representative at all times. The Discharger shall comply with any interim limitations established by addendum, enforcement action, or revised waste discharge requirements that have been or may be adopted by the Regional Water Board.

j. The Discharger shall comply with any interim limitations established by addendum, enforcement action, or revised waste discharge requirements that have been or may be adopted by the Regional Water Board

k. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

l. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, effluent limitation, discharge specification, or receiving water limitation of this Order, the Discharger shall notify the Regional Water Board by telephone (858) 467-2952 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Regional Water Board waives confirmation. The written notification shall state the nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the current noncompliance and prevent recurrence including, where applicable, a schedule of implementation. Other noncompliance requires written notification as above at the time of the normal monitoring report.

B. Monitoring and Reporting Program (MRP) Requirements

The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

a. This Order may be reopened for modification to include an effluent limitation if monitoring establishes that the discharge causes, has the reasonable potential to cause, or contributes to an excursion above WQOs (Basin Plan, Chapter 3).

b. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following;

i. Violation of any terms or conditions of this Order;

ii. Obtaining this Order by misrepresentation or failure to disclose fully all relevant fact; or

iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the Discharger for modifications, revocation and reissuance, or termination of this Order does not stay any condition of this Order. Notification by the Discharger of planned operational or facility changes, or anticipated noncompliance with this Order does not stay any condition of this Order.

c. If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under section 307(a) of the CWA for a toxic pollutant and that standard or prohibition is more stringent than any limitation on the pollutant in this Order, the Regional Water Board may institute proceedings under these regulations to modify or revoke and reissue the Order to conform to the toxic effluent standard or prohibition.

d. This Order may be re-opened and modified, to incorporate in accordance with the provisions set forth in 40 CFR Parts 122 and 124, to include requirements for the implementation of the watershed management approach.

e. This Order may be reopened and modified, in accordance with the provisions set forth in 40 CFR Parts 122 and 124, to include new Minimum Levels (MLs).

f. This Order may be re-opened and modified to revise effluent limitations as a result of future Basin Plan Amendments, or the adoption of a total maximum daily load allocation (TMDL) for the receiving water.

g. This Order may be re-opened upon submission by the Discharger of adequate information, as determined by this Regional Water Board, to provide for dilution credits or a mixing zone, as may be appropriate.

h. This Order may be re-opened and modified to revise the toxicity language once that language becomes standardized.

i. This Order may also be re-opened and modified, revoked and, reissued or terminated in accordance with the provisions of 40 CFR sections 122.44, 122.62 to 122.64, 125.62, and 125.62. Causes for taking such actions include, but are not limited to, failure to comply with any condition of this Order and permit, and endangerment to human health or the environment resulting from the permitted activity.

j. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

k. This Order may be reopened and modified for effluent copper limitations upon the Dischargers' development and submission of a receiving water-specific copper Water Effects Ration (WER) study.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. Toxicity Reduction Requirements

i. Initial Investigation TRE Workplan

Within 90 days of the permit effective date, the Discharger shall prepare and submit a copy of their Initial Investigation Toxicity Reduction Evaluation (TRE) Workplan (1-2 pages) to the Regional Water Board for review. This plan shall include steps the Discharger intends to follow if toxicity is measured above the acute or chronic WET Performance Goal as determined in section V of the MRP and should include, at minimum:

(a) A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.

(b) A description of methods for maximizing in-house treatment system efficiency, good housekeeping practices, and a list of all chemicals used in operations at the Facility.

(c) If a Toxicity Identification Evaluation (TIE) is necessary, an indication of who would conduct the TIEs (i.e., an in-house expert or outside contractor).

(d) The determination of when a TIE is necessary.

ii. Accelerated Toxicity Testing and TRE/TIE Process

(a) If one of the additional toxicity tests (Attachment E, section V.E) is exceeded, then, within 14 days of receipt of this test result, the Discharger shall initiate a TRE using, based on the type of treatment facility, EPA manual *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA/833/B-99/002, 1999) or EPA manual *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA/600/2-88/070, 1989). In conjunction, the Discharger shall develop and implement a detailed TRE Workplan which shall include: further actions undertaken by the Discharger to investigate, identify, and correct the causes of toxicity; actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and a schedule for these actions.

(b) The Discharger may initiate a Toxicity Identification Evaluation (TIE) as part of a TRE to identify the causes of toxicity using the same species and test method and, as guidance, EPA test method manuals: *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA/600/6-91/003, 1991); *Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/080, 1993); *Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/081, 1993); and *Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document* (EPA/600/R-96-054, 1996).

b. Benthic Invertebrate Monitoring Plan

In order to monitor potential impacts to the benthic communities due to increased effluent flow at Discharge Point No. 001b, the Discharger shall develop a plan to monitor benthic invertebrates within the receiving water. The Plan shall be submitted to the Regional Water Board within 180 days of the effective date of this Order. Within the plan, the Discharger shall establish locations upstream of the influence of the discharge and downstream of the discharge. Monitoring shall be conducted according to methodology in *Evaluation of Benthic Assessment Methodology in Southern California Bays and San Francisco Bay (SCCWRP, 2004).* The progress of plan development, implementation, including any resulting monitoring data and discussion of results shall be submitted in the annual report specified in X.A.3 of the MRP.

c. Macroalgae Monitoring Plan

In order to assess potential impacts from increased loadings of biostimulatory substances due to increased effluent flow at Discharge Point No. 001b, the Discharger shall develop a plan to monitor macroalgae within the receiving water. The Plan shall be submitted to the Regional Water Board within 180 days of the effective date of this Order. The plan shall include sampling for macroalgae at representative sites upstream and downstream of the discharge. Samples shall be analyzed for mass of organic material and percent organic matter. The plan shall also address macroalgae measurements using photographic quadrats. The progress of plan development, implementation, including any macroalgae sampling and photoquadrat monitoring results, and a discussion of results shall be submitted in the annual report specified in X.A.3 of the MRP.

d. Wetland Vegetation Monitoring Plan

In order to assess the potential effects of the increased discharge on the existing vegetation within the Lower Sweetwater River Estuary, the Discharger shall develop a plan to conduct wetland vegetation monitoring. The Plan shall be submitted to the Regional Water Board within 180 days of the effective date of this Order. Within the plan, the Discharger shall identify representative upstream and downstream locations whereby the Discharger shall conduct field observations and transect analysis to identify wetland vegetation species. The progress of plan development, implementation including any resulting monitoring data and discussion of results shall be submitted in the annual report specified in X.A.3 of the MRP

e. Temperature Compliance Determination Plan.

In order to demonstrate compliance with the temperature receiving water limitations in V.A.5.a of this Order, the Discharger shall develop a Plan determine the temperature influence (if any) on the receiving water. The Plan shall be submitted to the Regional Water Board within 60 days of the effective date of this Order. The purpose of the study shall be to demonstrate whether:

i. the effluent at Discharge Point No. 001a complies with V.A.5.a at the point of confluence of the Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River Estuary.

ii. the effluent at Discharge Point No. 001b will comply with the V.A.5.a within the Lower Sweetwater River Estuary.

The Plan shall address both dry weather flow and wet weather flow conditions.

3. Best Management Practices and Pollution Prevention

a. Pollution Prevention Plan. The Discharger shall prepare and implement a pollution prevention plan for copper, nickel, selenium, total nitrogen, and total phosphorus at Discharge Point No. 001a and 001b and copper at Discharge Point No. 002, in accordance with CWC section 13263.3(d)(2). The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet, Attachment F, section VI.G.3. A work plan and time schedule for preparation of the pollution prevention plan shall be completed and submitted to the Regional Water Board within 3 months of the effective date of this Order. The Discharger shall prepare and implement the pollution prevention plan in the event of a serious violation or if an effluent limitation is exceeded four or more times during a period of six consecutive months (in accordance with Section 13385 of the California Water Code).

4. Construction, Operation and Maintenance Specifications– Not Applicable

5. Other Special Provisions

a. Receiving Water Monitoring Locations for Relocated Discharge.

Prior to discharge through Discharge Point No. 001b, the Discharger shall establish receiving water monitoring locations, designated RSW-001b and RSW-002b. The Discharger shall determine an appropriate monitoring location upstream of the influence of the discharge from Discharge Point No. 001b and a downstream monitoring location no further than 50 meters downstream of the discharge. The Discharger shall provide the proposed monitoring locations to the Regional Water Board for approval prior to discharge through Discharger Point No. 001b.

6. Compliance Schedules

The Discharger shall comply with the following time schedule to ensure compliance with the toxicity effluent limitation of this Order:

Task	Compliance Date
Complete Engineering Analysis	Complete
Complete the permitting process necessary to construct	May 12, 2010
Complete financial arrangements for construction	January 2012
Complete Engineering Design	March 2012
Issue Request for Proposals for construction	March 2012
Begin construction	July 2012
Start up and initial testing	October 2013
Complete relocation of brine discharge to Discharge Point 001b	January 2014

The Discharger shall submit to the Regional Board on or before each compliance date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, and shall include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

Progress reports shall be submitted annually according to the schedule in Table E-8 of this Order and shall continue until compliance is achieved.

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in section IV of this Order will be determined as specified below:

A. General.

Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

B. Compliance with Average Monthly Effluent Limitation (AMEL).

If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of noncompliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for the month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

C. Compliance with Maximum Daily Effluent Limitation (MDEL).

If a daily discharge exceeds the MDEL for a given parameter, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

D. Compliance with Instantaneous Minimum Effluent Limitation

If the analytical result of a single sample is lower than the instantaneous minimum effluent limitation for a parameter, a violation will be flagged and the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of noncompliance with the instantaneous minimum effluent limitation.

E. Compliance with Instantaneous Maximum Effluent Limitation.

If the analytical result of a single sample is higher than the instantaneous maximum effluent limitation for a parameter, a violation will be flagged and the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of noncompliance with the instantaneous maximum effluent limitation).

F. Compliance with Temperature Effluent Limitation

Compliance with the temperature limitation shall be based on a 12-month running average (e.g. the average of the weekly readings obtained during any 12 month period). Receiving water monitoring shall be conducted simultaneously with effluent monitoring. For the purposes of this section, simultaneously means no more than 1 hour apart.

G. Mass and Concentration Limitations.

Compliance with mass and concentration effluent limitations for the same parameter shall be determined separately with their respective limitations. When the concentration of a constituent in an effluent sample is determined to be “ND” or “DNQ”, the corresponding mass emission rate (MER) determined from that sample concentration shall also be reported as “ND” or “DNQ”.

H. Compliance with Single-Constituent Effluent Limitations

The Discharger shall be deemed out of compliance with an effluent limitation or discharge specification if the concentration of the constituent in the monitoring sample is greater than the effluent limitation or discharge specification and greater than or equal to the ML.

I. Compliance with Effluent Limitations expressed as a Sum of Several Constituents

Dischargers are out of compliance with an effluent limitation that applies to the sum of a group of chemicals (e.g., PCBs) if the sum of the individual pollutant concentrations is greater than the effluent limitation. Individual pollutants of the group will be considered to have a concentration of zero if the constituent is reported as ND or DNQ.

J. Multiple Sample Data

When determining compliance with an AMEL or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of “Detected, but Not Quantified” (DNQ) or “Not Detected” (ND).

In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

1. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

2. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

K. Sampling Reporting Protocols

1. Dischargers must report with each sample result the reported ML and the laboratory's current Method Detection Limit (MDL).

2. Dischargers must also report results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML must be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, must be reported as "Detected, but Not Quantified", or DNQ. The laboratory must write the estimated chemical concentration of the sample next to DNQ as well as the words "Estimated Concentration" (may be shorted to Est. Conc.").

   c. Sample results less than the laboratory's MDL must be reported as "Not Detected", or ND.

L. Whole Effluent Toxicity

Compliance with the Acute and Chronic Toxicity Performance Goals for Discharge Point No. 001a and 001b shall be determined according to the MRP section V.

ATTACHMENT A – DEFINITIONS

Acute Toxicity

a. Acute Toxicity (TUa)

Expressed in Toxic Units Acute (TUa)

$$TUa = \frac{100}{\text{96-hr LC 50\%}}$$

b. Lethal Concentration 50% (LC 50)

LC 50 (percent waste giving 50% survival of test organisms) shall be determined by static or continuous flow bioassay techniques using standard marine test species. If specific identifiable substances in wastewater can be demonstrated by the Discharger as being rapidly rendered harmless upon discharge to the marine environment, but not as a result of dilution, the LC 50 may be determined after the test samples are adjusted to remove the influence of those substances.

When it is not possible to measure the 96-hour LC 50 due to greater than 50 percent survival of the test species in 100 percent waste, the toxicity concentration shall be calculated by the expression:

$$TUa = \frac{\log(100 - S)}{1.7}$$

where:

S = percentage survival in 100% waste. If S > 99, TUa shall be reported as zero.

Areas of Special Biological Significance (ASBS)
Those areas designated by the State Water Board as ocean areas requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are also classified as a subset of STATE WATER QUALITY PROTECTION AREAS.

Arithmetic Mean (μ)
Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic
Pollutants are substances that are known to cause cancer in living organisms.

Chronic Toxicity
This parameter shall be used to measure the acceptability of waters for supporting a healthy marine biota until improved methods are developed to evaluate biological response.

a. Chronic Toxicity (TUc)

Expressed as Toxic Units Chronic (TUc)

$$\text{TUc} = \frac{100}{\text{NOEL}}$$

b. No Observed Effect Level (NOEL)

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test.

Coefficient of Variation (CV)
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a

constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Degrade
Degradation shall be determined by comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected.

Detected, but Not Quantified (DNQ)
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Dredged Material
Any material excavated or dredged from the navigable waters of the United States, including material otherwise referred to as "spoil".

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than

75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters
All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Material
(a) In common usage: (1) the substance or substances of which a thing is made or composed (2) substantial; (b) For purposes of the Ocean Plan relating to waste disposal, dredging and the disposal of dredged material and fill, MATERIAL means matter of any kind or description which is subject to regulation as waste, or any material dredged from the navigable waters of the United States. See also, DREDGED MATERIAL.

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants

with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML)
ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results which are less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based

effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reported Minimum Level
The ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix II of the Ocean Plan in accordance with section III.C.5.a. of the Ocean Plan or established in accordance with section III.C.5.b. of the Ocean Plan. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the reported ML.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Serious Violation

Any waste discharge that violates the effluent limitations contained in the applicable waste discharge requirements for a Group II pollutant, as specified in Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations, by 20 percent or more or for a Group I pollutant, as specified in Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations, by 40 percent or more.

Shellfish
Organisms identified by the California Department of Health Services as shellfish for public health purposes (i.e., mussels, clams and oysters).

Significant Difference
Defined as a statistically significant difference in the means of two distributions of sampling results at the 95 percent confidence level.

Six-Month Median Effluent Limitation
The highest allowable moving median of all daily discharges for any 180-day period.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

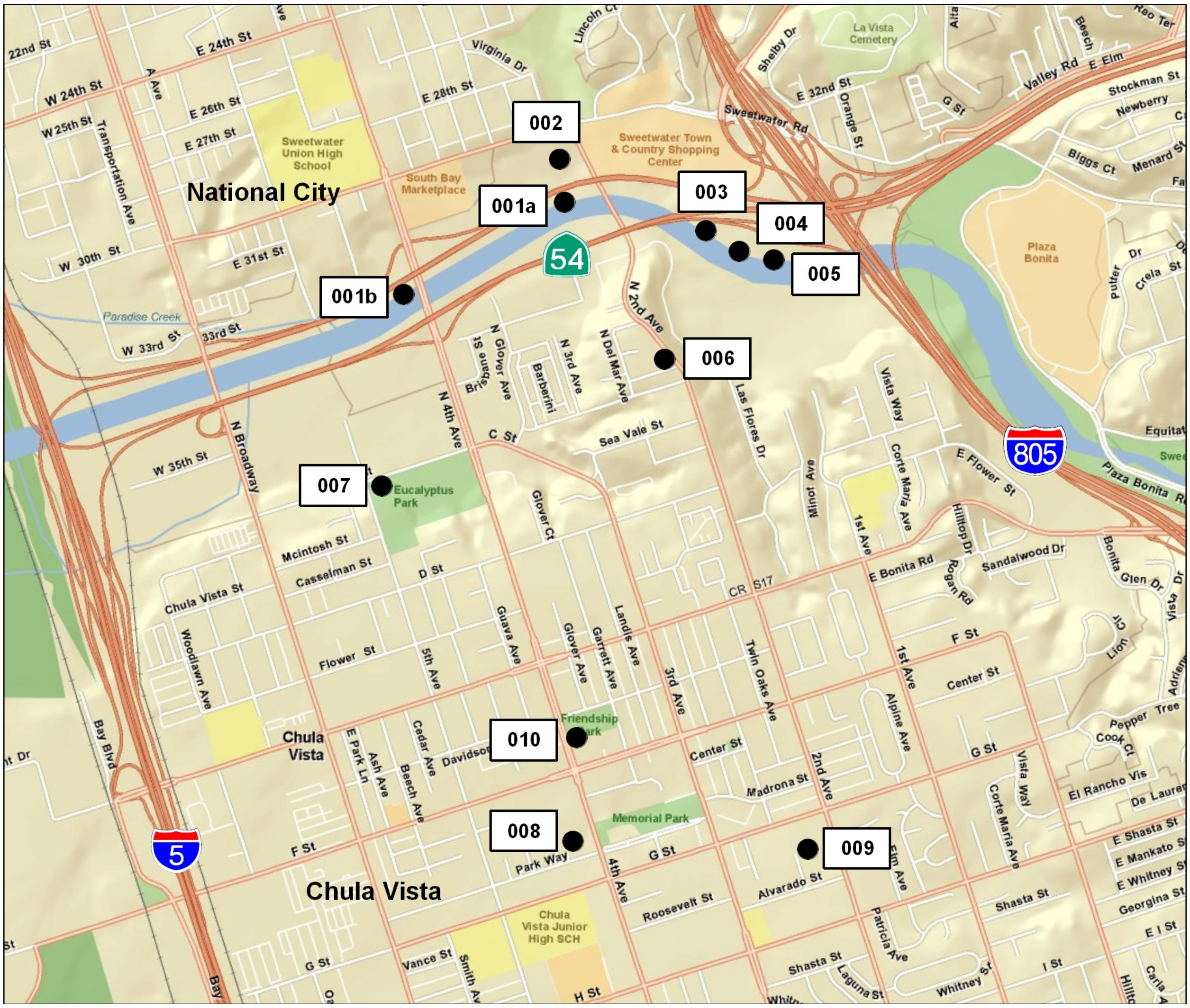
$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

State Water Quality Protection Areas (SWQPAs)
Non-terrestrial marine or estuarine areas designated to protect marine species or biological communities from an undesirable alteration in natural water quality. All AREAS OF SPECIAL BIOLOGICAL SIGNIFICANCE (ASBS) that were previously designated by the State Water Board in Resolution No.s 74-28, 74-32, and 75-61 are now also classified as a subset of State Water Quality Protection Areas and require special protections afforded by the Ocean Plan.

Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – MAP



Drawing Reference: **ESRI World Street Map Service** Copyright:© 2009 ESRI, AND, TANA, UNEP-WCMC **2008** **001** **= Discharge Point Nos.**	**SITE LOCATION MAP** **REYNOLDS DEMINERALIZATION PLANT, CHULA VISTA** **SAN DIEGO COUNTY**

ATTACHMENT C – FLOW SCHEMATIC

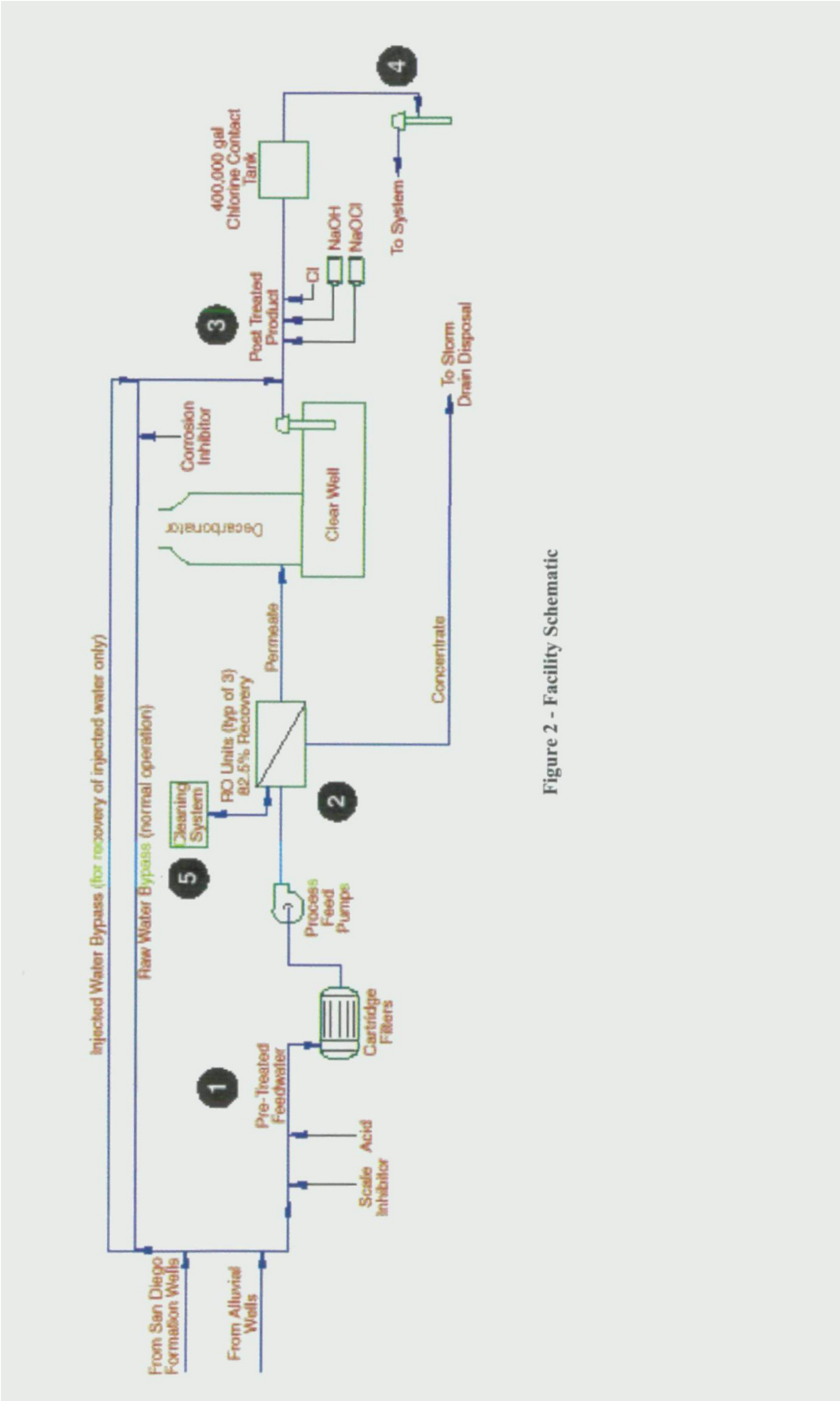


Figure 2 - Facility Schematic

ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR. § 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR. § 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR. § 122.41(c).)

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR. § 122.41(d).)

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 CFR. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR. § 122.41(g).)

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR. § 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR. § 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR. § 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR. § 122.41(i)(4).)

G. Bypass

1. Definitions

a. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR. § 122.41(m)(1)(i).)

b. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR. § 122.41(m)(1)(ii).)

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR. § 122.41(m)(2).)

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR. § 122.41(m)(4)(i)):

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR. § 122.41(m)(4)(i)(A));

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR. § 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR. § 122.41(m)(4)(i)(C).)

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR. § 122.41(m)(4)(ii).)

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR. § 122.41(m)(3)(i).)

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR. § 122.41(m)(3)(ii).)

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR. § 122.41(n)(1).)

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR. § 122.41(n)(2).)

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR. § 122.41(n)(3)):

a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR. § 122.41(n)(3)(i));

b. The permitted facility was, at the time, being properly operated (40 CFR. § 122.41(n)(3)(ii));

c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR. § 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR. § 122.41(n)(3)(iv).)

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR. § 122.41(n)(4).)

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR. § 122.41(f).)

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR. § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR. § 122.41(j)(1).)

B. Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 CFR. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR. § 122.41(j)(2).)

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR. § 122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 CFR. § 122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 CFR. § 122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 CFR. § 122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 CFR. § 122.41(j)(3)(v)); and
6. The results of such analyses. (40 CFR. § 122.41(j)(3)(vi).)

C. Claims of confidentiality for the following information will be denied (40 CFR. § 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR. § 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 CFR. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR. § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR. § 122.41(k).)

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR. § 122.22(a)(3).).

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR. § 122.22(b)(1));

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR. § 122.22(b)(2)); and

c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR. § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR. § 122.22(c).)

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." (40 CFR. § 122.22(d).)

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR. § 122.22(l)(4).)

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR. § 122.41(l)(4)(i).)

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR. § 122.41(l)(4)(ii).)

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR. § 122.41(l)(4)(iii).)

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR. § 122.41(l)(5).)

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR. § 122.41(l)(6)(i).)

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR. § 122.41(l)(6)(ii)):

a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR. § 122.41(l)(6)(ii)(A).)

b. Any upset that exceeds any effluent limitation in this Order. (40 CFR. § 122.41(l)(6)(ii)(B).)

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR. § 122.41(l)(6)(iii).)

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR. § 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 CFR. § 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under section 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 CFR. § 122.41(l)(1)(ii).)

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR.§ 122.41(l)(1)(iii).)

4. The Discharger has proposed an expansion of the existing facility to desalinate additional groundwater resulting in a discharge of up to 2.5 MGD of through outfalls. The Board is currently reviewing the request, including salinity models and receiving water monitoring.

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR. § 122.41(l)(2).)

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR. § 122.41(l)(7).)

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR. § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Regional Water Board as soon as they know or have reason to believe (40 CFR. § 122.42(a)):

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 CFR. § 122.42(a)(1)):

a. 100 micrograms per liter (μg/L) (40 CFR. § 122.42(a)(1)(i));

b. 200 μg/L for acrolein and acrylonitrile; 500 μg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 CFR. § 122.42(a)(1)(ii));

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 CFR. § 122.42(a)(1)(iii)); or

d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 CFR. § 122.42(a)(1)(iv).)

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels" (40 CFR. § 122.42(a)(2)):

a. 500 micrograms per liter (μg/L) (40 CFR. § 122.42(a)(2)(i));

b. 1 milligram per liter (mg/L) for antimony (40 CFR. § 122.42(a)(2)(ii));

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 CFR. § 122.42(a)(2)(iii)); or

d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 CFR. § 122.42(a)(2)(iv).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitoring discharge. All samples shall be taken at the monitoring points specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Regional Water Board. Samples shall be collected at times representative of “worst case” conditions with respect to compliance with the requirement of Order No. R9-2010-0012. Laboratories analyzing monitoring samples shall be certified by the Department of Health Services, in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

B. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurement is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ±5 percent from true discharge rates throughout the range of expected discharge volumes.

C. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved at 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act as amended, or unless other test procedures are specified in Order No. R9-2010-0012 and/or in this MRP and/or by the Regional Water Board.

D. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Public Health or a laboratory approved by the Regional Water Board.

E. Records of monitoring information shall include information required under Standard Provision, Attachment D, section IV.

F. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices.

G. The Discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. Duplicate chemical analyses must be conducted on a minimum of ten percent of the samples or at least one sample per month, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples. When requested by USEPA or the Regional Water Board, the Discharger will participate in the NPDES discharge monitoring report QA performance study. The Discharger should have a success rate equal or greater than 80 percent.

H. Analysis for toxic pollutants, including acute and chronic toxicity, with performance goals based on WQOs of the Basin Plan shall be conducted in accordance with procedures described in the Basin Plan and restated in this MRP.

I. This permit may be modified in accordance with the requirements set forth at 40 CFR Parts 122 and 124, to include appropriate conditions or limits to address demonstrated effluent toxicity based on newly available information, or to implement any USEPA approved, new, State water quality standards applicable to effluent toxicity.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	INT-001	Contactor tank overflow (discharge) drain vault, after dechlorination
001a	EFF-001a	Discharge of Demineralization Brine in the Upper Paradise Creek Flood Control Channel. Latitude 32°39'34"N Longitude 117°05'00"W
001b	EFF-001b	Relocated Discharge of Demineralization Brine in the Lower Sweetwater River. Latitude 32˚39' 19.98"N Longitude 117˚ 05' 26.22"W
002	EFF-002	Discharge from San Diego Formation Well No.1, No.2, and No.6, pressure relief valves, and plant feed-water dump, prior to discharge to Paradise Creek Flood Control Channel. Latitude 32°39'31"N, Longitude 117°05'02"W
003	EFF-003	Discharge from San Diego Formation Well No.3. Latitude 32°39'29"N, Longitude 117°04'41"W
004	EFF-004	Discharge from San Diego Formation Well No.4. Latitude 32°39'26"N Longitude 117°04'36"W
005	EFF-005	Discharge from San Diego Formation Well No.5. Latitude 32°39'25"N Longitude 117°04'31"W
006	EFF-006	Discharge from San Diego Formation Well No 7. Latitude 32˚39' 12.38"N, Longitude 117˚ 04' 50.48"W
007	EFF-007	Discharge from San Diego Formation Well No. 8 Latitude 32˚38' 57.71"N, Longitude 117˚ 05' 29.22"W
008	EFF-008	Discharge from San Diego Formation Well No. 9 Latitude 32˚38' 16.51"N, Longitude 117˚ 05' 02.37"W
009	EFF-009	Discharge from San Diego Formation Well No. 10 Latitude 32˚38' 15.59"N, Longitude 117˚ 04' 30.03"W
010	EFF-010	Discharge from San Diego Formation Well No. 11 Latitude 32˚38' 27.84"N, Longitude 117˚ 05' 02"W
--	RSW-001a	Lower Sweetwater River just west of N. 2nd Ave., approximately 450 feet upstream of the confluence of the Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River
--	RSW-002a	Drop Structure Location approximately 850 feet west of the confluence of the Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River
--	RSW-001b	To be established by the Discharger prior to relocation of brine effluent to Discharger Point No. 001b

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	RSW-002b	To be established by the Discharger prior to relocation of brine effluent to Discharger Point No. 001b

III. INFLUENT MONITORING REQUIREMENTS—NOT APPLICABLE

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001a and EFF-001b

The Discharger shall monitor Discharge Point Nos. 001a and 001b at EFF-001a and EFF-001b, respectively, as follows:

Table E-2. Effluent Monitoring EFF-001a and EFF-001b

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Flow	MGD	Meter	Daily	--
pH	units	Grab	Monthly	[1]
Total Suspended Solids	mg/L	Grab	Quarterly	[1]
Oils and Grease	mg/l	Grab	Quarterly	[1]
Temperature	ºC, ºF	Grab	1/Week	[1]
Turbidity	NTU	Grab	Monthly	[1]
Copper, Total Recoverable	µg/L	Grab	Monthly	[1, 2, 6]
Nickel, Total Recoverable	µg/L	Grab	Monthly	[1, 2, 6]
Selenium, Total Recoverable	µg/L	Grab	Monthly	[1, 2, 6]
Ammonia, Un-ionized as N	mg/L	Grab	Quarterly	[1]
Nitrate Nitrogen, Total (as N)	mg/L	Grab	Monthly	[1]
Nitrogen, Total (as N)	mg/L	Grab	Monthly	[1]
Orthophosphate (as P)	mg/L	Grab	Monthly	[1]
Phosphorus, Total (as P)	mg/L	Grab	Monthly	[1]
Settleable Solids	ml/L	Grab	Quarterly	[1]
Priority Pollutants	µg/L	Grab	[3]	[1, 2]
TCDD Equivalents	µg/L	Grab	[3]	[1, 2, 4]
Salinity	ppt	Grab	Monthly	[1]
Acute and Chronic Toxicity	T.U.	Grab	Annually	[5]

[1] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136. The methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

2 For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

3 Priority pollutants shall be sampled quarterly at EFF-001a and 001b (when discharge occurs) during the third year following the date of permit adoption and shall be conducted concurrently with effluent monitoring for pH.

4 The Discharger shall monitor for the presence of the 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD or Dioxin) congeners. TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

5 Acute and Chronic Toxicity monitoring requirements are described in section V of this Monitoring and Reporting Program

6 EPA Method 1640 (reductive precipitation sample pre-concentration)/EPA Method 200.8 (ICP-MS) may be used to determine copper and nickel; EPA Method 7742 (hydride) may be used to determine selenium.

B. Monitoring Location EFF-002, EFF-003, EFF-004, EFF-005, EFF-006, EFF-007, EFF-008, EFF-009, and EFF-010

1. The Discharger shall monitor well purges as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring of Well Purges at EFF-002, EFF-003, EFF-004, EFF-005, EFF-006, EFF-007, EFF-008, EFF-009, and EFF-010

Parameter	Units	Sample Type	Minimum Sampling Frequency[3]	Required Analytical Test Method and (Minimum Level, units), respectively
Flow	MGD	Estimate[1]	1/Discharge Event	[2]
pH	standard units	Grab	1/Discharge Event	[2]
Duration	min., hr.	--	1/Discharge Event	[2]
Date	mm/dd/yy	--	1/Discharge Event	[2]

Parameter	Units	Sample Type	Minimum Sampling Frequency[3]	Required Analytical Test Method and (Minimum Level, units), respectively
Copper, Total Recoverable	µg/L	Grab	Quarterly	[2, 4]
Selenium, Total Recoverable	µg/L	Grab	Quarterly	[2, 4]
Ammonia, Un-ionized as N	mg/L	Grab	Quarterly	[2]
Nitrogen, Total (as N)	mg/L	Grab	Quarterly	[2]
Phosphorus, Total (as P)	mg/L	Grab	Quarterly	[2]

1 Calculated estimate based on discharge structure characteristics.

2 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

3 If there are no dischargers during a quarter then no monitoring is required. The Discharger shall submit a certification~~s~~ stating there were no discharges during the reporting period.

4 EPA Method 1640 (reductive precipitation sample pre-concentration)/EPA Method 200.8 (ICP-MS) may be used to determine copper; EPA Method 7742 (hydride) may be used to determine selenium.

2. Each groundwater well discharge location shall be qualitatively evaluated each quarter and reported quarterly. The qualitative evaluation shall include a narrative description of any erosion, sediment deposition, or other impacts to vegetation or wildlife in the vicinity of the respective discharge.

3. The Discharger shall monitor any discharges from the Chlorine Contact Tank, including overflow, at INT-001:

Table E-4. Effluent Monitoring at Chlorine Contact Tank Discharges at INT-001.

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Flow	MGD	Estimate	1/Discharge Event	--
pH	standard units	Grab	1/Discharge Event	[1]
Duration of Discharge	minutes	--	1/Discharge Event	--
Date of Discharge	--	--	1/Discharge Event	--
Copper, Total Recoverable	µg/L	Grab	Quarterly	[1, 2]
Selenium, Total Recoverable	µg/L	Grab	Quarterly	[1, 2]
Chlorine, Total Residual	µg/L	Grab	Quarterly	[1]

1 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136. The methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

2 EPA Method 1640 (reductive precipitation sample pre-concentration)/EPA Method 200.8 (ICP-MS) may be used to determine copper; EPA Method 7742 (hydride) may be used to determine selenium.

4. The Discharger shall monitor Plant Feed-Water Dump at EFF-002 as follows:

Table E-5. Effluent Monitoring of Plant Feed-Water Dump at EFF-002 .

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Flow	MGD	Estimate	1/Discharge Event	--
pH	standard units	Grab	1/Discharge Event	[1]
Duration of Discharge	minutes	--	1/Discharge Event	--
Date of Discharge	--	--	1/Discharge Event	--
Copper, Total Recoverable	µg/L	Grab	Quarterly	[1, 2]
Selenium, Total Recoverable	µg/L	Grab	Quarterly	[1, 2]
Ammonia, Un-ionized as N	mg/L	Grab	Quarterly	[1]
Nitrogen, Total (as N)	mg/L	Grab	Quarterly	[1]
Phosphorus, Total (as P)	mg/L	Grab	Quarterly	[1]

1 Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136. The methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

2 EPA Method 1640 (reductive precipitation sample pre-concentration)/EPA Method 200.8 (ICP-MS) may be used to determine copper; EPA Method 7742 (hydride) may be used to determine selenium.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

The Discharger shall conduct annual acute and chronic toxicity testing on effluent samples collected at Effluent Monitoring Station EFF-001a and EFF-001b in accordance with the following schedule and requirements:

Table E-6. Whole Effluent Toxicity Testing-EFF-001a and EFF-001b[1]

Parameter	Units	Sample Type	Minimum Sampling Frequency
Acute Toxicity	Pass or Fail	Composite	Annually
Chronic Toxicity	TUc	Grab	Annually

1 Monitoring to be conducted at location(s) where discharge is occurring.

A. Acute Toxicity

1. Monitoring Frequency

The Discharger shall conduct annual acute toxicity tests on 24-hour composite effluent samples. Each calendar year, at a different time of year from the previous years, the Discharger shall split a 24-hour composite effluent sample and concurrently conduct two toxicity tests using a fish and an invertebrate species; the Discharger shall then continue to conduct routine annual toxicity testing using the single, most sensitive species.

Acute toxicity test samples shall be collected for each point of discharge at the designated NPDES sampling station for the effluent (i.e., downstream from the last treatment process and any in-plant return flows where a representative effluent sample can be obtained). During years 1, 2, 3, 4 and 5 of the permit, a split of each sample shall be analyzed for all other monitored parameters at the minimum frequency of analysis specified by the effluent monitoring program.

2. Marine and Estuarine Species and Test Methods

Species and short-term test methods for estimating the acute toxicity of NPDES effluents are found in the fifth edition of *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPN821/R02/012,2002; Table IA, 40 CFR Part 136). The Discharger shall conduct 96-hour static renewal toxicity tests with the following vertebrate species:

- The topsmelt, Atherinops affinis [Larval Survival and Growth Test Method 1006.0 (Daily observations for mortality make it possible to calculate acute toxicity for desired exposure periods (Le., 96-hour Pass-Fail test)] in the first edition of Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms (EPAI600/R*951136,* 1995) (specific to Pacific Coast waters);

- The Inland silverside, Menidia beryllina, only if Atherinops affins is not available. (Acute Toxicity Test Method 2006.0);

And the following invertebrate species:

- The West Coast mysid, Holmesimysis costata (Table 19 in the acute test methods manual) (specific to Pacific Coast waters);

- The mysid, Americamysis bahia, only if Holmesimysis costata is not available. (Acute Toxicity Test Method 2007.0).

3. Acute WET Permit Trigger

There is no acute toxicity effluent limit for this discharge. The acute permit trigger for this discharge is any one test result not meeting the "Pass" performance goal. For this permit, the determination of Pass or Fail from a single-effluent-concentration (paired) acute toxicity test shall be determined using a one-tailed hypothesis test (t-test). The objective of a Pass or Fail test is to determine if survival in the single treatment (100% effluent) is significantly different from survival in the control (0% effluent). Following Section 11.3 in the acute test methods manual (EPA/821/R-02/012, 2002), the t statistic for the single-effluent concentration acute toxicity test shall be calculated and compared with the critical t set at the 5% level of significance. If the calculated t does not exceed the critical t, then the mean responses for the single treatment and control are declared "not statistically different" and the Discharger shall report "Pass" on the quarterly report. If the calculated t does exceed the critical t, then the mean responses for the single treatment and control are declared "statistically different" and the Discharger shall report "Fail" on the quarterly. This permit requires additional toxicity testing if the acute WET permit trigger is reported as "Fail".

4. Quality Assurance

a. Quality assurance measures, instructions, and other recommendations and requirements are found in the test methods manual previously referenced. Additional requirements are specified, below.

b. This discharge is subject to a determination of Pass or Fail from a single-effluent concentration (paired) acute toxicity test using a one-tailed hypothesis test called a t-test. The acute instream waste concentration (IWC) for this discharge is 100% effluent. The 100% effluent concentration and a control shall be tested.

c. Control water shall be prepared and used as specified in the test methods manual *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms* (EPAl821/R-02/012, 2002); *and/or,* for Atherinops affinis, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPAl600/R-95/136, 1995*).*

d. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).

e. If either the reference toxicant or effluent toxicity tests do not meet all test acceptability criteria in the test methods manual, then the permittee must resample and retest within 14 days, or within the shortest time period possible (e.g., the next storm event, or next discharge event).

f. Following Paragraph 12.2.6.2 of the test methods manual, all acute toxicity test results from the multi-concentration tests required by this permit must be reviewed and reported according to USEPA guidance on the evaluation of concentration-response relationships found in Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR 136) (EPAIS21/B-001004, 2000).

g. Within-test variability of individual toxicity tests should be reviewed for acceptability and variability criteria (upper and lower PMSD bounds) should be applied, as directed under Section 12.2.S -*Test Variability* of the test methods manual, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*. Under Section 12.2.S, the calculated percent minimum significant difference (PMSD) for both reference toxicant test and effluent toxicity test results must be compared with the upper and lower PMSD bounds variability criteria specified in Table 3-6 -*Range of Relative Variability for Endpoints of Promulgated WET Methods, Defined by the 10th and 90th Percentiles from the Data Set of Reference Toxicant Tests*, taken from *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the National Pollutant Discharge Elimination System Program* (EPAIS33/R-001003, 2000), following the review criteria in Paragraphs 12.2.S.2.1 and 12.2.S.2 of the test methods manual. Based on this review, only accepted effluent toxicity test results shall be reported on the SMR for the quarter in which monitoring was conducted. If excessive within-test variability invalidates a test result, then the permittee must resample and retest within 14 days, or within the shortest time period possible (e.g., the next storm event, or next discharge event).

h. If the discharge effluent is chlorinated, then chlorine shall not be removed from the effluent sample prior to toxicity testing without written approval by the Regional Board.

i. Where total ammonia concentrations in the effluent are > 5 mg/l, toxicity may be contributed by unionized ammonia. pH drift during the toxicity test may contribute to artificial toxicity when ammonia or other ph-dependent toxicants (e.g., metals) are present. This problem is minimized by conducting toxicity tests in a static-renewal or flow-through mode, as outlined in Paragraph 9.5.9 of the test methods manual.

5. Initial Investigation TRE Workplan

Within 90 days of the permit effective date, the Discharger shall prepare and submit a copy of their Initial Investigation Toxicity Reduction Evaluation (TRE) Workplan (1-2 pages) to the Regional Board for review. This plan shall include steps the Discharger intends to follow if toxicity is measured above an acute WET permit limit or trigger and should include, at minimum:

a. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.

b. A description of methods for maximizing in-house treatment system efficiency, good housekeeping practices, and a list of all chemicals used in operations at the facility.

c. If a Toxicity Identification Evaluation (TIE) is necessary, an indication of who would conduct the TIEs (i.e., an in-house expert or outside contractor).

6. Accelerated Toxicity Testing and TRE/TIE Process

a. If an acute WET permit trigger is exceeded and the source of toxicity is known (e.g., a temporary plant upset), then the Discharger shall conduct one additional toxicity test using the same species and test method. This test shall begin within 14 days of receipt of test results exceeding an acute WET permit trigger. If the additional toxicity test does not exceed an acute WET permit trigger, then the Discharger may return to their regular testing frequency.

b. If an acute WET permit trigger is exceeded and the source of toxicity is not known, then the Discharger shall conduct six additional toxicity tests using the same species and test method, approximately every two weeks, over a 12 week period. This testing shall begin within 14 days of receipt of test results exceeding an acute WET permit trigger. If none of the additional toxicity tests exceed an acute WET permit trigger, then the Discharger may return to their regular testing frequency.

c. If one of the additional toxicity tests (in paragraphs 6.a or 6.b) exceeds an acute WET permit trigger, then, within 14 days of receipt of this test result, the Discharger shall initiate a TRE using, based on the type of treatment facility, EPA manual *Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants* (EPA/833/B-99/002, 1999) or EPA manual *Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations* (EPA/600/2-88/070, 1989). In conjunction, the Discharger shall develop and implement a Detailed TRE Workplan which shall include: further actions undertaken by the Discharger to investigate, identify, and correct the causes of toxicity; actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and a schedule for these actions.

d. The Discharger may initiate a Toxicity Identification Evaluation (TIE) as part of a TRE to identify the causes of toxicity using the same species and test method and, as guidance, EPA test method manuals: *Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures* (EPA/600/6-91/003,1991); *Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/080, 1993); *Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity* (EPA/600/R-92/081, 1993); and *Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document* (EPA/600/R-96-054, 1996).

7. Reporting of Acute Toxicity Monitoring Results

a. A full laboratory report for all toxicity testing shall be submitted as an attachment to the SMR for the quarter in which the toxicity test was conducted and shall also include: the toxicity test results-for determination of Pass/Fail-reported according to the test methods manual chapter on report preparation and test review; the dates of sample collection and initiation of each toxicity test; all results for effluent parameters monitored concurrently with the toxicity testes); and progress reports on TRE/TIE investigations.

b. The Discharger shall notify the Regional Water Board in writing within 14 days of an acute toxicity test resulting in a determination of "Fail". This notification shall describe actions the Discharger has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this Order; and schedule for actions not yet completed; or reason(s) that no action has been taken.

B. Chronic Toxicity

1. Monitoring Frequency

The Discharger shall conduct annual chronic toxicity tests on 24-hour composite effluent samples. Each calendar year, at a different time of year from the previous years, the Discharger shall split a 24-hour composite effluent sample and concurrently conduct three toxicity tests using a fish, an invertebrate, and an alga species. Chronic toxicity test samples shall be collected for each point of discharge at the designated NPDES sampling station for the effluent (i.e., downstream from the last treatment process and any in-plant return flows where a representative effluent sample can be obtained). During years 1, 2, 3, 4 and 5 of the permit, a split of each sample shall be analyzed for all other monitored parameters at the minimum frequency of analysis specified by the effluent monitoring program.

2. Marine and Estuarine Species and Test Methods

Species and short-term test methods for estimating the chronic toxicity of NPDES effluents are found in the first edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPAl600/R-9S/136, 1995) and applicable water quality standards; also see 40 CFR Parts 122.410)(4) and 122.44(d)(1)(iv) and 40 CFR Part 122.210)(S)(viii) for POTWs. The permittee shall conduct a static renewal toxicity test with the topsmelt, *Atherinops affinis* (Larval Survival and Growth Test Method 1006.0 (Daily observations for mortality make it possible to calculate acute toxicity for desired exposure periods (i.e., 7-day LCSO, 96-hour LCSO, etc.); a static nonrenewal toxicity test with the giant kelp, *Macrocystis pyrifera* (Germination and Growth Test Method 1009.0); and a toxicity test with one of the following invertebrate species:

- Static renewal toxicity test with the mysid, Holmesimysis costata (Survival and Growth Test Method 1007.01);
- Static non-renewal toxicity test with the Pacific oyster, Crassostrea gigas, or the mussel, Mytilus spp., (Embryo-larval Shell Development Test Method 100S.0);
- Static non-renewal toxicity test with the red abalone, Haliotis rufescens (Larval Shell Development Test Method);
- Static non-renewal toxicity test with the purple sea urchin, Strongylocentrotus purpuratus, or the sand dollar, Dentraster excentricus (Embryo-larval Development Test Method); or

- Static non-renewal toxicity test with the purple sea urchin, Strongylocentrotus purpuratus, or the sand dollar, Dendraster excentricus (Fertilization Test Method 1008.0).

If laboratory-held cultures of the topsmelt, *Atherinops affinis*, are not available for testing, then the permittee shall conduct a static renewal toxicity test with the inland silverside, *Menidia beryllina* (Larval Survival and Growth Test Method 1006.0), found in the third edition of *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPAl821/R-02/014, 2002; Table IA, 40 CFR Part 136).

3. Chronic WET Permit Triggers

There are no chronic toxicity effluent limits for this discharge. For this discharge, a mixing zone or dilution allowance is not authorized and the chronic WET permit triggers are any one test result greater than 1.6 TUc (during the monthly reporting period), or any one or more test results with a calculated median value greater than 1.0 TUc (during the monthly reporting period). Results shall be reported in TUc, where TUc = 100/NOEC. The No Observed Effect Concentration (NOEC) is the highest concentration of toxicant to which organisms are exposed in a short-term chronic test that causes no observable adverse effects on the test organisms (e.g., the highest concentration of toxicant in which the values for the observed responses are not statistically significantly different from the controls). This permit requires additional toxicity testing if a chronic WET permit trigger is exceeded.

4. Quality Assurance

a. Quality assurance measures, instructions, and other recommendations and requirements are found in the test methods manual previously referenced. Additional requirements are specified, below.

b. For this discharge, a mixing zone or dilution allowance is not authorized. The chronic instream waste concentration (IWCs) for this discharge is 100% effluent and 62.5% effluent. A series of at least five effluent dilutions and a control shall be tested. At minimum, the dilution series shall include the IWCs and four dilutions below the IWCs (e.g., 100%, 62.5%, 50%, 25% and 12.5%).

c. Effluent dilution water and control water should be prepared and used as described in the test methods manual *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms* (EPAl600/R-95/136, 1995) and/or *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms* (EPAl821/R-02/014, 2002). If the dilution water is different from test organism culture water, then a second control using culture water shall also be used. If the use of artificial sea salts is considered provisional in the test method, then artificial sea salts shall not be used to increase the salinity of the effluent sample prior to toxicity testing without written approval by the permitting authority.

d. If organisms are not cultured in-house, then concurrent testing with a reference toxicant shall be conducted. If organisms are cultured in-house, then monthly reference toxicant testing is sufficient. Reference toxicant tests and effluent toxicity tests shall be conducted using the same test conditions (e.g., same test duration, etc.).

e. If either the reference toxicant or effluent toxicity tests do not meet all test acceptability criteria in the test methods manual, then the Discharger must resample and retest within 14 days.

f. Following Paragraph 10.2.6.2 of the freshwater test methods manual, all chronic toxicity test results from the multi-concentration tests required by this permit must be reviewed and reported according to USEPA guidance on the evaluation of concentration response relationships found in *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing* (40 CFR 136) (EPAl821/B-00-004, 2000).

g. Because this permit requires sublethal hypothesis testing endpoints from test methods in Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms (EPAl600/R-95/136, 1995), within-test variability must be reviewed for acceptability and a variability criterion (upper %MSD bound) must be applied, as directed under each test method. Based on this review, only accepted effluent toxicity test results shall be reported on the report. If excessive within-test variability invalidates a test result, then the Discharger must resample and retest within 14 days.

h. If the discharged effluent is chlorinated, then chlorine shall not be removed from the effluent sample prior to toxicity testing without written approval by the permitting authority.

i. pH drift during the toxicity test may contribute to artifactual toxicity when pH dependent toxicants (e.g., ammonia, metals) are present in an effluent. To determine whether or not pH drift during the toxicity test is contributing to artifactual toxicity, the permittee shall conduct three sets of parallel toxicity tests, in which the pH of one treatment is controlled at the pH of the effluent and the pH of the other treatment is not controlled, as described in Section 11.3.6.1 of the test methods manual, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPAl821/R-02/013, 2002). Toxicity is confirmed to be artifactual and due to pH drift when no toxicity above the chronic WET permit limit or trigger is observed in the treatments controlled at the pH of the effluent. If toxicity is confirmed to be artifactual and due to pH drift, then, following written approval by the permitting authority, the permittee may use the procedures outlined in Section 11.3.6.2 of the test methods manual to control sample pH during the toxicity test.

5. **Initial Investigation of the TRE Workplan**

Within 90 days of the permit effective date, the Discharger shall submit a copy of their Initial Investigation Toxicity Reduction Evaluation (TRE) Workplan (1-2 pages) to the Regional Board for review. This plan shall include steps the Discharger intends to follow if toxicity is measured above the chronic WET permit trigger and should include, at a minimum:

a. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency.

b. A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices.

c. If a toxicity identification evaluation (TIE) is necessary, an indication of the person who would conduct the TIEs (i.e., an in-house expert or an outside contractor).

6. **Accelerated Toxicity Testing and TRE/TIE Process**

a. If a chronic WET permit limit or trigger is exceeded and the source of toxicity is known (e.g., a temporary plant upset), then the permittee shall conduct one additional toxicity test using the same species and test method. This test shall begin within 14 days of receipt of test results exceeding a chronic WET permit limit or trigger. If the additional toxicity test does not exceed a chronic WET permit limit or trigger, then the permittee may return to their regular testing frequency.

b. If a chronic WET permit limit or trigger is exceeded and the source of toxicity is not known, then the permittee shall conduct six additional toxicity tests using the same species and test method, approximately every two weeks, over a 12 week period. This testing shall begin within 14 days of receipt of test results exceeding a chronic WET permit limit or trigger. If none of the additional toxicity tests exceed a chronic WET permit limit or trigger, then the permittee may return to their regular testing frequency.

c. If one of the additional toxicity tests (in paragraphs 6.a or 6.b) exceeds a chronic WET permit limit or trigger, then, within 14 days of receipt of this test result, the permittee shall initiate a TRE using as guidance, based on the type of treatment facility, EPA manual Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants (EPA/ 833/B-99/002, 1999) or EPA manual Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (EPA/600/2-88/070, 1989). In conjunction, the permittee shall develop and implement a Detailed TRE Workplan which shall include: further actions undertaken by the Discharger to investigate, identify, and correct the causes of toxicity; actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and a schedule for these actions.

d. The permittee may initiate a Toxicity Identification Evaluation (TIE) as part of a TRE to identify the causes of toxicity using the same species and test method and, as guidance, EPA test method manuals: Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I (EPA/600/6-91/005F, 1992); Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity (EPA/600/R-92/080, 1993); Methods for Aquatic Toxicity Identification Evaluations, Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity (EPA/600/R-92/081, 1993); and Marine Toxicity Identification Evaluation (TIE): Phase I Guidance Document (EPA/600/R-96-054, 1996).

7. Reporting of Chronic Toxicity Monitoring Results

a. A full laboratory report for all toxicity testing shall be submitted as an attachment to the SMR for the quarter in which the toxicity test was conducted and shall also include: the toxicity test results—in NOEC; TUc = 100/NOEC; EC25 (or IC25); and TUc = 100/EC25 (or IC25)—reported according to the test methods manual chapter on report preparation and test review; the dates of sample collection and initiation of each toxicity test; all results for effluent parameters monitored concurrently with the toxicity test(s); and progress reports on TRE/TIE investigations.

b. The Discharger shall notify the Regional Board in writing within 14 days of exceedance of a chronic WET permit trigger. This notification shall describe actions the Discharger has taken or will take to investigate, identify, and correct the causes of toxicity; the status of actions required by this permit; and schedule for actions not yet completed; or reason(s) that no action has been taken.

VI. LAND DISCHARGE MONITORING REQUIREMENTS—NOT APPLICABLE

VII. RECLAMATION MONITORING REQUIREMENTS—NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001a/RSW-001b (Upstream) and RSW-002a/RSW-002b (Downstream) Lower Sweetwater River

1. The Discharger shall monitor the Lower Sweetwater River at RSW-001a/RSW-001b and RSW-002a/RSW-002b as follows:

Table E-7. Receiving Water Monitoring Requirements at RSW-001a/RSW-001b and RSW-002a/RSW-002b[1]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
pH	standard units	Grab	Quarterly	2
Total Suspended Solids	mg/L	Grab	Quarterly	2
Temperature	ºC, ºF	Grab	Monthly	2
Copper, Total Recoverable	µg/L	Grab	Quarterly	2, 3, 7
Nickel, Total Recoverable	µg/L	Grab	Quarterly	2, 3, 7
Selenium, Total Recoverable	µg/L	Grab	Quarterly	2, 3, 7
Ammonia, Unionized as N	mg/L	Grab	Quarterly	2
Dissolved Oxygen	mg/L	Grab	Quarterly	2
Nitrate, as N	mg/L	Grab	Quarterly	2
Nitrogen, Total (as N)	mg/L	Grab	Quarterly	2
Orthophosphate (as P)	mg/L	Grab	Quarterly	2
Phosphorus, Total (as P)	mg/L	Grab	Quarterly	2
Settleable Solids	ml/L	Grab	Quarterly	2
Priority Pollutants	µg/L	Grab	4	2, 3
TCDD Equivalents	µg/L	Grab	4	2, 3, 5
Salinity	mg/L	Grab	Quarterly	2
Acute Toxicity	Pass/Fail	Grab	Annually	6

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Chronic Toxicity	T.U.	Grab	Annually	[6]

[1] Prior to relocation of brine discharge, RSW-001a and RSW-002a shall be monitored. Once the brine discharge is relocated to Discharge Point 001b, monitoring shall occur at RSW-001b and RSW-002b.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; the methods must meet the lowest minimum levels (MLs) specified in Attachment 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Regional Water Board or the State Water Board.

[3] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

[4] Priority pollutants shall be sampled quarterly at RSW-001 and RSW-002 during the third year following the date of permit adoption and shall be conducted concurrently with effluent monitoring for pH.

[5] The Discharger shall monitor for the presence of the 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD or Dioxin) congeners. TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

[6] WET Testing Requirements as described in section V of the MRP.

[7] EPA Method 1640 (reductive precipitation sample pre-concentration)/EPA Method 200.8 (ICP-MS) may be used to determine copper and nickel; EPA Method 7742 (hydride) may be used to determine selenium.

IX. OTHER MONITORING REQUIREMENTS

A. Benthic Invertebrate Monitoring Plan

In order to monitor potential impacts to the benthic communities due to increased effluent flow at Discharge Point No. 001b, the Discharger shall develop a plan to monitor benthic invertebrates within the receiving water. Within the plan the Discharger shall establish locations upstream of the influence of the discharge and downstream of the discharge. Monitoring shall be conducted according to methodology in *Evaluation of Benthic Assessment Methodology in Southern California Bays and San Francisco Bay (SCCWRP, 2004).* The Plan shall be submitted to the Regional Water Board within 180 days of the effective date of this Order. Progress of plan development, implementation including any resulting monitoring data and discussion of results shall be submitted in the annual report specified in X.A.3.

B. Macroalgae Monitoring Plan

In order to assess potential impacts from increased loadings of biostimulatory substances due to increased effluent flow at Discharge Point No. 001b , the Discharger shall develop a plan to monitor macroalgae within the receiving water. The plan shall include sampling for macroalgae at representative sites upstream and downstream of the discharge. Samples shall be analyzed for mass of organic material and percent organic matter. The plan shall also address macroalgae measurements using photographic quadrats. The Plan shall be submitted to the Regional Water Board within 180 days of the effective date of this Order. Progress of plan development, implementation, including any macroalgae sampling and photoquadrat monitoring results, and a discussion of results shall be submitted in the annual report specified in X.A.3

C. Wetland Vegetation Monitoring Plan

In order to assess the potential effects of the increased discharge on the existing vegetation within the Lower Sweetwater River Estuary, the Discharger shall develop a plan to conduct wetland vegetation monitoring. Within the Plan, the Discharger shall identify representative upstream and downstream locations whereby the Discharger shall conduct field observations and transect analysis to identify wetland vegetation species. The Plan shall be submitted to the Regional Water Board within 180 days of the effective date of this Order. Progress of plan development, implementation including any resulting monitoring data and discussion of results shall be submitted in the annual report specified in X.A.3.

D. Temperature Compliance Determination Plan.

In order to demonstrate compliance with the temperature receiving water limitations in V.A.5.a of this Order, the Discharger shall develop a Plan to determine the temperature influence (if any) on the receiving water. The purpose of the study shall be to demonstrate whether:

a. the effluent at Discharge Point No. 001a complies with V.A.5.a at the point of confluence of the Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River Estuary.

b. the effluent at Discharge Point No. 001b will comply with the V.A.5.a within the Lower Sweetwater River Estuary.

The Plan address both dry weather flow and wet weather flow conditions. The Plan shall be submitted to the Regional Water Board within 60 days of the effective date of this Order. Progress of Plan development, implementation, including any resulting monitoring data and discussion of results shall be submitted in the annual report specified in X.A.3.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. The Discharger shall report all instances of noncompliance not reported under Attachment D, sections III, V, and VI of this Order No. R9-2010-0012 at the time monitoring reports are submitted.

3. By March 1 of each year, the Discharger shall submit an annual report to the Regional Water Board and USEPA Region 9 that contains tabular and graphical summaries of the monitoring data obtained during the previous year. The Discharger shall discuss the compliance record and corrective actions taken, or which may be taken, or which may be needed to bring the discharge into full compliance with the requirements of Order No. R9-2004-0111 and this MRP.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through IX. The Discharger shall submit quarterly SMRs including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-8. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	**July 1, 2010**	**All**	**Submit with quarterly SMR**
Monthly	**July 1, 2010**	**1st day of calendar month through last day of calendar month**	**Submit with quarterly SMR**
Quarterly	**July 1, 2010**	**January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31**	**30 days from the end of the monitoring period**
Annually	**January 1 following permit effective date**	**January 1 through December 31**	**30 days from the end of the monitoring period**
1/ Discharge Event	**July 1, 2010**	**January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31**	**Submit with quarterly SMR**

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

5. Compliance Determination. Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined above and Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

6. Multiple Sample Data. When determining compliance with an AMEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

7. The Discharger shall submit SMRs in accordance with the following requirements:

a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The

Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

c. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

9174 Sky Park Court, Suite 100
San Diego, CA 92123-4340

C. Discharge Monitoring Reports (DMRs)—Not Applicable

D. Other Reports

1. **Toxicity Reduction Evaluation.** The Discharger shall report the progress and results of any TRE (and TIE if applicable) required by Special Provision VI.C.2.a of this Order as specified in Special Provisions VI.C.2.a of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

2. **Benthic Invertebrate Monitoring Plan.** Within 180 days of the effective date of this Order, the Discharger shall develop a plan to monitor benthic invertebrates within the receiving water as required by Special Provisions VI.C.2.c of this Order.

3. **Macroalgea Monitoring Plan.** Within 180 days of the effective date of this Order, the Discharger shall develop a plan to monitor macroalgea within the receiving water as required by Special Provisions VI.C.2.d of this Order.

4. **Wetland Vegetation Monitoring Plan.** Within 180 days of the effective date of this Order, the Discharger shall develop a plan to monitor wetland vegetation within the vicinity of the discharge as required by Special Provisions VI.C.2.e of this Order.

5. **Temperature Compliance Determination Plan.** In accordance with Special Provision VI.C.2.f of this Order, within 60 days of the effective date of this Order, the Discharger shall develop a plan to demonstrate compliance with the temperature receiving water limitations in section V.A.5.a of this Order.

6. **Pollution Prevention Plan.** As specified in Special Provisions VI, pollution prevention plan reports shall be submitted in accordance with the following reporting requirements.

Table E-9. Other Reporting Requirements

Reporting Requirements	Report Due
Order Provision VI.C.2a. (If applicable) Progress and results of any TRE (and TIE if applicable)	First quarterly SMR scheduled to be submitted on or immediately following the report due date
Order Provision VI.C.2.c Plan to monitor benthic invertebrates within the receiving water	Within 180 days of the effective date of this Order
Order Provision VI.C.2.d Plan to monitor macroalgea within the receiving water	Within 180 days of the effective date of this Order
Order Provision VI.C.2.e Plan to monitor wetland vegetation within the vicinity of the discharge	Within 180 days of the effective date of this Order
Order Provision VI.C.2.f - Plan to demonstrate compliance with the temperature receiving water limitations	Within 60 days of the effective date of this Order
Order Provision VI.C.3 -Work plan and time schedule for preparation of the pollution prevention plan for copper, nickel, selenium, total nitrogen, and total phosphorus at Discharge Point No. 001a and 001b and copper at Discharge Point No. 002	Within 90 days after the adoption of this Order
Order Provision VI.C.3 -Final pollution prevention plan for copper, nickel, selenium, total nitrogen, and total phosphorus at Discharge Point Nos. 001a and 001b and copper at Discharge Point No. 002	The Discharger shall prepare and implement the pollution prevention plan in the event of a serious violation or if an effluent limitation is exceeded four or more times during a period of six consecutive months (in accordance with Section 13385 of the California Water Code).

ATTACHMENT F – FACT SHEET

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List of Tables

ATTACHMENT F – FACT SHEET

As described in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	**9 000000858**
Discharger	Sweetwater Authority
Name of Facility	Lower Sweetwater River Basin, Groundwater Demineralization Plant
Facility Address	3066 North Second Avenue Chula Vista, CA 91910 San Diego County
Facility Contact, Title and Phone	Don R. Thomson, Director of Water Quality, Sweetwater Authority, (619) 409-6801
Authorized Person to Sign and Submit Reports	Don R. Thomson, Director of Water Quality, Sweetwater Authority, (619) 420-1413
Mailing Address	P.O. Box 2328 Chula Vista, CA 91912-2328
Billing Address	P.O. Box 2328 Chula Vista, CA 91912-2328
Type of Facility	Groundwater Demineralization Plant, SIC code 4941
Major or Minor Facility	Minor
Threat to Water Quality	III
Complexity	b
Pretreatment Program	NA
Reclamation Requirements	NA
Facility Permitted Flow	0.8 MGD day at existing discharge location 1.0 MGD during December-May at existing discharge location or 2.5 MGD upon relocation and expansion
Facility Design Flow	2.5 MGD
Watershed	San Diego Bay
Receiving Water	Lower Sweetwater River, Tidal Prism of San Diego Bay
Receiving Water Type	Inland Surface Water, Estuary, and Enclosed Bay

A. The Sweetwater Authority (hereinafter Discharger) is the owner and operator of the Richard A. Reynolds Desalination Facility (hereinafter Facility), a groundwater demineralization plant.

For the purposes of this Order, references to the “discharger” or “permittee” in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The Facility discharges wastewater to the Lower Sweetwater River and the Tidal Prism of the San Diego Bay, waters of the United States, and is currently regulated by Order R9-2004-0111 which was adopted on June 10, 2004 and expired on June 10, 2009. The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit are adopted pursuant to this Order.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit on December 22, 2008 and applied for a NPDES permit renewal and request to increase the discharge from 0.8 MGD to 1.0 MGD at the existing discharge location and up to 2.5 MGD of demineralized brine and miscellaneous wastewater from the Facility upon relocation. Supplemental information was submitted on January 21, 2009 and June 26, 2009. The application was deemed complete on June 26, 2009.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility is a groundwater desalination plant capable of pumping up to 5 MGD of brackish groundwater for desalination and use as a potable water supply to approximately 180,000 customers through about 35,000 service connections in the communities of Chula Vista and National City. The Facility’s current discharge rate of 0.8 MGD limits the pumping of brackish groundwater to 4 MGD. The Discharger has requested an increase in flow from 0.8 MGD to 1.0 MGD, during the winter months at the existing location, to allow the pumping of the full 5 MGD of brackish groundwater the Facility is currently capable of treating. Six groundwater wells draw from the San Diego Formation Aquifer to provide plant feed-water to the existing facility. An additional five groundwater wells will be added as part of the proposed expansion for a total of eleven groundwater wells. Upon the addition of the proposed wells, the plant will be capable of pumping up to 10 MGD of brackish groundwater. Plant feed-water is pretreated by addition of scale inhibitors then passes through cartridge filters to remove larger particles prior to treatment by reverse osmosis units. The reverse osmosis units separate feed-water into permeate and concentrate (brine). Sodium hypochlorite (NaOCl) is added to the permeate to provide disinfection for potable water. The brine solution comprises the Facility’s continuous discharge, currently to the Upper Paradise Creek Flood Control Channel, which discharges to Lower Sweetwater

River. Other intermittent discharges include groundwater well purges, plant feed-water dumps, and chlorine contact tank overflow. A discussion of each type of discharge follows:

1. **Brine Concentrate.** The brine concentrate is generated from the desalination process and the discharge occurs daily and continuously when the plant is operating. The maximum discharge rate observed in monitoring data collected from April 2008 through September 2008, was 0.778 MGD. Order No. R9-2004-0111 permitted up to 0.8 MGD of brine discharge through Outfall No. 009 (redesignated as Discharge Point No. 001a in this Order). From the time that Order R9-2004-0111 was issued, the Facility has increased the potable water production capacity from 4 MGD to 5 MGD. If operated at the increased capacity, the discharge of brine is estimated, based on an 80 percent recovery rate, to be 1.0 MGD. In the Report of Waste Discharge, the Facility indicated that it is pursuing further production capacity and requested an increase in discharge flow up to 2.5 MGD. In order to mitigate any potential impacts caused by the increased discharge the Facility proposes to relocate the brine discharge location to a point approximately 2,200 feet (ft) downstream of the confluence of the Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River (designated as Discharge Point No. 001b in this Order). Other water discharges (described below) are not anticipated to change as a result of the increased production capacity.

2. **Groundwater Well Purge Water.** The groundwater well-purge water discharges occur when an inactive well is activated. Inactive groundwater wells need to be purged due to operational requirements (such as, to eliminate sand from the well casing) at the Demineralization Plant. During normal operation of the Facility, a groundwater well will remain on-line for several months before deactivation. Start-up of the wells and therefore any discharge from the wells occur once or twice per year. Mechanical problems may necessitate more frequent well deactivations. Subsequently, the groundwater well-purge water discharges may occur more frequently than once or twice per year. Table F-2, below provides a summary of discharges from the San Diego Formation Wells (SDFs) submitted in Discharge Monitoring Reports from April 2008 through September 2008. In relation to Discharge Points, the well purges occur at Outfall Nos. 002 through 005. Additional groundwater well-purge discharge points 006 through 010 will be added as part of the plant expansion.

Table F-2. Well Purge Discharge Summary April 2008 through September 2008

Well Source	Maximum Discharge Flow (MGD)	Maximum Duration (minutes)	Maximum No. of Discharges per Month	Total No. of Discharges (April 2008 through Sept. 2008)	Discharge Point No.
SDF-1	1.66	42	1	3	002
SDF-2	0.88	30	3	6	002
SDF-3	1.12	60	2	3	003
SDF-4	1.33	60	1	2	004
SDF-5	0.86	60	1	2	005
SDF-6	2.3	36	2	5	002

The average well purge flow rates in gallons per minute (gpm), reported in the application Form 2c, are as follows:

Table F-3 Well Purge Flow Rates Reported in Form 2C

SDF No.1: 1,100 gpm	SDF No.4: 890 gpm
SDF No.2: 600 gpm	SDF No.5: 480 gpm
SDF No.3: 710 gpm	SDF No.6: 1,470 gpm

Order No. R9-2004-0111 contained groundwater well-purge discharges associated with 4 alluvial production wells (APWs). On January 20, 2010, the Discharger submitted an amended application requesting the removal of all alluvial wells. The use of alluvial wells has been discontinued and the Discharger intends to abandon the wells in the near future. There will be no well purges from APW1, APW 2, APW3, or APW4. Historical water quality data on the APW wells will be available in the Regional Water Board file for this Facility.

3. **Plant Feed-Water Dump.** The plant feed-water dump (the manifold supplying the reverse osmosis process trains) occurs if one or more of the reverse osmosis process trains are not in operation and at start-up of the process trains. The feed- water dump consists of groundwater feed-water that may contain anti-scalent. During any emergency deactivation of the process trains the chemical feed pumps are shut-off. During start-up of the process trains, the plant feed-water dump overflow occurs for approximately 15 minutes to allow the pH to stabilize. The plant feed-water dump overflow discharge is located at the Facility at Discharge Point No. 002. During the period from April through September 2008 plant feed-water dumps occurred six times with a maximum frequency of twice a month and a maximum discharge rate of 2.34 MGD and a maximum duration of 140 minutes. The average discharge flow rate reported in the application Form 2c was 2,040 gpm. Plant feed water and well purges are not discharged simultaneously.

4. **Chlorine Contact Tank Emptying/Overflow.** Discharge from the chlorine contact-tank occurs at Discharge Point No. 002 when water stored in the potable water tank is not suitable for distribution, is drained for maintenance, or if the tank overflows. These discharges may contain chlorine due to the addition of NaOCl for disinfection. During the period of April through September 2008, discharge from the chlorine contact tank was reported once at a flow of 0.72 MGD for a period of 30 minutes. No other discharges have been reported during the term of the previous Order (June 1, 2004, through December 31, 2008). The Discharger reported in the Form 2C Report of Waste Discharge (ROWD) that the average flow rate during discharge is 1,080 gpm.

B. Discharge Points and Receiving Waters

Effluent from Discharge Point No. 001a and Discharge Point No. 002 enter the Upper Paradise Creek Flood Control Channel, a concrete lined conveyance that delivers upstream, ephemeral flow as well as the plant wastewaters to the Lower Sweetwater River Estuary. The discharge is located approximately 750 ft upstream of the confluence of the Upper Paradise Creek Flood Control Channel with the Lower Sweetwater River. To mitigate potential impacts from an increase in discharge rate, the Facility plans to relocate the brine discharge to a point approximately 2,200 ft downstream of the confluence of the Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River (Discharge Point No. 001b). The salinity and mixing conditions at the locations of Discharge Point Nos. 001a and 001b and 002 in the Lower Sweetwater River and the Upper Paradise Creek Flood Control Channel are such that the Regional Water Quality Control Board, San Diego (Regional Water Board) determined the discharge locations are within the tidal prism of the San Diego Bay. The Facility also discharges well purge water to several locations in the Lower Sweetwater River (Discharge Point Nos. 003 through 006). These discharge points are not considered to be within the tidal prism of the San Diego Bay. Well purge water from Discharge Point Nos. 007, 008, 009, and 010 will discharge into San Diego Bay. Table F-4 describes each discharge point.

Table F-4. Discharge Locations and Receiving Waters

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001a	Demineralization Brine	32 º 39' 34" N	117 º 05' 00" W	Lower Sweetwater River via Upper Paradise Creek Flood Control Channel (Tidal Prism of San Diego Bay)
001b	Demineralization Brine	32 º 39' 19.98" N	117 º 05' 26.22" W	Lower Sweetwater River (Tidal Prism of San Diego Bay)
002	Storm Water Runoff, Chlorine Contact-Tank Water, Plant Feed-water Dump, Groundwater Well-purge Water (SDFs No.1, No. 2, and No. 6)	32 º 39' 31" N	117 º 05' 02" W	Lower Sweetwater River (Tidal Prism of San Diego Bay)
003	Well-purge Water (SDF No.3)	32 º 39' 29" N	117 º 04' 41" W	Lower Sweetwater River
004	Well-purge Water (SDF No. 4	32 º 39' 26" N	117 º 04' 36" W	Lower Sweetwater River
005	Well-purge Water (SDF No. 5	32 º 39' 25" N	117 º 04' 31" W	Lower Sweetwater River
006	Well-purge Water (SDF No. 7	32˚39' 12.38"N	117˚ 04' 50.48"W	Lower Sweetwater River
007	Well-purge Water (SDF No. 8	32˚38' 57.71"N	117˚ 05' 29.22"W	San Diego Bay
008	Well-purge Water (SDF No. 9)	32˚38' 16.51"N	117˚ 05' 02.37"W	San Diego Bay
009	Well-purge Water (SDF No. 10)	32˚38' 15.59"N	117˚ 04' 30.03"W	San Diego Bay
010	Well-purge Water (SDF No. 11)	117˚ 05' 02"W	32˚38' 27.84"N	San Diego Bay

SDF=San Diego Formation Well

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in the existing Order for discharges from Discharge Point No. 001a, (Monitoring Location EFF-001a) and representative monitoring data from the term of the previous Order are as follows:

Table F-5. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From July 1, 2004 through November 13, 2008)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly	Highest Average Weekly	Highest Daily
Flow	MGD	--	--	0.800	--	--	0.8[1]
pH	std. units	--	--	6.0-9.0[2]	--	--	7.1-7.9
Nitrate (as N)	mg/L	--	--	5.0	--	--	0.10
Copper, Dissolved	mg/L	--	--	3.1[3]	--	--	2.89[4]
Copper, Total Recoverable	µg/L	--	--	3.73	--	--	4.3[5]

1 Average daily discharge flow, 30 day rolling average.

2 pH must be between 6.0 and 9.0 at all times

3 Interim effluent limitation for copper shall not exceed a maximum daily effluent limitation of 3.1 µg/L as dissolved (0.021 lbs/day). Interim effluent limitation terminated June 10, 2006.

4 Maximum effluent concentration during period of interim limit (November 14 2004 through June 10, 2006.

5 Includes special monitoring conducted as part of a Water Quality study during the period of April 25, 2007 through March 26, 2008.

Order No. R9-2004-0111 contained effluent limitations and monitoring requirements for metals in the total recoverable form. The Order also specified that the Discharger had committed to performing a metals translator study for copper (Finding No. 12). An interim limit for dissolved copper of 3.1 ug/L was included in the Order to extend 2 years after the adoption of the Order to allow for the Regional Water Board to evaluate the dissolved to total translator and modify the Order. The Order specifies that without modification, on June 10, 2006, limitations for copper revert to the total copper limitations of 3.73 µg/L (0.025 lbs/day).

A translator study was not conducted since, after further evaluation and discussions, it was determined that exceedances of the copper effluent limitation were a result of an interference with the test method.

Table F-6. Historic Effluent Limitations and Monitoring Data-Effluent Limitations for Groundwater Well-purge Water, Plant Feed-water Dump, and Chlorine Contact-tank Overflow

Parameter	Units	Effluent Limitation		Monitoring Data (From July 1, 2004 – To November 31, 2008)[1]	
		Instantaneous Maximum	Maximum Daily	Minimum Daily Discharge	Highest Daily Discharge
Chlorine Residual, Total	mg/L	--	0	--	0.15
pH	s.u.	within 6.0-9.0	--	6.6	8.6

1 Represents a combined data set of Discharge Point Nos. 002, 003, 004, and 005

D. Compliance Summary

During the term of the previous Order (2004-2009) there were no reported instances where the Discharger exceeded effluent limitations. A compliance evaluation inspection was conducted at the Facility on October 23, 2008. Major Findings from the inspection report were as follows:

1. The facility reported some metals analytical results as “Not Detected” that should have been reported as “Detected but Not Quantified”.

2. The name of the individual performing the sampling for nitrate (as N), total phosphorus, total suspended solids (TSS), total dissolved solids (TDS), settleable solids, and orthophosphate was not recorded for some dates. Further, the "Relinquished by" field of the chain of custody was not filled out for some sampling events. Lastly, monitoring information was not available for pH (date, time, location, and individual performing sampling) for monitoring events.

E. Planned Changes

In February 2006, the Discharger requested the proposed increase to 2.5 MGD of brine discharge be permitted. At the request of the Regional Water Board the Discharger collected additional water quality and biological monitoring and a salinity mixing model analysis to assess the potential for impacts associated with the increased discharge. The results of the monitoring indicated that an increase in discharge would likely affect salinity in the estuary and may have impacts on aquatic life. In consultation with the Regional Water Board, to mitigate any potential impacts associated with the increase in brine discharge, the Facility has proposed to relocate the discharge point approximately 2, 200 ft downstream of the confluence of the Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River, where tidal action provides more dilution and thus more uniform salinity.

In the interim, the Regional Water Board will allow an increase in flow from 0.8 MGD to 1.0 MGD, at the existing location, during the months of December thru May. SDF- 3, SDF-4, and SDF 5, which are located adjacent to the river, are only operated during the winter months to lesson the impacts to the freshwater marsh habitat in the Sweetwater River. The decision of when to operate the well is determined, in part by, the groundwater salinity as measured by conductivity in a nearby piezometer. As part of the adaptive management component of the Monitoring and Mitigation Plan, the three wells may only be used when the conductivity of the piezometer falls below 4,000 micro Siemens (uS) (approximately 2.7 ppt). Generally this occurs after the first rains in late fall to early winter. Depending on rainfall, the piezometer conductivity will remain below the 4,000 uS until late spring. It is anticipated that during the winter months, impacts associated with the brine discharge will be minimal when compared to the large volume of fresh water introduced into the estuary as a result of the rain.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and chapter 5.5, division 7 of the California Water Code (commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as WDRs pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under Water Code Section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 2100-21177. An Environmental Impact Report for the proposed expansion was prepared and certified on February 24, 2010.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Regional Water Quality Control Board (Regional Water Board) adopted a Water Quality Control Plan for the San Diego Basin (hereinafter Basin Plan) on September 8, 1994, that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan.

   The Basin Plan at page 2-12 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan does not specifically identify beneficial uses for Upper Paradise Creek Flood Control Channel but does identify present and potential uses for the Lower Sweetwater River Estuary within the San Diego Bay Tidal Prism, to which the Upper Paradise Creek Flood Control Channel, is tributary. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. The Lower Sweetwater River, in hydrologic unit basin number 909.12 is not designated as for MUN, as indicated in the Basin Plan Table 2-2. The beneficial uses applicable to the Upper Paradise Flood Control Channel, the San Diego Bay Tidal Prism and the Lower Sweetwater River are as follows:

Table F-7. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001a, 002	Tidal Prism of the San Diego Bay via Upper Paradise Creek Flood Control Channel and Lower Sweetwater River	Existing: Industrial service supply (IND), navigation (NAV), contact water recreation (REC1), non-contact water recreation (REC2), commercial and sport fishing (COMM), biological habitats of special significance (BIOL), estuarine habitat (EST), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), marine habitat (MAR), migration of aquatic organisms (MIGR), spawning (SPWN), and shellfish harvesting (SHELL).
001b	Tidal Prism of the San Diego Bay via Lower Sweetwater River	Existing: Industrial service supply (IND), navigation (NAV), contact water recreation (REC1), non-contact water recreation (REC2), commercial and sport fishing (COMM), biological habitats of special significance (BIOL), estuarine habitat (EST), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), marine habitat (MAR), migration of aquatic organisms (MIGR), spawning (SPWN), and shellfish harvesting (SHELL).
003, 004, 005, and 006	Sweetwater River (Hydrologic Unit Basin No. 9.12)	Existing: industrial service supply (IND), non-contact water recreation (REC2), warm freshwater habitat (WARM), wildlife habitat (WILD). Potential: contact water recreation (REC1)
007, 008, 009, and 010	San Diego Bay	Existing: Industrial service supply (IND), navigation (NAV), contact water recreation (REC1), non-contact water recreation (REC2), commercial and sport fishing (COMM), biological habitats of special significance (BIOL), estuarine habitat (EST), wildlife habitat (WILD), preservation of rare, threatened or endangered species (RARE), marine habitat (MAR), migration of aquatic organisms (MIGR), and shellfish harvesting (SHELL).

Requirements of this Order implement the Basin Plan.

2. **Thermal Plan.** The State Water Board adopted a Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for surface waters. The discharge from Outfall 001b constitutes a new discharge of an elevated temperature waste. As such, the Thermal Plan is applicable to the discharge. Requirements of this Order implement the Thermal Plan.

3. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

4. **State Implementation Policy.** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

5. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes (40 CFR. § 131.21, 65 Fed. Reg. 24641 (April 27, 2000)). Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

6. **Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal

law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of section 131.12 and State Water Board Resolution No. 68-16.

7. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations[1] section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed.

D. Impaired Water Bodies on CWA 303(d) List

The San Diego Bay Shoreline, Chula Vista Marina, is identified on the 303(d) list for copper. The estimated size affected with respect to the Chula Vista Marina is 0.41 miles. The Chula Vista Marina is located 3.78 miles from the confluence of Upper Paradise Creek and the Lower Sweetwater River Estuary and is not a major source of copper to the Marina location.

E. Other Plans, Polices and Regulations

1. **Bays and Estuaries Policy**. The State Water Board adopted the Water Quality Control Policy for Enclosed Bays and Estuaries of California (Bays and Estuaries Policy) on May 16, 1974. The Bays and Estuaries Policy establishes principles for management of water quality, water quality requirements for waste discharges, discharge prohibitions, and general provisions to prevent water quality degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. These principles, requirements, prohibitions, and provisions have been incorporated into this Order.

   The Bays and Estuaries Policy contains the following principles for management of water quality in enclosed bays and estuaries, which includes San Diego Bay:

   "The discharge of municipal wastewaters and industrial process waters (exclusive of cooling water discharges) to enclosed bays and estuaries shall be phased out at the earliest practicable date. Exceptions to this provision may be granted by a Regional Water Board only when the Regional Water Board finds that the wastewater in question would consistently be treated and discharged in such a manner that it would

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

enhance the quality of receiving waters above that which would occur in the absence of the discharge."

For the purpose of this policy, treated ballast waters and innocuous non-municipal wastewater such as clear brines, washwater, and pool drains are not necessarily considered industrial process wastes, and may be allowed by Regional Water Boards under discharge requirements that provide protection to the beneficial uses of the receiving water. For the purpose of the Bays and Estuaries Policy and this Order, the discharge of reverse osmosis brine concentrate, groundwater well-purge water, plant feed-water dump, and chlorine contact-tank overflow associated with the Facility are considered innocuous non-municipal wastewaters and, as such, will not be considered industrial process wastes. Therefore, the discharges of such wastes may be allowed by this Regional Water Board under WDRs that provide protection of the beneficial uses of the receiving waters.

The following Principles for the Management of Water Quality in Enclosed Bays and Estuaries, as stated in the Bays and Estuaries Policy apply to all of California's enclosed bays and estuaries including San Diego Bay:

a. Persistent or cumulative toxic substances shall be removed from the waste to the maximum extent practicable through source control or adequate treatment prior to discharge.

b. Bay or estuarine outfall and diffuser systems shall be designed to achieve the most rapid initial dilution practicable to minimize concentrations of substances not removed by source control or treatment.

c. Wastes shall not be discharged into or adjacent to areas where the protection of beneficial uses requires spatial separation from waste fields.

d. Waste discharges shall not cause a blockage of zones of passage required for the migration of anadromous fish.

e. Nonpoint sources of pollutants shall be controlled to the maximum practicable extent.

As of the date of adoption of this Order, no segment of San Diego Bay has been designated as an area where the protection of beneficial uses requires spatial separation from waste fields. This Regional Water Board has considered the Principles for the Management of Water Quality in Enclosed Bays and Estuaries, in adopting this Order. The terms and conditions of this Order are consistent with the Principles for the Management of Water Quality in Enclosed Bays and Estuaries.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: section 122.44(a) requires that permits include applicable technology-based limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water.

A. Discharge Prohibitions

Discharge Prohibitions in section III. of this Order are carried over from Order No. R9-2004-0111, with the exception of III.H. Prohibition A incorporates by reference Basin Plan Waste Discharge Prohibitions. Prohibition B ensures that the operating and discharge conditions under which this Order addresses are not modified in such a way as to result in exceedances of Basin Plan Objectives and/or impairment of beneficial uses. Prohibitions C, D, E, and F, and G are based on the directives contained in the Bays and Estuaries Policy and are carried over from Order No. R9-2004-0111. This Order modifies Prohibition III.H. to account for the planned increase in discharge flow. Prohibition I and J are carried over from Order No. R9-2004-0111 to ensure water quality objectives of the Basin Plan are adhered to. Prohibition K is carried over from R9-2004-0111 to prevent the introduction of wastes that were not considered in development of this Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations, require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3. The CWA requires that technology-based effluent limitations be established based on several levels of controls:

a. Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.

b. Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

c. Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease. The BCT standard is established after considering the "cost reasonableness" of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

d. New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires USEPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BAT, BCT, and NSPS. Section 402(a)(1) of the CWA and section 125.3 of the Code of Federal Regulations authorize the use of BPJ to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the permit writer must consider specific factors outlined in section 125.3.

2. Applicable Technology-Based Effluent Limitations

There are currently no effluent limitations guidelines that are specific to the type of discharge from this Facility. The TSS limitations in Table A of the Ocean Plan is designated for POTWs which remove large amounts of TSS from their effluent. Regional Board staff has conducted a review of TSS effluent limitation contained in the NPDES permit for several facilities that discharge to the ocean in the San Diego Region. It is evident, based on that review, that most POTWs and industrial facilities are capable of achieving a monthly average TSS level of 30 mg/l and a daily maximum TSS level of 50 mg/l in their effluent. Based on BPJ, the proposed Order restricts discharge flow rates at Discharge Point No. 001a and 001b to 0.8 MGD, 1.0 MGD and 2.5 MGD, respectively, based on the long-term average of the existing discharge and the projected long-term average of the proposed increased discharge. The Order also includes a restriction that the total flow from both Discharge Points may not exceed 2.5 MGD.

Table F-8. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Grease and Oil	mg/l	25				75
Total Suspended Solids	mg/l	30				50
Settleable Solids	mg/l	1.0				3.0
Turbidity	NTU	75				225
pH	Standard units	Within 6.0 to 9.0 at all time				

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

Beneficial Uses of the Tidal Prism of the San Diego Bay and the Lower Sweetwater River are discussed in section III.C. The Basin Plan numeric water quality objectives applicable to these receiving waters are listed in Tables F-7 and F-8 below:

Table F-9. Basin Plan Objectives —Tidal Prism of San Diego Bay and San Diego Bay

Constituent	Units	Water Quality Criteria
pH	s.u.	Between 7.0 and 9.0 at all times. Changes in normal ambient pH shall not exceed 0.2 units.
Ammonia, un-ionized	mg/L	0.025 mg/L as N
Phosphorus	mg/L	0.1[1]
Nitrogen	mg/L	1.0[2]
Turbidity	NTU	Within the San Diego Bay, the transparency of bay waters, insofar as it may be influenced by any controllable factor, either directly or through induced conditions, shall not be less than 8 feet in more than 20 percent of the readings in any zone, as measured by a standard Secchi disk. Wherever the water is less than 10 feet deep, the Secchi disk reading shall not be less than 80 percent of the depth in more than 20 percent of the readings in any zone.

1 Goal to prevent plant nuisance in streams and other flowing waters, not to be exceeded more than 10% of the time..

2 Where natural ratios of N/P are lacking, a ratio of N:P equal to10:1, on a weight to weight basis shall be used.

Table F-10.Basin Plan Objectives —Lower Sweetwater River

Constituent	Units	Water Quality Criteria
pH	s.u.	Between 6.5 and 8.5 at all times. Changes in normal ambient pH shall not exceed 0.5 units.
Ammonia, un-ionized	mg/L	0.025 mg/L as N
Phosphorus	mg/L	0.1[1]
Nitrogen	mg/L	1.0[2]
Dissolved Oxygen	mg/L	5.0
Total Dissolved Solids	mg/L	1,500
Chloride	mg/L	500
Sulfate	mg/L	500
Percent Sodium	mg/L	60
Iron	mg/L	0.3
Manganese	mg/L	0.05
Methylene Blue Active Substances (MBAS)	mg/L	0.5
Boron	mg/L	0.75

Constituent	Units	Water Quality Criteria
Odor	mg/L	None
Color	Units	20
Turbidity	NTU	20

[1] Goal to prevent plant nuisance in streams and other flowing waters, not to be exceeded more than 10% of the time.

[2] Where natural ratios of N/P are lacking, a ratio of N:P equal to10:1, on a weight to weight basis shall be used.

This Order contains requirements for ph of "between 6.0 and 9.0 at all times", which is carried over from the existing permit. It is not anticipate that this will cause an exceedance of the applicable water quality objective in the receiving waters.

Effluent from Discharge Point Nos. 001a and 002 enter the Upper Paradise Creek Flood Control Channel and are conveyed a short distance (approximately 750 feet) to a location in the Lower Sweetwater River that is considered part of the tidal prism of the San Diego Bay. Priority pollutant water quality criteria in the CTR are applicable to the tidal prism of the San Diego Bay and the Lower Sweetwater River. The CTR contains both saltwater and freshwater criteria. As specified in the CTR, "(1) freshwater criteria apply at salinities of 1 ppt and below at locations where this occurs 95% or more of the time; 2) saltwater criteria apply at salinities of 10 parts per thousand and above at locations where this occurs 95 percent or more of the time; and (3) at salinities between 1 and 10 ppt the more stringent of the two apply unless EPA approves the application of the freshwater or saltwater criteria based on an appropriate biological assessment.

Because the lack of upstream water in the Upper Paradise Creek Flood Control Channel (effluent discharges from Discharge Point No. 001a and 002 typically dominate the flow) and because of the short distance from the discharge to the Lower Sweetwater River, the salinity in the Lower Sweetwater River, upstream of the confluence of the Paradise Creek Flood Control Channel, was used to represent ambient salinity to determine whether marine or freshwater criteria apply. A total of 25 samples were collected from April 25, 2007 through March 26, 2008. The results demonstrated salinity varied from 0.4 ppt to 30.3 ppt. The salinity concentration at which 95 percent of the results were greater than was 1.4 ppt. The salinity concentration at which 95 percent of the data were below was 29.88 ppt. Since 95 percent of the receiving water salinity results were neither at or below 1 ppt nor at or above 10 ppt, the more stringent of the saltwater or freshwater criteria apply to Discharge Point Nos. 001a and 002.

Well Purge water from Discharge Point Nos. 003, 004, 005, and 006 enter the Lower Sweetwater River at a location upstream of where mixing of tidal and freshwater occurs. For these discharges, CTR and NTR freshwater aquatic life criteria and human health criteria apply. As described in the CTR, most of the data for which hardness dependent criteria equations were developed were based on hardness data between 25 mg/L CaCO3 and 400 mg/L CaCO3. Further, as stated in the CTR, USEPA recommends that where actual ambient hardness is greater than 400 mg/L CaCO3, a value of 400 mg/L CaCO3 may be used to develop protective criteria. At a sampling station located upstream of Discharge Point 001 a, within the lower Sweetwater River, hardness was analyzed 9 times between October 17, 2004 and February 19, 2007. The minimum hardness value measured was 556 mg/L CaCO3. The freshwater criteria used in this Order were developed based on a capped hardness of 400 mg/L CaCO3. Table F-10 identifies the applicable water quality criteria for facility discharges both within the tidal prism and upstream in the freshwater portion of the Lower Sweetwater River. Where no detectable effluent or receiving water concentrations were found, the constituent is omitted from the Table.

Well purge water from Discharge Points Nos. 007, 008, 009, and 010 will enter San Diego Bay. For these discharges, CTR and NTR saltwater aquatic life criteria apply.

Table F-11. Applicable Water Quality Criteria (Priority Pollutants)

Constituent	Selected Criteria	CTR/NTR Water Quality Criteria					
		Freshwater		Saltwater[1]		Human Health for Consumption of:	
		Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms only
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Arsenic, Total Recoverable	36	340	150	69	36	NA	--
Arsenic, Dissolved	36	340	150	69.00	36		--
Copper, Total Recoverable	3.7	52	31	5.8	3.7		--
Copper, Dissolved	3.1	50	29	4.8	3.1		--
Nickel, Total Recoverable	8.3	1500	170	75	8.3		4600
Selenium, Total Recoverable	5.0	20	5.0	290	71		Narrative
Selenium, Dissolved	5.0	20	5.0	290	71		--
Silver, Total Recoverable	2.2	44	--	2.2	--		--
Zinc, Total Recoverable	86	390	390	95	86		--

Constituent	Selected Criteria	CTR/NTR Water Quality Criteria					
		Freshwater		Saltwater[1]		Human Health for Consumption of:	
		Acute	Chronic	Acute	Chronic	Water & Organisms	Organisms only
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Zinc, Dissolved	81	380	380	90	81		--

1 Not applicable to Outfalls 003, 004, 005, and 006.

"N/A" indicates that the water quality criteria for the protection of human health for the consumption of water and organisms are not applicable.

3. Determining the Need for WQBELs

Order No. R9-2004-0111 contained effluent limitations for non-conventional and toxic pollutant parameters in the Basin Plan as well as the CTR. For the proposed Order, the need for effluent limitations based on water quality objectives in the Basin Plan and CTR criteria was re-evaluated in accordance with 40 CFR 122.44(d) and guidance for statistically determining the "reasonable potential" for a discharged pollutant to exceed an objective, as outlined in the SIP. The Regional Water Board analyzes effluent and receiving water data and identifies the maximum observed effluent concentration (MEC) and maximum background concentration (B) in the receiving water for each constituent. To determine reasonable potential, the MEC and the B are then compared with the applicable water quality objectives (C) outlined in the CTR, NTR, as well as the Basin Plan. For all pollutants that have a reasonable potential to cause or contribute to an excursion above a state water quality standard, numeric WQBELs are required. The Reasonable Potential Analysis (RPA) considers water quality criteria from the CTR and NTR, and when applicable, water quality objectives specified in the Basin Plan. To conduct the RPA, the Regional Water Board identifies the MEC and maximum background concentration in the receiving water for each constituent, based on data provided by the Discharger.

Four years worth of data were considered representative of current discharges. Effluent data provided by the Discharger for the Facility from November 17, 2004 through November 13, 2008 were used in the analyses. Because the effluent discharges typically dominate the flow of the Upper Paradise Creek Flood Control Channel and because of the short distance from the discharge to the Lower Sweetwater River, ambient, upstream monitoring data for Discharge Point No. 001a and 002 was obtained from a location in the Lower Sweetwater River as opposed to the Upper Paradise Creek Flood Control Channel. The data set location was in the Lower Sweetwater River, less than 500 feet upstream of the confluence of the Paradise Creek Flood Control Channel. These data consisted of 29 samples collected from April 25 2007 through March 26, 2008. Ambient, upstream water quality data for Discharge Point Nos. 003 through 005 were available at a location at Bonita Road, near Discharge Point No. 008 and consisted of six samples collected from October 17, 2004 through February 19, 2006.

Section 1.4.2 of the SIP establishes procedures for granting mixing zones and the assimilative capacity of the receiving water. Before establishing a dilution credit for a discharge, it must first be determined if, and how much, receiving water assimilative capacity is available to dilute the discharge. The Discharger has not requested dilution credit therefore zero dilution is assumed for calculation of limitations.

SIP methodology specifies determining the MEC and projecting receiving water values (based on the MEC and minimum probable initial dilution). The projected receiving water concentrations are then compared to the appropriate objective or criteria to determine the potential for an exceedance of that objective and the need for an effluent limitation.

A summary of the RPA results is provided in Tables F-10a through F-10d below. Several of the CTR/NTR parameters, were not detected in the effluent or receiving water using appropriate MLs. These are omitted from the table and are considered to not demonstrate reasonable potential. The second column in Tables F-10a through F-10d identifies either the Basin Plan or CTR/NTR as the basis for evaluating the parameter. The third column identifies the source of the criteria used within either the Basin Plan or CTR/NTR.

Table F-12a. Parameters Evaluated for Reasonable Potential –Demineralization Brine at Discharge Point No. 001a[1]

Parameter (µg/L)	Basis for Applying Criteria/ Objective[2]	Source of Applied Criteria/ Objective	n[3]	MEC µg/L	Most Stringent Criteria µg/L	Background µg/L	Effluent Limitation µg/L
Arsenic, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	19	2.4	36	NA	No
Arsenic, Total Recoverable	CTR/NTR	Saltwater Aquatic Life Chronic	29	18	36	2.2	No
Copper, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	19	2.89	3.1	NA	No
Copper, Total Recoverable	CTR/NTR	Saltwater Aquatic Life Chronic	39	4.3	3.73	3.82	Yes[4]
Nickel, Total Recoverable	CTR/NTR	Saltwater Aquatic Life Chronic	10	26	8.3	NA	Yes
Silver, Total Recoverable	CTR/NTR	Freshwater Aquatic Life Acute	10	< 3	2.2	NA	No

Parameter (µg/L)	Basis for Applying Criteria/ Objective[2]	Source of Applied Criteria/ Objective	n[3]	MEC µg/L	Most Stringent Criteria µg/L	Background µg/L	Effluent Limitation µg/L
Zinc, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	19	18.1	81	NA	No
Zinc, Total Recoverable	CTR/NTR	Saltwater Aquatic Life Chronic	29	12.1	86	11.1	No
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	19	5.6	5.0	NA	Yes[4]
Selenium, Total Recoverable	CTR/NTR	Freshwater Aquatic Life Chronic	30	62	5.0	< 1	Yes[4]

1 Parameters are excluded from this table if no detected concentrations are found in effluent or receiving water and no other information indicates that effluent limitations are necessary.

2 CTR/NTR =National Toxics Rule/California Toxics Rule.

3 Number of data points available for the RPA.

4 According to 40 CFR Part 122.45(c), effluent limitations for metals shall be expressed in terms of “total recoverable”, thus only total recoverable limitations for copper and selenium shall be applied.

“NA” indicates data were not available.

Table F-12b. Parameters Evaluated for Reasonable Potential –Well Purge Water[1]

Parameter (µg/L)	Basis for Applying Criteria/ Objective[2]	Source of Applied Criteria/ Objective	n[3]	MEC µg/L	Most Stringent Criteria µg/L	Background µg/L	Effluent Limitation µg/L
SDF-1 (Discharge Point No. 002)							
Arsenic, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	15	1.2	36	NA	No
Copper, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	16	3.7	3.1	NA	Yes
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	15	1.2	5	NA	No
Zinc, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	15	2.6	81	NA	No
SDF-2 (Discharge Point No. 002)							
Arsenic, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	15	1.6	36	NA	No
Copper, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	16	7.7	3.1	NA	Yes
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	15	1.1	5	NA	No
Zinc, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	15	12.4	81	NA	No
SDF-3 (Discharge Point No. 003)							
Arsenic, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	14	< 0.6	150	2	No
Copper, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	15	11	29	6	No
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	14	< 0.4	5.0	< 4	No
Zinc, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	14	18.4	380	40	No
SDF-4 (Discharge Point No. 004)							
Arsenic, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	14	0.8	150	2	No
Copper,	CTR/NTR	Freshwater	15	9.9	29	6	No

Parameter (µg/L)	Basis for Applying Criteria/ Objective[2]	Source of Applied Criteria/ Objective	n[3]	MEC µg/L	Most Stringent Criteria µg/L	Background µg/L	Effluent Limitation µg/L
Dissolved		Aquatic Life Chronic					
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	14	< 0.4	5.0	< 4	No
Zinc, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	14	3.0	380	40	No
SDF-5 (Discharge Point No. 005)							
Arsenic, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	11	< 0.6	150	2	No
Copper, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	12	20.1	29	6	No
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	11	< 0.4	5.0	< 4	No
Zinc, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	11	26.4	380	40	No
SDF-6 (Discharge Point No. 002)							
Arsenic, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	10	1.6	36	NA	No
Copper, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	10	3	3.1	NA	Yes[4]
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	10	1.0	5	NA	No
Zinc, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	10	< 2.0	81	NA	No

1 Parameters are excluded from this table if no detected concentrations are found in effluent or receiving water and no other information indicates that they are present in the effluent.

2 CTR/NTR =National Toxics Rule/California Toxics Rule.

3 Number of data points available for the RPA.

4 Although the MEC is not greater than the criteria for SDF-6, the copper concentrations in other San Diego Formation Well discharges (SDF-1 and SDF-2) at this location (Discharge Point No. 002) indicate copper is present in concentrations greater than the aquatic life marine water quality criteria. Step 7 of the SIP allows for other information to determine if a water quality-based effluent limitation is necessary to protect beneficial uses.

NA indicates data were not available

Table F-12c. Parameters Evaluated for Reasonable Potential –Plant Feed-water Dumps at Discharge Point No. 002[1]

Parameter (µg/L)	Basis for Applying Criteria/ Objective[2]	Source of Applied Criteria/ Objective	n[3]	MEC µg/L	Most Stringent Criteria µg/L	Background µg/L	Effluent Limitation µg/L
Copper, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	7	5.5	3.1	NA	Yes
Arsenic, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	7	2.0	36	NA	No
Zinc, Dissolved	CTR/NTR	Aquatic Life Chronic	7	19.8	81	NA	No
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	7	0.7	5.0	NA	No

1 Parameters are excluded from this table if no detected concentrations are found in effluent or receiving water and no other information indicates that effluent limitations are necessary.

2 Number of data points available for the RPA.

NA indicates data were not available

Table F-12d. Parameters Evaluated for Reasonable Potential –Chlorine Contact Tank Discharge at Discharge Point No. 002[1]

Parameter (µg/L)	Basis for Applying Criteria/ Objective[2]	Source of Applied Criteria/ Objective	n[3]	MEC[4] µg/L	Most Stringent Criteria µg/L	Background µg/L	Effluent Limitation µg/L
Copper, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	10	1.1	3.1	NA	No
Arsenic, Dissolved	CTR/NTR	Saltwater Aquatic Life Chronic	9	< 5	36	NA	No
Zinc, Dissolved	CTR/NTR	Aquatic Life Chronic	10	< 6	81	NA	No
Selenium, Dissolved	CTR/NTR	Freshwater Aquatic Life Chronic	10	< 0.4	5	NA	No

1 Parameters are excluded from this table if no detected concentrations are found in effluent or receiving water and no other information indicates that effluent limitations are necessary.

2 CTR/NTR =National Toxics Rule/California Toxics Rule.

3 Number of data points available for the RPA.

a. **Ammonia in Well Purge Water and Plant Feed-Water.** Monitoring of a blend of groundwater from source wells was conducted from April 25, 2007 through March 26, 2008. The maximum concentration of total ammonia observed during this period in the blend samples was 0.28 mg/L as N. The Basin Plan Objective for ammonia (0.025 mg/L) is expressed as un-ionized ammonia as N. Monitoring results from the blend sample do not distinguish ammonia contributions from individual wells and a comparison of the total ammonia concentrations and the un-ionized ammonia objective cannot be made without corresponding temperature, pH, and salinity values. For these reasons, limitations are not included in this Order. However, the ammonia concentrations in the blend indicate that ammonia may be of concern in at least some of the wells. To further ascertain the potential for ammonia to impair beneficial uses, quarterly monitoring requirements for well purge and feed- water dumps at Discharge Point Nos. 001a, 001b, 002, 003, 004, and 005, 006, 007, 008, 009, and 010 are included in this Order.

b. **Ammonia in Brine Discharge.** Brine effluent monitoring data collected at Discharge Point No. 001a from April 25, 2007 through March 26, 2008 resulted in a maximum total ammonia concentration of 0.8 mg/L as N. Upstream Sweetwater River monitoring collected during the same period resulted in a maximum receiving water concentration of total ammonia of 0.35 mg/L as N. Similarly, the maximum total ammonia concentration at the confluence of the discharge from Upper Paradise Creek Flood Control Channel and the Lower Sweetwater River was 0.28 mg/L as N. The Basin Plan objective for un-ionized ammonia is 0.025 mg/L as N. Data on pH, salinity, and temperature for the sample were not available, thus the results in total ammonia as N cannot be compared to the Basin Plan Objective which is in terms of un-ionized ammonia as N, thus no limitations are included in this Order for un-ionized ammonia. In order to collect the data necessary to determine reasonable potential, this Order includes monitoring as discussed in section VI.B.

c. **Biostimulatory Substances in Brine Discharge.** The Basin Plan establishes that waters shall not contain *"biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses."* The goal to prevent impairment of beneficial uses due to phosphorus is 0.1 mg/L of total phosphorus. The Discharger conducted a water quality monitoring study of phosphorus and nitrogen with samples collected between April 25, 2007 and March 26, 2008 from the effluent and Sweetwater River Estuary locations upstream and downstream of the confluence of the Upper Paradise Creek Flood Control Channel. The results were reported in the *Reynolds Discharge Monitoring Program, Annual Report (AMEC Earth and Environmental, Inc., September 2008)*. Summary statistics of these results are presented in Table F-12 below.

Table F-13. Summary of Phosphorus and Nitrogen Monitoring (April 25, 2007 Through March 26, 2008)

	Min (mg/L)	Median (mg/L)	Max (mg/L)	Basin Plan Goal (mg/L)	Percent of Results Exceeding Goal
Total Phosphorus					
Upstream Concentration	ND[1]	0.11	0.72	0.1	62%
Brine Concentration	0.05	0.11	1.3	0.1	52%
Confluence Concentration	0.04	0.12	1.8	0.1	62%
Total Nitrogen					
Upstream Concentration	< 0.5	0.78	1.61	1.0	24%
Brine Concentration	< 0.5	0.7	1.3	1.0	14%
Confluence Concentration	< 0.5	0.56	1.47	1.0	10%

[1] Less than the reporting limit of 0.1 mg/L

Within the *Reynolds Discharge Monitoring Program, Annual Report,* the facility presented results of an inter-laboratory comparison study to the Regional Water Board suggesting that the contract laboratory phosphorus results (that provided NPDES compliance monitoring) up until June 13 of 2007 were higher than results from other laboratories. After June 13, 2007, the facility switched contract labs, yet 7 out of 21 effluent phosphorus results from this data set were still greater than the Basin Plan goal of 0.1 mg/L. When effluent monitoring results conducted as part of the Monitoring and Reporting Program (MRP) are combined with the special nutrient study, 44 out of 78 effluent samples resulted in phosphorus concentrations greater than the goal for plant nuisance. Because of the potential for effluent to contribute to an exceedance of the water quality objective to prevent plant nuisance, this Order includes brine effluent limitations for total phosphorus equal to 0.1 mg/L at Discharge Point Nos. 001a and 001b.

The Basin Plan does not establish a goal for nitrogen, however, provides recommendation that natural ratios of Nitrogen to Phosphorus (N:P) *"be determined by surveillance and upheld".* Nitrogen and Phosphorus monitoring was conducted a from April 2007 through March 2008, however, because the data spanned only one year, the natural N/P cannot be accurately established to account for seasonal and climatic differences that would occur over a longer period. In the absence of a natural ratio, the Basin Plan specifies a ratio of N:P of 10:1 be used to determine nitrogen concentrations that would prevent impairment of beneficial uses. During the April 25, 2007 through March 26, 2008 sampling period, 4 out of 29 nitrogen results (14 percent) were greater than the threshold of 1.0 mg/L. Monitoring conducted under the MRP indicated all other nitrogen results were below the threshold of 1.0 mg/L. Because of the potential for effluent to contribute to an exceedance of the water quality objective to prevent plant nuisance, this Order includes a brine effluent limitation for total nitrogen equal to 1.0 mg/L at Discharge Point Nos. 001a and 001b.

d. Biostimulatory Substances in Well Purges and Plant Feed-Water. No nutrient monitoring data for individual Discharge Point Nos. 002, 003, 004, and 005 were available for the RPA. However, from April 25, 2007 through March 26, 2008, the Discharger analyzed samples of different blends of groundwater source water. Since the effluent quality of well purge and plant feed water dumps is largely dependent on the source water quality, the groundwater nutrient monitoring data were compared to Basin Plan Objectives for biostimulatory substances. Out of 29 samples collected during the aforementioned sample period, the maximum concentration of total nitrogen observed was 0.84 mg/L as N, which is less than the Basin Plan threshold to prevent plant nuisance of 1.0 mg/L as N. During the same period, the maximum concentration of phosphorus was 0.78 mg/L total P, with 6 out of 29 samples exhibiting phosphorus concentrations greater than the Basin Plan goal of 0.1 mg/L. The instances where phosphorus concentrations were greater than 0.1 mg/L all occurred prior to June 21, 2007, when the Discharger switched contract laboratories. Since that time, 21 results were below 0.1 mg/L. Although there are groundwater feed-water phosphorus concentrations that are greater than the Basin Plan goals, limitations are not included in this order because 1) the groundwater source is a blend of different well sources and the phosphorus cannot be attributed to particular wells and 2) as indicated in Table F-2, the discharges tend to be intermittent and of short duration. Because of these two factors, it cannot be determined if the feed-water dumps or the well purge waters would contribute to exceedances of the Basin Plan goal to prevent plant nuisances. To further ascertain the potential for impairment, quarterly monitoring requirements for total nitrogen and phosphorus in well purge and feed-water dumps are included in this Order.

4. WQBEL Calculations

a. Effluent limitations for the CTR/NTR constituents copper, nickel, and selenium at Discharge Point Nos. 001a and 001b and copper at Discharge Point No. 002, were calculated in accordance with section 1.4 of the SIP. If a reasonable potential exists to exceed applicable water quality criteria or objectives, then a WQBEL must be established in accordance with one or more of the three procedures contained in Section 1.4 of the SIP. These procedures include:

i. If applicable and available, use of the WLA established as part of a TMDL.

ii. Use of a steady-state model to derive maximum daily effluent limitations (MDELs) and average monthly effluent limitations (AMELs).

iii. Where sufficient effluent and receiving water data exist, use of a dynamic model, which has been approved by the Regional Water Board.

b. Water quality-based effluent limits (final) for the constituents identified in Tables F-14a through F-14d are based on monitoring results and following the procedure based on the steady-state model, available in Section 1.4 of the SIP.

c. The Discharger has not requested dilution credit, therefore, no dilution credit is being allowed. However, in accordance with the reopener provision in section VI.C.1.g in the Tentative Order, this Order may be reopened upon the submission by the Discharger of adequate information to establish appropriate dilution credits or a mixing zone, as determined by the Regional Water Board.

d. WQBELs Calculation Example

Using nickel at Discharge Point Nos. 001a and 001b as an example, the following demonstrates how WQBELs were established for this Order.

Concentration-Based Effluent Limitations

A set of AMEL and MDEL values are calculated separately, one set for the protection of aquatic life and the other for the protection of human health. The AMEL and MDEL limitations for aquatic life and human health are compared, and the most restrictive AMEL and the most restrictive MDEL are selected as the WQBEL.

Calculation of aquatic life AMEL and MDEL:

Step 1: For each constituent requiring an effluent limit, identify the applicable water quality criteria or objective. For each criteria determine the effluent concentration allowance (ECA) using the following steady state equation:

$$ECA = C + D(C-B) \quad \text{when } C > B \text{, and}$$
$$ECA = C \quad \text{when } C \leq B$$

Where: C = The priority pollutant criterion/objective, adjusted if

necessary for hardness, pH and translators
D = The dilution credit, and
B = The background concentration

As discussed above, for this Order, dilution was not allowed; therefore:

ECA = C

For nickel the applicable water quality criteria are (reference Table F-10):

ECA_{acute}= 74.8 µg/L
$ECA_{chronic}$= 8.3 µg/L

Step 2: For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier). The multiplier is a statistically based factor that adjusts the ECA to account for effluent variability. The value of the multiplier varies depending on the coefficient of variation (CV) of the data set and whether it is an acute or chronic criterion/objective. Table 1 of the SIP provides pre-calculated values for the multipliers based on the value of the CV. Equations to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 3 of the SIP and will not be repeated here.

$LTA_{acute} = ECA_{acute} \times Multiplier_{acute\ 99}$

$LTA_{chronic} = ECA_{chronic} \times Multiplier_{chronic\ 99}$

The CV for the data set must be determined before the multipliers can be selected and will vary depending on the number of samples and the standard deviation of a data set. If the data set is less than 10 samples, or at least 80 percent of the samples in the data set are reported as non-detect, the CV shall be set equal to 0.6.

For nickel, the following data were used to develop the acute and chronic LTA using equations provided in Section 1.4, Step 3 of the SIP (Table 1 of the SIP also provides this data up to three decimals):

No. of Samples	CV	ECA $Multiplier_{acute\ 99}$	ECA $Multiplier_{chronic\ 99}$
10	0.69	0.286	0.486

LTA_{acute} = 74.8 µg/L x 0.286 = 21.4 µg/L

$LTA_{chronic}$ = 8.3 µg/L x 0.486 = 4.03 µg/L

Step 3: Select the most limiting (lowest) of the LTA.

LTA = most limiting of LTA_{acute} or $LTA_{chronic}$

For nickel, the most limiting LTA was the $LTA_{chronic}$

LTA = 4.03 µg/L

Step 4: Calculate the WQBELs by multiplying the LTA by a factor (multiplier). WQBELs are expressed as an AMEL and MDEL. The multiplier is a statistically-based factor that adjusts the LTA for the averaging periods and exceedance frequencies of the criteria/objectives and the effluent limitations. The value of the multiplier varies depending on the probability basis, the CV of the data set, the number of samples (for AMEL) and whether it is a monthly or daily limit. Table 2 of the SIP provides pre-calculated values for the multipliers based on the value of the CV and the number of samples. Equations to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 5 of the SIP and will not be repeated here.

$AMEL_{aquatic\ life} = LTA \times AMEL_{multiplier\ 95}$

$MDEL_{aquatic\ life} = LTA \times MDEL_{multiplier\ 99}$

AMEL multipliers are based on a 95th percentile occurrence probability, and the MDEL multipliers are based on the 99th percentile occurrence probability. If the number of samples is less than four (4), the default number of samples to be used is four (4).

For nickel, the following data were used to develop the AMEL and MDEL for aquatic life using equations provided in Section 1.4, Step 5 of the SIP (Table 2 of the SIP also provides this data up to two decimals):

No. of Samples Per Month	CV	$Multiplier_{MDEL\ 99}$	$Multiplier_{AMEL\ 95}$
4	0.69	3.5	1.64

$AMEL_{aquatic\ life} = 4.03 \times 1.64 = 6.6$ µg/L

$MDEL_{aquatic\ life} = 4.03 \times 3.50 = 14$ µg/L

Calculation of human health AMEL and MDEL:

Step 5: For the ECA based on human health, set the AMEL equal to the $ECA_{\text{human health}}$

$$AMEL_{\text{human health}} = ECA_{\text{human health}}$$

For nickel

$$AMEL_{\text{human health}} = 4600\ \mu g/L$$

Step 6: Calculate the MDEL for human health by multiplying the AMEL by the ratio of the $Multiplier_{MDEL}$ to the $Multiplier_{AMEL}$. Table 2 of the SIP provides pre-calculated ratios to be used in this calculation based on the CV and the number of samples.

$$MDEL_{\text{human health}} = AMEL_{\text{human health}}\ \times (Multiplier_{MDEL} / Multiplier_{AMEL})$$

For nickel, the following data were used to develop the $MDEL_{\text{human health}}$:

No. of Samples Per Month	CV	$Multiplier_{MDEL\ 99}$	$Multiplier_{AMEL\ 95}$	Ratio
4	0.69	3.50	1.64	2.137

$$MDEL_{\text{human health}} = 4{,}600\ \mu g/L \times 2.137 = 9830\ \mu g/L$$

Step 7: Select the lower of the AMEL and MDEL based on aquatic life and human health as the WQBEL for the Order.

$AMEL_{\text{aq. life}}$	$MDEL_{\text{aq. life}}$	$AMEL_{HH}$	$MDEL_{HH}$
6.6	14	4600	9830

The lowest (most restrictive) effluent limits are based on aquatic toxicity and were incorporated into this Order. For copper and selenium there are no numeric human health criteria; therefore, the AMEL and MDEL based on aquatic life criteria are established as the WQBELs. These limits will be protective of aquatic life.

Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and Maximum Contaminant Levels) and mass limitations are not necessary to protect the beneficial uses of the receiving water. As stated in 40 CFR section 122.45(f)(1)(ii), mass limitations are not required when applicable standards are expressed in terms of other units of measurement. For intermittent discharges (Discharge Point Nos. 002, 003, 004, 005, 006, 007, 008, 009, and 010), mass-based limitations were not included in this Order as the short and infrequent duration of these discharges represent minimal contributions in loadings to the receiving water. As stated in 40 CFR section 122.45(f)(1)(ii), mass limitations are not required when applicable standards are expressed in terms of other units of measurement. The numerical effluent limitations for copper, nickel, selenium, and nutrients in the brine discharge, in the proposed Order, are based on water quality standards and objectives. These are expressed in terms of concentration and mass. Mass-based effluent limitations for brine discharge were calculated using the following equation:

Lbs/day = Permitted Flow (MGD) x Pollutant Concentration (mg/L) x 8.34

A summary of the calculations for WQBELs established in this Order is provided below.

Table F-14a. WQBEL Calculations for Copper, Total Recoverable, at Discharge Point No. 002

Parameter	Acute	Chronic
Criteria (µg/L)[1]	5.78	3.73
Dilution Credit	None	None
ECA	5.78	3.73
ECA Multiplier	0.164	0.303
LTA	0.95	1.13
AMEL Multiplier (95th%)	2.21	[2]
AMEL (µg/L)	2.1	[2]
MDEL Multiplier (99th%)	6.11	[2]
MDEL (µg/L)	5.8	[2]

[1] USEPA Ambient Water Quality Criteria

[2] Limitations based on acute LTA (Acute LTA < Chronic LTA)

Table F-14b. WQBEL Calculations for Copper, Total Recoverable, at Discharge Point Nos. 001a and 001b

Parameter	Acute	Chronic
Criteria (µg/L)[1]	5.78	3.73
Dilution Credit	None	None
ECA	5.78	3.73
ECA Multiplier	0.321	0.527
LTA	1.86	1.97
AMEL Multiplier (95th%)	1.55	[2]
AMEL (µg/L)	2.88	[2]
MDEL Multiplier (99th%)	3.11	[2]
MDEL (µg/L)	5.78	[2]

[1] USEPA Ambient Water Quality Criteria

[2] Limitations based on acute LTA (Acute LTA < Chronic LTA)

Table F-14c. WQBEL Calculations for Nickel, Total Recoverable, at Discharge Point Nos. 001a and 001b

Parameter	Acute	Chronic
Criteria (µg/L)[1]	74.8	8.3
Dilution Credit	None	None
ECA	74.8	8.28
ECA Multiplier	0.286	0.486
LTA	21.4	4.03
AMEL Multiplier (95th%)	[2]	1.64
AMEL (µg/L)	[2]	6.6
MDEL Multiplier (99th%)	[2]	3.5
MDEL (µg/L)	[2]	14

[1] USEPA Ambient Water Quality Criteria

[2] Limitations based on chronic LTA (Chronic LTA < Acute LTA)

Table F-14d. WQBEL Calculations for Selenium, Total Recoverable, at Discharge Point No. 001a and 001b

Parameter	Acute	Chronic
Criteria (µg/L)[1]	20	5.0
Dilution Credit	None	None
ECA	20	5.0
ECA Multiplier	0.32	0.53
LTA	6.4	2.64
AMEL Multiplier (95th%)	[2]	1.55
AMEL (µg/L)	[2]	4.1
MDEL Multiplier (99th%)	[2]	3.11
MDEL (µg/L)	[2]	8.2

1 USEPA Ambient Water Quality Criteria
2 Limitations based on chronic LTA (Chronic LTA < Acute LTA)

Copper limitations at Discharge Point No. 002 were developed to apply to plant feed-water dump and contributing well purges from SDF-1, SDF-2, and SDF-6. Each set of monitoring data resulted in a different coefficient of variation. The well purge copper monitoring data exhibited a higher CV (1.29) than the plant feed-water copper CV (0.68), which resulted in a more stringent AMEL (2.1 versus 2.7). The calculated MDELs were the same for both plant feed water dump and well purges. In order to develop a single set of copper limitations at Discharge Point No. 002 that is protective of beneficial uses, the more stringent AMEL developed from the well purge data from SDF-1, SDF-2, and SDF-6 is applied at Discharge Point No. 002. The resulting limitations are a total recoverable copper AMEL of 2.1 µg/L and an MDEL of 5.8 µg/L.

Summary of Water Quality-based Effluent Limitations

Table F-15a. Summary of Water Quality-based Effluent Limitations-Well Purge Water from SDF No.1, SDF No.2, and SDF No.6 and Plant Feed-Water Dump[1]

Parameter	Units	Effluent Limitations				Basis
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
pH	standard units	--	--	6.0	9.0	Previous Order
Copper, Total Recoverable	µg/L	2.1	5.8	--	--	SIP/CTR

1 Applicable at Discharge Point No. 002.

Table F-15b. Summary of Water Quality-based Effluent Limitations-Chlorine Contactor.[1]

Parameter	Units	Effluent Limitations				Basis
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
pH	standard units	standard units	--	6.0	9.0	Previous Order
Chlorine, Total Residual	mg/L	--	0[2]	--	--	Previous Order

[1] Applicable at Discharge Point No. 002 (monitoring location INT-001).
[2] No Detectable Concentrations using lowest ML approved by Regional Water Board.

Table F-15c. Summary of Water Quality-based Effluent Limitations-Well Purges.[1]

Parameter	Units	Effluent Limitations		Basis
		Instantaneous Minimum	Instantaneous Maximum	
pH	standard units	6.0	9.0	Previous Order

[1] Applicable at Discharge Point Nos. 003, 004, and 005.

Table F-15d. Summary of Water Quality-based Effluent Limitations-Brine Discharge[1]

Parameter	Units	Effluent Limitations				Basis
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
pH	standard units	--	--	6.0	9.0	Previous Order
Salinity	ppt	8-11	--	--	--	Basin Plan – Toxicity Narrative Objective
Temperature	ºC, ºF	**a.** The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.				Thermal Plan
Nitrate	mg/L	--	5.0	--	--	Previous Order[5]
	lbs/day[2]	--	33	--	--	
	lbs/day[3]	--	42	--	--	
	lbs/day[4]	--	100	--	--	
Nitrogen, Total (as N)	mg/L	--	1.0	--	--	Basin Plan Objective-Bays and Estuaries-threshold value to prevent plant nuisance
	lbs/day[2]	--	6.7	--	--	
	lbs/day[3]	--	8.3	--	--	
	lbs/day[4]	--	21	--	--	

Parameter	Units	Effluent Limitations				Basis
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Phosphorus, Total (as P)	mg/L	--	0.1	--	--	Basin Plan Objective-Bays and Estuaries-goal to prevent plant nuisance
	lbs/day[2]	--	0.67	--	--	
	lbs/day[3]	--	0.83	--	--	
	lbs/day[4]	--	2.1	--	--	
Copper, Total Recoverable	µg/L	2.9	5.8	--	--	SIP/CTR
	lbs/day[2]	0.019	0.039	--	--	
	lbs/day[3]	0.024	0.048	--	--	
	lbs/day[4]	0.060	0.12	--	--	
Nickel, Total Recoverable	µg/L	6.6	14	--	--	SIP/CTR
	lbs/day[2]	0.044	0.093	--	--	
	lbs/day[3]	0.055	0.12	--	--	
	lbs/day[4]	0.14	0.29	--	--	
Selenium, Total Recoverable	µg/L	4.1	8.2	--	--	SIP/CTR
	lbs/day[2]	0.027	0.055	--	--	
	lbs/day[3]	0.034	0.068	--	--	
	lbs/day[4]	0.085	0.17	--	--	

1 Applicable at Discharge Point Nos. 001a and 001b.
2 Based on a flow of 0.8 MGD at Discharge Point No. 001a (June through November).
3 Based on a flow of 1.0 MGD at Discharge Point No. 001a (December through May).
4 Based on a flow of 2.5 MGD at Discharge Point No. 001b.
5 Order No. R9-2004-0111 included limitation based on BPJ and the Monitoring and Mitigation Plan.

These requirements have been incorporated in this Order as effluent and receiving water limitations in section V.A.

5. Whole Effluent Toxicity (WET)

Whole effluent toxicity (WET) protects the receiving water quality from the aggregate toxic effect of a mixture of pollutants in the effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent. The WET approach allows for protection of the narrative “no toxics in toxic amounts” criterion while implementing numeric criteria for toxicity. There are two types of WET tests: acute and chronic. An acute toxicity test is conducted over a short time period and measures mortality. A chronic toxicity test is conducted over a longer period of time and may measure mortality, reproduction, and growth.

The Basin Plan specifies a narrative objective for toxicity, requiring that all waters be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental responses by aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alterations in population, community ecology, or receiving water biota.

In addition to the Basin Plan requirements, Section 4 of the SIP states that a chronic toxicity effluent limitation is required in permits for all discharges that will cause, have the reasonable potential to cause, or contribute to chronic toxicity in receiving waters.

The discharges from Discharge Point Nos. 001a and 001b could contribute to long-term toxic effects within the receiving water. However, the most recent acute and chronic toxicity monitoring data available is from March 10, 2003. Because this WET monitoring data may no longer be representative of the current discharge, in accordance with the SIP, the Discharger will be required to conduct chronic toxicity testing at Discharge Point No. 001a and 001b (monitoring location EFF-001a and EFF-001b) in order to determine reasonable potential and establish WQBELs as necessary. In addition, the Order establishes thresholds that when exceeded requires the Discharger to conduct accelerated toxicity testing and/or conduct toxicity reduction evaluation (TRE) and toxicity identification evaluation (TIE) studies.

D. Final Effluent Limitations

Tables F-14a through F-14d, collectively list the effluent limitations established in this Order under section IV.A.

1. Satisfaction of Anti-Backsliding Requirements

The effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order, with the exception of effluent limitations for total residual chlorine and copper. Order No. R9-2004-0111 contained total residual chlorine limitations applicable to well purge water, plant feed-water dump, air pressure relief valves, and chlorine contact tank overflow. Of these sources, chlorine is added only to the chlorine contact tank; chlorine is not used in any other portion of the treatment system and will therefore not be present in other discharges such as from well feed-water, well purge water, and pressure relief valves. As a result, the maximum daily total residual chlorine limitation in this Order is applied only to discharges from the chlorine contact tank. Regulations pertaining to anti-backsliding in CWA Section 402.02 allow for relaxation of limitations based on new information that was not available at the time of permit issuance. As such, the new information clarifying chlorination locations satisfies Anti-backsliding conditions. Effluent monitoring requirements from Order No. R9-2004-0111 specifically addressed chlorine contact tank discharges and are retained in this Order.

Order No. R9-2004-0111 contained a single effluent limitation for copper of 3.73 ug/L, expressed as a daily maximum, which is equal to the USEPA chronic, saltwater, copper criteria. For this Order, the most recent SIP procedures were followed and as demonstrated in IV.C.4 of this Fact Sheet, both average monthly and maximum daily copper limitations were calculated. Anti-backsliding regulations allow for less stringent effluent limitations when new information is available that was not available at the time of permit issuance. As such, the new calculations of both monthly average and daily maximum limitations constitutes new information, thus allowing for the less stringent maximum daily effluent limitation. The monthly average limitation ensures that the chronic copper water quality objective will be met. The discharge will not impair beneficial uses and its removal is consistent with 40 CFR 122.44(l)(1).

2. Satisfaction of Antidegradation Policy

Waste Discharge Requirements for the Discharger must conform with federal and State antidegradation policies provided at 40 CFR 131.12 and in State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California. The antidegradation policies require that beneficial uses and the water quality necessary to maintain those beneficial uses in the receiving waters of the discharge shall be maintained and protected, and, if existing water quality is better than the quality required to maintain beneficial uses, the existing water quality shall be maintained and protected unless allowing a lowering of water quality is necessary to accommodate important economic and social development or consistent with maximum benefit to the people of California. When a significant lowering of water quality is allowed by the Regional Water Board, an antidegradation analysis is required in accordance with the State Water Board's Administrative Procedures Update (July 2, 1990), Antidegradation Policy Implementation for NPDES Permitting.

The Discharger has proposed a plant expansion which would result in an increase in the brine discharge from the currently authorized 0.8 MGD to 2.5 MGD at the relocated Discharge Point designated 001b. In order to assess the potential impacts of the increased discharge to the receiving water, the Regional Water Board required the Discharger to collect additional water quality and biological monitoring data and conduct a salinity mixing model analysis. The Discharger implemented the water quality monitoring over a 1-year period from April 2007 through March 2008. The Discharger reported the results of the salinity modeling analysis in November 2008.

The results of the biological monitoring showed that the current discharge is having some chemical and biological effects on the lower Sweetwater River in the vicinity of the confluence with the Upper Paradise Creek Flood Control Channel and that any increase may exacerbate these effects. The most significant factor considered was the influence of low salinity in the discharge compared to the receiving water. Data presented in the *Brine Discharge Mixing Analysis, Final Report, (November 2008)* indicate that the brine discharge salinity is within the brackish range, with a historical average of 7.8 ppt.[2] Data collected between April 25, 2007 and March 25, 2008 indicate that

[2] Everest International Consultants, *Brine Discharge Mixing Analysis, Final Report,* November, 2008, p 3.

the receiving water salinity at the location of the confluence of Upper Paradise Flood Control Channel and the Lower Sweetwater River varies from 0.8 ppt to 31.2 ppt[3]. In addition, the tidal influence results in some potential biological effects of the discharge at a location 500 ft. upstream of the confluence. The Regional Water Board also found that at the existing discharge location, the relatively high concentration of orthophosphate and possibly other constituents in the discharge appear to have effects on macroalgae and salinity, which, in turn, affects macroinvertebrates and wetland vegetation.

In the interim, this Order allows an increase in flow from 0.8 MGD to 1.0 MGD at the existing discharge location during the months of December thru May. During the winter months, the receiving water contains low salinity levels due to an influx of freshwater and it is anticipated that an increase in flow will not cause any additional impacts.

Salinity modeling indicated that upon relocating the discharge to the area represented by Box 5 model results, approximately 2,200 ft downstream of the confluence, where more tidal action and dilution is provided, changes in receiving water composition will be minimized and impacts will be nonexistent or negligible. Model results predict that if the discharge is moved to a Box 5 location the maximum change in receiving water salinity from the existing conditions would occur at Box 2 (the existing confluence location), where the salinity would change from approximately 24 ppt (mean, measured under partial mixing conditions) to approximately 32 ppt (assumes full mixing spring tide conditions). The model also indicates that at this relocation, the salinity at the Box 7 location (4,639 ft. to 6,519 ft downstream) would not change from the current conditions. Because the brine discharge is brackish, a relocated discharge may help to buffer the effects of freshwater inputs in the Lower Sweetwater River. When considering the salinity variation will lessen, the proposed increase in discharge is not expected to cause impacts to the biological community and as such does not constitute a "significant lowering of water quality". The proposed Order restricts the increase in flow only to the relocated Discharge Point No. 001b, with flow at Discharge Point No.001a limited to 0.8 MGD. In addition, the total flow from both discharge points may not exceed 2.5 MGD.

3. Stringency of Requirements for Individual Pollutants

This Order contains water quality-based effluent limitations for individual pollutants, discussed in section IV.B of the Fact Sheet. These limitations are not more stringent than that required by the CWA. WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal

[3] AMEC Earth and Environmental, Inc., Reynolds Discharge Monitoring Program, Annual Report, September 2008.

water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to section 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR-SIP, which was approved by USEPA on May 18, 2000. All the beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

E. Performance Goals at Discharge Point No. 001a and 001b

Constituents that do not have reasonable potential or had inconclusive reasonable potential analysis results are referred to as performance goal constituents and are assigned the performance goals listed in the following table. Performance goal constituents shall be monitored at EFF-001a and EFF-001b, but the results will be used for informational purposes only, not compliance determination.

Table F-16a. Performance Goals Based on the CTR/NTR Criteria.

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
OBJECTIVES FOR THE PROTECTION OF AQUATIC LIFE				
Antimony, Total Recoverable	µg/L	4.30E+03	8.63E+03	--
	lbs/day[2]	2.87E+01	5.76E+01	--
	lbs/day[3]	8.97E+01	1.80E+02	--
Arsenic, Total Recoverable	µg/L	2.95E+01	5.91E+01	--
	lbs/day[2]	1.97E-01	3.95E-01	--
	lbs/day[3]	6.15E-01	1.23E+00	--
Cadmium, Total Recoverable	µg/L	7.66E+00	1.54E+01	--
	lbs/day[2]	5.11E-02	1.03E-01	--
	lbs/day[3]	1.60E-01	3.20E-01	--
Chromium III, Total Recoverable[3]	µg/L	5.27E+02	1.06E+03	--
	lbs/day[2]	3.52E+00	7.06E+00	--
	lbs/day[3]	1.10E+01	2.21E+01	--
Chromium VI, Total Recoverable	µg/L	4.12E+01	8.27E+01	--
	lbs/day[2]	2.75E-01	5.52E-01	--
	lbs/day[3]	8.60E-01	1.72E+00	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Cyanide, Total Recoverable[4]	µg/L	4.98E-01	1.00E+00	--
	lbs/day[2]	3.33E-03	6.67E-03	--
	lbs/day[3]	1.04E-02	2.09E-02	--
Lead, Total Recoverable	µg/L	6.97E+00	1.40E+01	--
	lbs/day[2]	4.65E-02	9.33E-02	--
	lbs/day[3]	1.45E-01	2.92E-01	--
Mercury, Total Recoverable	µg/L	5.10E-02	1.02E-01	--
	lbs/day[2]	3.40E-04	6.83E-04	--
	lbs/day[3]	1.06E-03	2.13E-03	--
Silver, Total Recoverable	µg/L	1.11E+00	2.24E+00	--
	lbs/day[2]	7.43E-03	1.49E-02	--
	lbs/day[3]	2.32E-02	4.66E-02	--
Zinc, Total Recoverable	µg/L	4.74E+01	9.51E+01	--
	lbs/day[2]	3.16E-01	6.35E-01	--
	lbs/day[3]	9.89E-01	1.98E+00	--
OBJECTIVES FOR PROTECTION OF HUMAN HEALTH				
2,3,7,8 TCDD	µg/L	1.40E-08	2.81E-08	--
	lbs/day[2]	9.34E-11	1.87E-10	--
	lbs/day[3]	2.92E-10	5.86E-10	--
TCDD Equivalents[5]	µg/L	1.40E-08	2.81E-08	--
	lbs/day[2]	9.34E-11	1.87E-10	--
	lbs/day[3]	2.92E-10	5.86E-10	--
Acrolein	µg/L	7.80E+02	1.56E+03	--
	lbs/day[2]	5.20E+00	1.04E+01	--
	lbs/day[3]	1.63E+01	3.26E+01	--
Acrylonitrile	µg/L	6.60E-01	1.32E+00	--
	lbs/day[2]	4.40E-03	8.83E-03	--
	lbs/day[3]	1.38E-02	2.76E-02	--
Benzene	µg/L	7.10E+01	1.42E+02	--
	lbs/day[2]	4.74E-01	9.50E-01	--
	lbs/day[3]	1.48E+00	2.97E+00	--
Bromoform	µg/L	3.60E+02	7.22E+02	--
	lbs/day[2]	2.40E+00	4.82E+00	--
	lbs/day[3]	7.51E+00	1.51E+01	--
Carbon Tetrachloride	µg/L	4.40E+00	8.83E+00	--
	lbs/day[2]	2.94E-02	5.89E-02	--
	lbs/day[3]	9.17E-02	1.84E-01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Chlorobenzene	µg/L	2.10E+04	4.21E+04	--
	lbs/day[2]	1.40E+02	2.81E+02	--
	lbs/day[3]	4.38E+02	8.78E+02	--
Chlorodibromomethane	µg/L	3.40E+01	6.82E+01	--
	lbs/day[2]	2.27E-01	4.55E-01	--
	lbs/day[3]	7.09E-01	1.42E+00	--
Dichlorobromomethane	µg/L	4.60E+01	9.23E+01	--
	lbs/day[2]	3.07E-01	6.16E-01	--
	lbs/day[3]	9.59E-01	1.92E+00	--
1,2-Dichloroethane	µg/L	9.90E+01	1.99E+02	--
	lbs/day[2]	6.61E-01	1.33E+00	--
	lbs/day[3]	2.06E+00	4.14E+00	--
1,1-Dichloroethylene	µg/L	3.20E+00	6.42E+00	--
	lbs/day[2]	2.14E-02	4.28E-02	--
	lbs/day[3]	6.67E-02	1.34E-01	--
1,2-Dichloropropane	µg/L	3.90E+01	7.82E+01	--
	lbs/day[2]	2.60E-01	5.22E-01	--
	lbs/day[3]	8.13E-01	1.63E+00	--
1,3-Dichloropropylene	µg/L	1.70E+03	3.41E+03	--
	lbs/day[2]	1.13E+01	2.28E+01	--
	lbs/day[3]	3.54E+01	7.11E+01	--
Ethylbenzene	µg/L	2.90E+04	5.82E+04	--
	lbs/day[2]	1.93E+02	3.88E+02	--
	lbs/day[3]	6.05E+02	1.21E+03	--
Methyl Bromide	µg/L	4.00E+03	8.02E+03	--
	lbs/day[2]	2.67E+01	5.35E+01	--
	lbs/day[3]	8.34E+01	1.67E+02	--
Methylene Chloride	µg/L	1.60E+03	3.21E+03	--
	lbs/day[2]	1.07E+01	2.14E+01	--
	lbs/day[3]	3.34E+01	6.69E+01	--
1,1,2,2-Tetrachloroethane	µg/L	1.10E+01	2.21E+01	--
	lbs/day[2]	7.34E-02	1.47E-01	--
	lbs/day[3]	2.29E-01	4.60E-01	--
Tetrachloroethylene	µg/L	8.85E+00	1.78E+01	--
	lbs/day[2]	5.90E-02	1.18E-01	--
	lbs/day[3]	1.85E-01	3.70E-01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Toluene	µg/L	2.00E+05	4.01E+05	--
	lbs/day[2]	1.33E+03	2.68E+03	--
	lbs/day[3]	4.17E+03	8.37E+03	--
1,2-Trans-Dichloroethylene	µg/L	1.40E+05	2.81E+05	--
	lbs/day[2]	9.34E+02	1.87E+03	--
	lbs/day[3]	2.92E+03	5.86E+03	--
1,1,2-Trichloroethane	µg/L	4.20E+01	8.43E+01	--
	lbs/day[2]	2.80E-01	5.62E-01	--
	lbs/day[3]	8.76E-01	1.76E+00	--
Trichloroethylene	µg/L	8.10E+01	1.63E+02	--
	lbs/day[2]	5.40E-01	1.08E+00	--
	lbs/day[3]	1.69E+00	3.39E+00	--
Vinyl Chloride	µg/L	5.25E+02	1.05E+03	--
	lbs/day[2]	3.50E+00	7.03E+00	--
	lbs/day[3]	1.09E+01	2.20E+01	--
2-Chlorophenol	µg/L	4.00E+02	8.02E+02	--
	lbs/day[2]	2.67E+00	5.35E+00	--
	lbs/day[3]	8.34E+00	1.67E+01	--
2,4-Dichlorophenol	µg/L	7.90E+02	1.58E+03	--
	lbs/day[2]	5.27E+00	1.06E+01	--
	lbs/day[3]	1.65E+01	3.30E+01	--
2,4-Dimethylphenol	µg/L	2.30E+03	4.61E+03	--
	lbs/day[2]	1.53E+01	3.08E+01	--
	lbs/day[3]	4.80E+01	9.62E+01	--
4,6-dinitro-o-cresol (aka2-methyl-4,6-Dinitrophenol)	µg/L	7.65E+02	1.53E+03	--
	lbs/day[2]	5.10E+00	1.02E+01	--
	lbs/day[3]	1.60E+01	3.20E+01	--
2,4-Dinitrophenol	µg/L	1.40E+04	2.81E+04	--
	lbs/day[2]	9.34E+01	1.87E+02	--
	lbs/day[3]	2.92E+02	5.86E+02	--
Pentachlorophenol	µg/L	6.47E+00	1.30E+01	--
	lbs/day[2]	4.32E-02	8.66E-02	--
	lbs/day[3]	1.35E-01	2.71E-01	--
Phenol	µg/L	4.60E+06	9.23E+06	--
	lbs/day[2]	3.07E+04	6.16E+04	--
	lbs/day[3]	9.59E+04	1.92E+05	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
2,4,6-Trichlorophenol	µg/L	6.50E+00	1.30E+01	--
	lbs/day[2]	4.34E-02	8.70E-02	--
	lbs/day[3]	1.36E-01	2.72E-01	--
Acenaphthene	µg/L	2.70E+03	5.42E+03	--
	lbs/day[2]	1.80E+01	3.61E+01	--
	lbs/day[3]	5.63E+01	1.13E+02	--
Anthracene	µg/L	1.10E+05	2.21E+05	--
	lbs/day[2]	7.34E+02	1.47E+03	--
	lbs/day[3]	2.29E+03	4.60E+03	--
Benzidine	µg/L	5.40E-04	1.08E-03	--
	lbs/day[2]	3.60E-06	7.23E-06	--
	lbs/day[3]	1.13E-05	2.26E-05	--
Benzo(a)Anthracene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Benzo(a)Pyrene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Benzo(b)Fluoranthene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Benzo(k)Fluoranthene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Bis(2-Chloroethyl)Ether	µg/L	1.40E+00	2.81E+00	--
	lbs/day[2]	9.34E-03	1.87E-02	--
	lbs/day[3]	2.92E-02	5.86E-02	--
Bis(2-Chloroisopropyl)Ether	µg/L	1.70E+05	3.41E+05	--
	lbs/day[2]	1.13E+03	2.28E+03	--
	lbs/day[3]	3.54E+03	7.11E+03	--
Bis(2-Ethylhexyl)Phthalate	µg/L	5.90E+00	1.18E+01	--
	lbs/day[2]	3.94E-02	7.90E-02	--
	lbs/day[3]	1.23E-01	2.47E-01	--
Butylbenzyl Phthalate	µg/L	5.20E+03	1.04E+04	--
	lbs/day[2]	3.47E+01	6.96E+01	--
	lbs/day[3]	1.08E+02	2.18E+02	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
2-Chloronaphthalene	µg/L	4.30E+03	8.63E+03	--
	lbs/day[2]	2.87E+01	5.76E+01	--
	lbs/day[3]	8.97E+01	1.80E+02	--
Chrysene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Dibenzo(a,h)Anthracene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
1,2-Dichlorobenzene	µg/L	1.70E+04	3.41E+04	--
	lbs/day[2]	1.13E+02	2.28E+02	--
	lbs/day[3]	3.54E+02	7.11E+02	--
1,3-Dichlorobenzene	µg/L	2.60E+03	5.22E+03	--
	lbs/day[2]	1.73E+01	3.48E+01	--
	lbs/day[3]	5.42E+01	1.09E+02	--
1,4-Dichlorobenzene	µg/L	2.60E+03	5.22E+03	--
	lbs/day[2]	1.73E+01	3.48E+01	--
	lbs/day[3]	5.42E+01	1.09E+02	--
3,3 Dichlorobenzidine	µg/L	7.70E-02	1.54E-01	--
	lbs/day[2]	5.14E-04	1.03E-03	--
	lbs/day[3]	1.61E-03	3.22E-03	--
Diethyl Phthalate	µg/L	1.20E+05	2.41E+05	--
	lbs/day[2]	8.01E+02	1.61E+03	--
	lbs/day[3]	2.50E+03	5.02E+03	--
Dimethyl Phthalate	µg/L	2.90E+06	5.82E+06	--
	lbs/day[2]	1.93E+04	3.88E+04	--
	lbs/day[3]	6.05E+04	1.21E+05	--
Di-n-Butyl Phthalate	µg/L	1.20E+04	2.41E+04	--
	lbs/day[2]	8.01E+01	1.61E+02	--
	lbs/day[3]	2.50E+02	5.02E+02	--
2,4-Dinitrotoluene	µg/L	9.10E+00	1.83E+01	--
	lbs/day[2]	6.07E-02	1.22E-01	--
	lbs/day[3]	1.90E-01	3.81E-01	--
1,2-Diphenylhydrazine	µg/L	5.40E-01	1.08E+00	--
	lbs/day[2]	3.60E-03	7.23E-03	--
	lbs/day[3]	1.13E-02	2.26E-02	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Fluoranthene	µg/L	3.70E+02	7.42E+02	--
	lbs/day[2]	2.47E+00	4.95E+00	--
	lbs/day[3]	7.71E+00	1.55E+01	--
Fluorene	µg/L	1.40E+04	2.81E+04	--
	lbs/day[2]	9.34E+01	1.87E+02	--
	lbs/day[3]	2.92E+02	5.86E+02	--
Hexachlorobenzene	µg/L	7.70E-04	1.54E-03	--
	lbs/day[2]	5.14E-06	1.03E-05	--
	lbs/day[3]	1.61E-05	3.22E-05	--
Hexachlorobutadiene	µg/L	5.00E+01	1.00E+02	--
	lbs/day[2]	3.34E-01	6.69E-01	--
	lbs/day[3]	1.04E+00	2.09E+00	--
Hexachlorocyclopenta-diene	µg/L	1.70E+04	3.41E+04	--
	lbs/day[2]	1.13E+02	2.28E+02	--
	lbs/day[3]	3.54E+02	7.11E+02	--
Hexachloroethane	µg/L	8.90E+00	1.79E+01	--
	lbs/day[2]	5.94E-02	1.19E-01	--
	lbs/day[3]	1.86E-01	3.72E-01	--
Indeno(1,2,3-cd)Pyrene	µg/L	4.90E-02	9.83E-02	--
	lbs/day[2]	3.27E-04	6.56E-04	--
	lbs/day[3]	1.02E-03	2.05E-03	--
Isophorone	µg/L	6.00E+02	1.20E+03	--
	lbs/day[2]	4.00E+00	8.03E+00	--
	lbs/day[3]	1.25E+01	2.51E+01	--
Nitrobenzene	µg/L	1.90E+03	3.81E+03	--
	lbs/day[2]	1.27E+01	2.54E+01	--
	lbs/day[3]	3.96E+01	7.95E+01	--
N-Nitrosodimethylamine	µg/L	8.10E+00	1.63E+01	--
	lbs/day[2]	5.40E-02	1.08E-01	--
	lbs/day[3]	1.69E-01	3.39E-01	--
N-Nitrosodi-n-Propylamine	µg/L	1.40E+00	2.81E+00	--
	lbs/day[2]	9.34E-03	1.87E-02	--
	lbs/day[3]	2.92E-02	5.86E-02	--
N-Nitrosodiphenylamine	µg/L	1.60E+01	3.21E+01	--
	lbs/day[2]	1.07E-01	2.14E-01	--
	lbs/day[3]	3.34E-01	6.69E-01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Pyrene	μg/L	1.10E+04	2.21E+04	--
	lbs/day[2]	7.34E+01	1.47E+02	--
	lbs/day[3]	2.29E+02	4.60E+02	--
Aldrin	μg/L	1.40E-04	2.81E-04	--
	lbs/day[2]	9.34E-07	1.87E-06	--
	lbs/day[3]	2.92E-06	5.86E-06	--
alpha-BHC	μg/L	1.30E-02	2.61E-02	--
	lbs/day[2]	8.67E-05	1.74E-04	--
	lbs/day[3]	2.71E-04	5.44E-04	--
beta-BHC	μg/L	4.60E-02	9.23E-02	--
	lbs/day[2]	3.07E-04	6.16E-04	--
	lbs/day[3]	9.59E-04	1.92E-03	--
gamma-BHC	μg/L	6.30E-02	1.26E-01	--
	lbs/day[2]	4.20E-04	8.43E-04	--
	lbs/day[3]	1.31E-03	2.64E-03	--
Chlordane	μg/L	5.90E-04	1.18E-03	--
	lbs/day[2]	3.94E-06	7.90E-06	--
	lbs/day[3]	1.23E-05	2.47E-05	--
4,4'-DDT	μg/L	5.90E-04	1.18E-03	--
	lbs/day[2]	3.94E-06	7.90E-06	--
	lbs/day[3]	1.23E-05	2.47E-05	--
4,4'-DDE	μg/L	5.90E-04	1.18E-03	--
	lbs/day[2]	3.94E-06	7.90E-06	--
	lbs/day[3]	1.23E-05	2.47E-05	--
4,4'-DDD	μg/L	8.40E-04	1.69E-03	--
	lbs/day	5.60E-06	1.12E-05	--
	lbs/day[3]	1.75E-05	3.51E-05	--
Dieldrin	μg/L	1.40E-04	2.81E-04	--
	lbs/day[2]	9.34E-07	1.87E-06	--
	lbs/day[3]	2.92E-06	5.86E-06	--
alpha-Endosulfan	μg/L	2.40E+02	4.81E+02	--
	lbs/day[2]	1.60E+00	3.21E+00	--
	lbs/day[3]	5.00E+00	1.00E+01	--
beta-Endolsulfan	μg/L	2.40E+02	4.81E+02	--
	lbs/day[2]	1.60E+00	3.21E+00	--
	lbs/day[3]	5.00E+00	1.00E+01	--

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum
Endosulfan Sulfate	µg/L	2.40E+02	4.81E+02	--
	lbs/day[2]	1.60E+00	3.21E+00	--
	lbs/day[3]	5.00E+00	1.00E+01	--
Endrin	µg/L	8.10E-01	1.63E+00	--
	lbs/day[2]	5.40E-03	1.08E-02	--
	lbs/day[3]	1.69E-02	3.39E-02	--
Endrin Aldehyde	µg/L	8.10E-01	1.63E+00	--
	lbs/day[2]	5.40E-03	1.08E-02	--
	lbs/day[3]	1.69E-02	3.39E-02	--
Heptachlor	µg/L	2.10E-04	4.21E-04	--
	lbs/day[2]	1.40E-06	2.81E-06	--
	lbs/day[3]	4.38E-06	8.78E-06	--
Heptachlor Epoxide	µg/L	1.10E-04	2.21E-04	--
	lbs/day[2]	7.34E-07	1.47E-06	--
	lbs/day[3]	2.29E-06	4.60E-06	--
PCBs sum[6]	µg/L	1.70E-04	3.41E-04	--
	lbs/day[2]	1.13E-06	2.28E-06	--
	lbs/day[3]	3.54E-06	7.11E-06	--
Toxaphene	µg/L	7.50E-04	1.50E-03	--
	lbs/day[2]	5.00E-06	1.00E-05	--
	lbs/day[3]	1.56E-05	3.14E-05	--

1 Scientific "E" notation is used to express certain values. In scientific "E" notation, the number following the "E" indicates that position of the decimal point in the value. Negative numbers after the "E" indicate that the value is less than 1, and positive numbers after the "E" indicate that the value is greater than 1. In this notation a value of 6.1E-02 represents 6.1×10^{-2} or 0.061, 6.1E+02 represents 6.1×10^{2} or 610, and 6.1E+00 represents 6.1×10^{0} or 6.1.

2 Based on a flow of 0.8 MGD at Discharge Point No. 001a.

3 Based on a flow of 2.5 MGD at Discharge Point No. 001b.

4 If a Discharger can demonstrate to the satisfaction of the Regional Water Board (subject to USEPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by (or performance goals may be evaluated with) the combined measurement of free cyanide, simple alkali metals cyanides, and weakly complexed organometalic cyanide complexes. In Order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR Part 136, as revised May 14, 1999.

5 TCDD equivalents represent the sum of concentrations of chlorinated dibenzodioxins (2,3,7,8-CDDs) and chlorinated dibenzofurans (2,3,7,8-CDFs) multiplied by their respective toxicity factors, as shown by the table below. USEPA Method 8280 may be used to analyze TCDD equivalents.

Isomer Group	Toxicity Equivalence Factor
2,3,7,8 – tetra CDD	1.0
2,3,7,8 – penta CDD	0.5
2,3,7,8 – hexa CDD	0.1
2,3,7,8 – hepta CDD	0.01
octa CDD	0.001
2,3,7,8 – tetra CDF	0.1
1,2,3,7,8 – penta CDF	0.05
2,3,4,7,8 – penta CDF	0.5
2,3,7,8 – hexa CDFs	0.1
2,3,7,8 – hepta CDFs	0.01
Octa CDF	0.001

6 PCBs (polychlorinated biphenyls) represent the sum of chlorinated biphenyls whose analytical characteristics resemble those of Aroclor-1016, Aroclor-1221, Aroclor-1232, Aroclor-1242, Aroclor-1248, Arolclor-1254, and Arcolor-1260.

Table F-16b. Performance Goals For Whole Effluent Toxicity

Parameter	Performance Goals[1]			
	Unit	Average Monthly	Daily Maximum	Instantaneous Maximum[2]
Acute Toxicity	Pass/Fail	1		
Chronic Toxicity	TUc	2	--	1.6

1. Discharges shall achieve a rating of "Pass" for acute toxicity with compliance determined as specified in Section VII.J of this Order.
2. One or more test results with a calculated median value of 1.0 TUc

F. Land Discharge Specifications—Not Applicable

G. Reclamation Specifications—Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

Surface water limitations in section V.A.1.a through V.A.2.e are based on Basin Plan Objectives and are carried over from Order No. R9-2004-0111. The surface water limitation for dissolved oxygen in section V.A.2.a has been modified from Order No. R9-2004-0111 to reflect current wording in the Basin Plan, as applicable to the marine habitat beneficial use at Discharge Point Nos. 001a and 001b and 002. The surface water limitations in section V.A.2.c and d for biostimulatory substances and un-ionized ammonia, respectively, have been reworded to include the Lower Sweetwater River as well as the Tidal Prism to the San Diego Bay. This Order includes surface water limitations for temperature in the Tidal Prism of the San Diego Bay, based on the Thermal Plan (V.A.5). The brine discharge is considered an elevated temperature waste and as such must comply with conditions outlined in the Thermal Plan.

B. Groundwater—Not Applicable

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The MRP, Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring—Not Applicable

B. Effluent Monitoring

Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to insure the discharge is not the cause of unreasonable impacts on the receiving stream and groundwater.

Monitoring results for copper and selenium in the brine at Discharge Point No. 001a exceeded CTR/NTR water quality criteria as described in section IV.C.3. In order to more carefully characterize effluent conditions and the potential to impair beneficial uses, this Order increases the monitoring frequency from quarterly to monthly for copper and selenium at Discharge Point Nos. 001a and 001b

This Order includes new effluent limitations at Discharge Point Nos. 001a and 001b for nickel and nitrogen (See discussions in section IV.C.3.). In association with these new limitations, monthly monitoring requirements have been established. Order No. R9-2004-0111 contained monthly monitoring requirements for total phosphorus at Discharge Point No. 001a. This Order retains the requirement for determining compliance with the new total phosphorus effluent limitation at Discharge Point Nos. 001a and 001b.

As discussed in section IV.C.3, effluent concentrations of brine at Discharge Point No. 001a and 001b (EFF-001a and EFF-001b) may exhibit un-ionized ammonia at concentrations greater than the Basin Plan Objective. Previous monitoring was reported as total ammonia as N. In order to allow comparison to the Basin Plan Objective, this Order includes quarterly effluent monitoring of un-ionized ammonia at Discharge Point Nos. 001a and 001b, with results reported as un-ionized ammonia as N.

As discussed in section IV.C.3, analyses of well purge and feed water discharges of ammonia, nitrogen, and phosphorus indicated that these constituents may be present in concentrations greater than the numeric Basin Plan Objectives. Because of the short duration and intermittent nature of the discharges it is unclear if they will result in exceedances of Basin Plan Objectives. As a result effluent monitoring requirements for these constituents are included in this Order for well purge and feedwater discharges at Discharge Point No. EFF-002 and well purges from Discharge Point Nos. 003, 004, 005, 006, 007, 008, 009, and 010.

The discharge is considered an elevated temperature waste and as such is subject to the Thermal Plan. Effluent monitoring requirements for temperature at Discharge Point Nos. 001a and 001b are included in this Order to assess compliance with the Thermal Plan.

The SIP section 1.3 specifies that Regional Water Board shall require periodic monitoring for pollutants for which criteria or objectives apply and for which no effluent limitations have been established. As such, priority pollutant and TCDD monitoring requirements are included in this Order for Discharge Point Nos. 001a and 001b. As allowed in the SIP section 1.3, the Regional Water Board may exempt low volumes determined to have no significant adverse impact on water quality. For this reason, no priority pollutant or TCDD monitoring is being required for Discharge Point Nos. 002, 003, 004, 005. 006, 007, 008, 009, or 010.

The MRP contained in Order No. R9-2004-0111 included quarterly monitoring for total arsenic and total zinc in the brine and well purge discharges at Discharge Point No. 001a and 002. During this term, the maximum total arsenic concentrations from both waste streams was 18 mg/L, below the most stringent criterion (saltwater, chronic) of 36 mg/L/ Similarly, the maximum total zinc concentration was 12.1, well below the most stringent (saltwater, chronic) criterion of 85 mg/L. Monitoring from Discharge Point Nos. 003 through 005 had similar results, with maximum dissolved arsenic and zinc concentrations of 5.3 and 30 compared to the most stringent dissolved criteria of 150 (freshwater, chronic) and 380 (freshwater, acute and chronic). The results indicate that the constituents are not likely to exhibit “reasonable potential”, therefore, the monitoring frequency is reduced to once per permit term as part of the priority pollutant analysis.

C. Whole Effluent Toxicity Testing Requirements

Whole effluent toxicity testing (acute and chronic) have been established to determine compliance with the narrative prohibition of toxicity (III.L).

D. Receiving Water Monitoring

1. Surface Water

The MRP specifies conditions for monitoring to address compliance with receiving water limitations specified in section V.A of this Order, to distinguish the facility’s potential contributions of pollutants to receiving waters, and to determine if the water quality objectives contained in the Basin Plan are being achieved in the receiving water.

Sweetwater Authority developed and implemented a Mitigation and Monitoring Program, (MMP) as part of an Environmental Impact Report (EIR) prepared on May 16, 1997 and revised through July 18, 1998 and submitted to the Bureau of Reclamation, the lead agency. The MMP involved monitoring of various locations in the Lower Sweetwater River for environmental factors including vegetation and water quality constituents. Order No. R9-2004-0111 contained requirements to implement, and report to the Regional Water Board, the results of monitoring outlined in *Section 3 (Downstream Monitoring)* and *Section 5 (Summary of Monitoring Program in Demineralization Facility Production Adjustment* of the *Lower Sweetwater River Basin Groundwater Demineralization Project).* Specifically, Order No. R9-2004-0111 incorporated by reference the water quality portion of the MMP which included monitoring the Lower Sweetwater River (Tidal Prism of San Diego Bay) for Total dissolved solids (TDS), total kjeldahl nitrogen (TKN), nitrate, chlorophyll A, total phosphorus, and orthophosphorus. The plan required monitoring for a 3 year period after which the agencies involved would determine additional monitoring or revisions to the plan. In December of 2004, the receiving water monitoring stemming from the MMP was completed.

This Order includes new receiving water monitoring requirements at RSW-001 and RSW-002 for constituents that mirror the monitoring requirements of Discharge Point Nos. 001a and 001b. These monitoring requirements are necessary to characterize receiving water capacity for pollutants, identify potential contributions of pollutants from the Discharger, as well as determine whether Basin Plan Objectives are being met. Receiving water monitoring locations RSW-001 and RSW-002 correspond to the water quality sampling locations described in the September 2006 Discharge Monitoring Program Annual Report. In addition, a monitoring requirement for temperature at RSW-001 is included to assess compliance with the thermal plan.

2. Groundwater—Not Applicable

E. Rationale for Provisions

F. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42.

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

G. Special Provisions

1. Reopener Provisions

Order No. R9-2010-0012 may be re-opened and modified, revoked, and reissued or terminated in accordance with the provisions of 40 CFR Parts 122, 123, 124, and 125. The Regional Water Board may reopen the permit to modify permit conditions and requirements. Causes for modifications include the promulgation of new regulations, modification in sludge use or disposal practices, or adoption of new regulations by the State Water Board or Regional Water Board, including revisions to the Basin Plan.

2. Special Studies and Additional Monitoring Requirements

a. Toxicity Reduction Requirements

The Basin Plan contains a narrative toxicity objective that states “All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at page 3-29). This provision requires the Discharger to develop and Initial Investigative TRE Workplan in accordance with USEPA guidance which shall include steps the Discharger intends to follow if toxicity is measured above the performance goal for acute toxicity. This provision also includes requirements to initiate the TRE/TIE process if the results of the acute toxicity testing exceed the performance goal for toxicity.

b. Benthic Invertebrate Monitoring Plan

The proposed increase to 2.5 MGD may result in increased loadings of pollutants including nutrients and metals. In order to monitor potential impacts to the benthic communities, this Order requires the Discharger to develop a plan to monitor benthic invertebrates within the receiving water (VI.C.2.c). Within the plan the Discharger shall establish locations upstream of the influence of the discharge and downstream of the discharge. Monitoring shall be conducted according to methodology in Evaluation of *Benthic Assessment Methodology in Southern California Bays and San Francisco Bay (SCCWRP, 2004).*

c. Macroalgae Monitoring Plan

The proposed increase in discharge may contribute additional nitrogen and phosphorus to the receiving water, which could result in algal blooms, which in turn may smother benthic communities and create eutrophic conditions. In order to assess these potential effects, this Order requires the Discharger to develop a plan to monitor macroalgae within the receiving water (VI.C.2.d). The plan shall include sampling for macroalgae at representative sites upstream and downstream of the discharge. Samples shall be analyzed for mass of organic material and results shall be reported as ash free dry weight and percent organic matter. The plan shall also include macroalgae measurements using photographic quadrats.

d. Wetland Vegetation Monitoring Plan

The proposed increase may contribute pollutants including nutrients and metals as well as areas of lower salinity within the receiving water. In order to assess the potential effects, this Order requires the Discharger to develop a plan to conduct wetland vegetation monitoring (VI.C.2.e). Within the plan, the Discharger shall establish a representative downstream location whereby the Discharger shall conduct field observations and transect analysis to identify wetland vegetation species. Results of wetland vegetation monitoring shall be reported in the annual report.

e. Temperature Compliance Determination Study.

Based on requirements of the Thermal Plan, receiving water temperature limitations have been included in this Order, as discussed in this Fact Sheet section V.A. The receiving water limitations in V.A.5.a of this Order, specify that

i. *"The maximum temperature of waste discharges shall not exceed the natural temperature of the receiving waters by more than 20°F."*

Insufficient data is available to determine whether the Discharger is able to meet theses limitations. Therefore, the Discharger is required to develop a plan to demonstrate compliance with this Thermal Plan Objective at the locations of Discharge Point Nos. 001a and 001b, as stipulated in VI.C.2.f of this Order.

3. Best Management Practices and Pollution Prevention

CWC section 13263.3(d)(2) Pollution Prevention Plans. Section 13263.3 of the California Water Code states that pollution prevention should be the first step in the hierarchy for reducing pollution and managing wastes. Further, section 13263.3 (d)(1) states that a Regional Water Board may require a discharger to complete and implement a pollution prevention plan is necessary to achieve a water quality objective. The results of a reasonable potential analysis and other evaluations of effluent data detailed in section IV.C.3 of this Fact Sheet indicate the discharger has potential to contribute to exceedances of water quality objectives. In section VI.C.3 of this Order, the Discharger is required to develop and implement a Pollution Prevention Plan for copper, nickel, selenium, total nitrogen, and total phosphorus in brine discharges at Discharge Point No. 001a and 001b, and for copper in well purge water and plant feed dump water at Discharge Point No. 002, which at a minimum meets the requirements outlined in CWC section 13263.3(d)(2).

The minimum requirements for the pollution prevention plans include the following:

a. An analysis of one or more of the pollutants, as directed by the state board, a regional board, or a POTW, that the facility discharges into water or introduces into POTWs, a description of the sources of the pollutants, and a comprehensive review of the processes used by the discharger that result in the generation and discharge of the pollutants.

b. An analysis of the potential for pollution prevention to reduce the generation of the pollutants, including the application of innovative and alternative technologies and any adverse environmental impacts resulting from the use of those methods.

c. A detailed description of the tasks and time schedules required to investigate and implement various elements of pollution prevention techniques.

d. A statement of the discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action.

e. A description of the discharger's existing pollution prevention methods.

f. A statement that the discharger's existing and planned pollution prevention strategies do not constitute cross media pollution transfers unless clear environmental benefits of such an approach are identified to the satisfaction of the state board, the regional board, or the POTW, and information that supports that statement.

g. Proof of compliance with the Hazardous Waste Source Reduction and Management Review Act of 1989 {Article 11. 9 (commencing with Section 25244.12) of Chapter 6.5 of Division 20 of the Health and Safety Code) if the discharger is also subject to that act.

h. An analysis, to the extent feasible, of the relative costs and benefits of the possible pollution prevention activities.

i. A specification of, and rationale for, the technically feasible and economically practicable pollution prevention measures selected by the discharger for implementation.

The Discharger shall prepare and implement the pollution prevention plan in the event of a serious violation or if an effluent limitation is exceeded four or more times during a period of six consecutive months (in accordance with Section 13385 of the California Water Code).

4. Construction, Operation, and Maintenance Specifications—Not Applicable

5. Other Special Provisions

Receiving Water Monitoring Locations for Relocated Discharge.

The receiving water monitoring locations that are established for the existing discharge location will not be adequate to provide information on water quality if the discharge is relocated downstream. In response to the proposed relocation of brine discharge to Discharge Point No. 001b, the Discharger must establish new receiving water monitoring locations, designated RSW-001b and RSW-002b to reflect the instream conditions of the relocated discharge. The Discharger shall determine an appropriate monitoring location upstream of the influence of the discharge from Discharge Point No. 001b and a downstream monitoring location no further than 50 meters downstream of the discharge. The Discharger shall provide the proposed monitoring locations to the Regional Water Board for approval prior to discharge through Discharger Point No. 001b.

6. Compliance Schedules

Recent data submitted by the Discharger demonstrates the discharge of demineralization brine at the existing location (001a) has toxic effects in the receiving water. In Order to reduce these impacts to less than significant levels, the discharger proposes to relocate the discharge point approximately 2,200 ft downstream of the existing location (001b).

The Discharger has requested a compliance schedule and has demonstrated to the Regional Board, that more time is needed to implement actions necessary to comply with a more stringent permit limitation specified to implement a newly interpreted water quality objective. The proposed compliance schedule is as short as possible and provides the Discharger a reasonable amount of time to relocate the discharge point.

The Discharger shall comply with the following time schedule to ensure compliance with the toxicity effluent limitation of this Order:

Task	Compliance Date
Complete Engineering Analysis	Complete
Complete Engineering Design	March 2012
Complete the permitting process necessary to construct	May 12, 2010
Complete financial arrangements for construction	January 2012
Issue Request for Proposals for construction	March 2012
Begin construction	July 2010
Start up and initial testing	October 2013
Complete relocation of brine discharge to Discharge Point 001b	January 2014

The Discharger shall submit to the Regional Board on or before each compliance date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, and shall include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

Progress reports shall be submitted annually according to the schedule in Table E-8 of this Order and shall continue until compliance is achieved.

VII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, San Diego Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Lower Sweetwater Authority Reynolds Demineralization Plant. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative

WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the San Diego Union Tribune on February 1, 2010.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments must be received at the Regional Water Board offices by 5:00 p.m. on April 7, 2010.

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: **May 12, 2010**
Time: **9:00 AM**
Location: **Regional Water Quality Control Board**
Regional Board Room
9174 Sky Park Court, Suite 100
San Diego, CA 92123

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is <**http://www.waterboards.ca.gov/sandiego**> where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling (858) 467-2952.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Michelle Mata at (858) 467-2981 or via email at mmata@waterboards.ca.gov

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

ORDER NO. 2001-352 AS AMENDED BY ORDER NO. R9-2012-0027

MASTER RECLAMATION PERMIT
WITH WASTE DISCHARGE REQUIREMENTS
FOR THE PRODUCTION AND PURVEYANCE OF RECYCLED WATER

FOR

CARLSBAD MUNICIPAL WATER DISTRICT
CARLSBAD WATER RECYCLING FACILITY
SAN DIEGO COUNTY

The California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Board), finds that:

1. On January 23, 1984, this Regional Board adopted Order No. 84-10, "Water Reclamation Requirements for the City of Carlsbad for the Purveyance of Reclaimed Water, San Diego County." Order No. 84-10 established requirements under which the City of Carlsbad could purchase wholesale reclaimed water from the San Marcos County Water District's Meadowlark Water Reclamation Plant and sell the water to various users within the city.

2. On May 20, 1991, this Regional Board adopted Order No. 91-60, "Water Reclamation Requirements for the Purveyance of Reclaimed Water by the Carlsbad Municipal Water District, San Diego County." Order No. 91-60 superseded Order No. 84-10 and added the Shadowridge and Gafner Water Reclamation Plants as additional recycled water suppliers.

3. On December 16, 1998, this Regional Board adopted Order No. 98-200. The order established water reuse areas and required the discharger to implement appropriate and reasonable measures to prevent the discharge of reclaimed water from the reclaimed water storage ponds at the North La Costa Golf Course to San Marcos Creek and Batiquitos Lagoon. The measures included the termination of the discharge to the reservoirs when there is a potential for overflow.

4. On December 5, 2000, this Regional Board received a Report of Waste Discharge (RWD) submitted by the Carlsbad Municipal Water District (CMWD) for the Carlsbad Water Recycling Facility.

5. The proposed Carlsbad Water Recycling Facility (CWRF) is to be owned and operated by the CMWD. The facility is located immediately south of the Encina Water Pollution Control Facility (EWPCF) in the city of Carlsbad in San Diego County in Hydrologic Subarea (HSA) 904.51.

6. Secondary effluent from the EWPCF is to be used as influent for the CWRF.

7. The RWD contains a conceptual process schematic of the proposed CWRF, describing the facility as consisting of storage basins, continuous backwash granulated media filter, microfiltration/ultrafiltration, reverse osmosis, chlorine disinfection, and thickener.

8. In accordance with section 2200, Title 23 of the California Code of Regulation, the threat to water quality and complexity of the use of the treated wastewater from the CWRF is determined to be category IIB.

9. The CMWD is authorized to purchase and use up to 5.0 MGD of recycled water from the Vallecitos Water District's Meadowlark Water Reclamation Plant and up to 2.0 MGD of recycled water from the Leucadia County Water District's Gafner Water Reclamation Plant.

10. All recycled water discharges from the CWRF and from water purchased by the CMWD are to occur in the CMWD recycled water service area. The recycled water service area of the CMWD encompasses portions of the El Salto Hydrologic Subarea (HSA 904.21), the Los Monos Hydrologic Subarea (HSA 904.31), the Encinas Hydrologic Area (HA 904.40), the Batiquitios Hydrologic Subarea (HSA 904.51), and the Richland Hydrologic Subarea (HSA 904.52). All of the aforementioned hydrologic regions are located within the Carlsbad Hydrologic Unit (HU 904.00). The Basin Plan established municipal and domestic supply, agricultural supply, and industrial process supply as existing beneficial uses of ground water in HU 904.00 and for the aforementioned hydrologic regions.

11. This Regional Board, acting in accordance with section 13244 of the California Water Code, adopted the Water Quality Control Plan for the San Diego Basin (9), (hereinafter Basin Plan) on September 8, 1994. The Basin Plan was subsequently approved by the State Water Resources Control Board (SWRCB) on December 13, 1994. Subsequent revisions to the Basin Plan have also been adopted by the Board and approved by the SWRCB. The Basin Plan contains beneficial uses and water quality objectives.

12. The Basin Plan states that waters designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels specified in the California Code of Regulations, Title 22, Table 64449-A of Section 64449 (Secondary Maximum Contaminant Levels, Consumer Acceptance Limits), incorporated by reference, including future changes to the incorporated provisions as the changes take effect. The Basin Plan lists the following additional ground water quality objectives for the following hydrologic regions in HU 904.00:

BASIN PLAN GROUNDWATER WATER QUALITY OBJECTIVES (mg/L or as noted)													
(Concentrations not to be exceeded more than 10% of the time during any one year period)													
HYDROLOGIC AREA / SUBAREA[1]	**TDS**	**Cl**	**SO_4**	**%Na**[6]	**NO_3**	**Fe**	**Mn**	**MBAS**	**B**	**ODOR**	**TURB NTU**	**COLOR UNITS**	**F**
904.21 El Salto	3500	800	500	60	45	0.3	0.05	0.5	2.0	None	5	15	1.0
904.31 Los Monos[2]	3500	800	500	60	45	0.3	0.05	0.5	2.0	None	5	15	1.0
904.40 Encinas	3500[5]	800[5]	500[5]	60	45[5]	0.3[5]	0.05[5]	0.5	2.0[5]	None	5	15	1.0
904.50 San Marcos[3]	1000	400	500	60	10	0.3	0.05	0.5	0.75	None	5	15	1.0
904.51 Batiquitos[4]	3500	800	500	60	45	0.3	0.05	0.5	2.0	None	5	15	1.0

[1]The water quality objectives do not apply westerly of the easterly boundary of Interstate 5.

[2]The water quality objectives apply to the portion of Subarea 904.31 bounded on the west by the easterly boundary of the Interstate 5 right-of-way and on the east by the easterly boundary of El Camino Real.

[3]The water quality objectives do not apply to hydrologic subareas 904.51 and 904.52 between Highway 78 and El Camino Real and to all lands which drain to Moonlight Creek and Encinitas Creek.

[4]The water quality objectives do not apply to hydrologic subareas 904.51 and 904.52 between Highway 78 and El Camino Real and to all lands which drain to Moonlight Creek and Encinitas Creek. The water quality objectives apply to the portion of Subarea 904.51 bounded on the south by the north shore of Batiquitos Lagoon, on the west by the easterly boundary of the Interstate 5 right-of-way and on the west by the easterly boundary of El Camino Real.

[5]Detailed salt balance studies are recommended for this area to determine limiting mineral concentration levels for discharge. On the basis on existing data, the tabulated objectives would probably be maintained in most areas. Upon completion of the salt balance studies, significant water quality objective revisions may be necessary. In the interim period of time, projects of ground water recharge with water quality inferior to the tabulated numerical values may be permitted following individual review and approval by the Regional Board if such projects do not degrade existing ground water quality to the aquifiers affected by the recharge.

[6]In some cases, Adjusted Sodium Adsorption Ratio (ASAR) may be a better indicator of the potential sodium hazard in irrigation water than percent sodium. The Regional Board may authorize the use of the ASAR instead of percent sodium to indicate the potential sodium hazard.

13. As stated in the Basin Plan, for discharges of recycled water not upgradient of municipal water supply reservoirs, numerical effluent limitations for constituents shall be at levels no lower than the quality of the basin's water supply concentration plus a typical incremental increase resulting from domestic water use, but not more than the Basin Plan ground water quality objectives.

14. A discharge in compliance with this Order will be consistent with the standards, policies, and regulations established in the Basin Plan for the achievement of water quality objectives.

15. For flows exceeding the existing storage capacity, the CWRF has authorization from the Encina Wastewater Authority to use the Encina Ocean Outfall, and as such is exempt from the required 84-day on-site storage capacity as required by the Basin Plan.

16. In establishing the requirements contained herein the Regional Board considered factors including, but not limited to, the following:

    a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose,

    b. Other waste discharges,

    c. The need to prevent nuisance,

    d. Past, present, and probable future beneficial uses of the hydrologic subunits under consideration,

    e. Environmental characteristics of the hydrologic subunits under consideration,

    f. Water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area,

    g. Economic considerations,

    h. The need for additional housing within the region, and

    i. The need to develop and use recycled water.

17. The proposed project will make use of recycled water consistent with the goals of California Water Code, Division 7, Chapter 7, *Water Recycling Law.*

18. Pursuant to California Water Code (CWC) section 13523.1, this Regional Board, after consulting with, and receiving the recommendations of, the State Department of Health Services (State DHS) and any party who has requested in writing to be consulted and with the consent of the proposed permitee, issues a master reclamation permit to the recycled water supplier in lieu of issuing waste discharge requirements pursuant to CWC section 13263 or water reclamation requirements pursuant to CWC section 13523.

19. As specified by CWC section 13523.2, this Order includes the following: waste discharge requirements adopted pursuant to Article 4;

- Requirements that the permittee comply with the uniform statewide criteria established by the State DHS pursuant to section 13521 and other applicable permit conditions for the use of recycled water;
- Requirements for the discharger to establish and enforce rules and regulations for recycled water users in accordance with statewide reclamation criteria;
- Requirements for the submittal of quarterly recycled water use summary reports;
- Requirements for the recycled water agency to conduct periodic inspections of the recycled water use sites; and
- Other requirements determined to be appropriate by this Regional Board.

20. In accordance with the *Memorandum Of Agreement Between The Department Of Health Services And The State Water Resources Control Board On Use Of Reclaimed Water,* this Order incorporates any conditions of approval submitted as part of the State DHS recommendations into water reclamation requirements proposed for adoption by this Regional Board.

21. This Regional Board has considered all water resource related environmental factors associated with the proposed discharge of waste from the proposed CWRF.

22. This Regional Board has notified the CMWD and all known interested parties of the intent to prescribe master reclamation permit requirements for the proposed discharge.

23. This Regional Board in a public meeting has heard and considered all comments pertaining to the proposed discharge of waste from the CWRF.

IT IS HEREBY ORDERED THAT, the Carlsbad Municipal Water District (hereinafter Recycled Water Agency), in order to meet the provisions contained in Division 7 of the California Water Code and Regulations adopted thereunder, shall comply with the following requirements for the discharge and purveyance of recycled water from the CWRF to HA 904.40 and HSA 904.21, 904.31, 904.51, and 904.52.

A. PROHIBITIONS

1. Discharge of wastes to lands which have not been specifically described in the RWD and for which valid waste discharge requirements are not in force are prohibited.

2. Discharges of treated or untreated solid or liquid waste to a navigable water or tributary of a navigable water are prohibited unless as authorized by an NPDES permit issued by this Regional Board.

3. Neither the treatment, storage, nor disposal of waste shall create a pollution, contamination or nuisance, as defined by Section 13050 of the California Water Code.

4. The discharge of treated wastewater shall not cause a violation of the prohibitions contained in the Basin Plan.

5. Total daily effluent flow from the CWRF in excess of 4 million gallons is prohibited.

B. DISCHARGE SPECIFICATIONS

1. Effluent used for landscape irrigation purposes shall be treated to the most restricted level in conformance with all applicable provisions of California Code of Regulations, Title 22, Division 4, Chapter 3 (Reclamation Criteria) for landscaping irrigation (currently section 60304 (b) and 60320.5). Recycled water from the CWRF shall not contain constituents in excess of the following limitations:

CONSTITUENT	30-DAY AVERAGE (mg/L)[1]	DAILY MAXIMUM (mg/L)[2]
Biochemical Oxygen Demand (BOD_5 @ 20°C)	30	45
Total Suspended Solids	30	45
pH (within limits shown at all times)	6.0 – 9.0	

[1]The 30-day average effluent limitation shall apply to the arithmetic mean of the results of all samples collected during any calendar month.

[2]The daily maximum effluent limitation shall apply to the results of a single composite or grab sample.

2. The median concentration of total coliform bacteria measured in the disinfected recycled water effluent from the CWRF shall not exceed a Most Probable Number (MPN) of 2.2 per 100 milliliters, utilizing the bacteriological results of the last seven days for which analyses have been completed; and the number of total coliform bacteria shall not exceed a MPN of 23 per 100 milliliters in more than one sample in any 30-day period. No sample shall exceed a MPN of 240 total coliform bacteria per 100 milliliters.

3. Turbidity concentration of the recycled water effluent from the CWRF shall not exceed a daily average value of 2 NTU (nephelometric turbidity units), shall not exceed 5 NTU more than 5% of the time during a 24-hour period, and shall not exceed 10 NTU at any time.

4. Discharges to a landscape impoundment must be terminated whenever an overflow of the impoundment is imminent.

5. Recycled water from the CWRF shall not contain constituents in excess of the following limitations:

Constituent	Unit	Daily Maximum[1]	30-day Average[2]	Annual Average[3]
TDS	mg/L	1,200	--	1,100
Chloride	mg/L	400	350	--
Sulfate	mg/L	400	--	350
Boron	mg/L	0.75	0.75	0.75
Iron	mg/L	--	--	0.3
Manganese	mg/L	--	--	0.1
Fluoride	mg/L	--	--	1.0
Methylene blue active substances	mg/L	--	--	0.5

[1] The daily maximum effluent limitation shall apply to the results of a single composite or grab sample

[2] The 30-day average effluent limitation shall apply to the arithmetic mean of the results of all samples collected during any calendar month.

[3] The annual average effluent limitation shall apply to the arithmetic mean of the results of all samples collected during a calendar year.

C. RECYCLED WATER PURVEYANCE REQUIREMENTS

1. Prior to the initiation of the purveyance of recycled water project, the Recycled Water Agency must complete all of the following:

   a. Develop and submit for approval *Rules and Regulations for Recycled Water Users* governing the design and construction of recycled water use facilities and the use of recycled water to the Regional Board, the State DHS and the County of San Diego Department of Environmental Health (County DEH). Rules and regulations shall, at a minimum, include the requirements that are contained in Attachment No. 1 of this Order.

b. Develop and submit for approval a program to conduct compliance inspections of recycled water reuse sites to the Regional Board, State DHS and County DEH. Inspections shall determine the status of compliance with the Recycled Water Agency's approved rules and regulations for recycled water users.

c. Submit a report to the State DHS and the County DEH containing the information listed below. The Recycled Water Agency may submit a Master Plan report that covers more than one reuse site. The report shall include a detailed description of each reuse site identifying all of the information below:

(1) The number, location, and type of facilities within the use area proposing to use domestic and recycled water. "Facility" means any type of building or structure, or defined area of specific public use that utilizes or proposes to utilize a dual plumbed system.

(2) The specific boundaries of the proposed use site area including a map showing the location of each facility, drinking water fountain and impoundment to be served.

(3) The person or persons responsible for operation of the recycled water system at each use area.

(4) The specific use to be made of the recycled water at each use area.

(5) The methods to be used by the Recycled Water Agency to assure that the installation and operation of the recycled system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye or other test methods to be used to test the system.

(6) Plans and specifications shall include the following and shall be submitted to the State DHS and County DEH for approval:

(a) Proposed piping system to be used,

(b) Pipe locations of both the recycled and potable systems,

(c) Type and location of the outlets and plumbing fixtures that will be accessible to the public,

(d) The methods and devices to be used to prevent backflow of recycled water into the public water system,

(e) Plan notes relating to recycled water specific installation and use requirements.

2. Subsequent to initiation of the purveyance of recycled water and prior to providing recycled water to a new use site, the Recycled Water Agency shall do the following:

   a. Submit for review and approval a report that either certifies (by the agency) that the project conforms with what is described in the master plan or information to supplement what is described in the master plan to the State DHS and the County DEH. A certification report shall document that all criteria described in *Recycled Water Purveyance Requirements C.1c* has been submitted to and approved by the appropriate regulatory agency. Information submitted as a supplement to the master plan shall document compliance with any criteria, as described by *Recycled Water Purveyance Requirements C.1c,* not met through submittal of the master plan.

   b. The City of Carlsbad will perform a complete cross-connection shut down test, performed by a certified cross-connection control specialist, with oversight and monitoring provided by the County DEH.

   c. Submit for review and approval documentation confirming the information submitted as part of Monitoring and Reporting Program No. 2001-352, Recycled Water Users Summary Report F.2 to the Regional Board.

   d. Perform an alarm simulation shut down test after completion of the construction of CWRF, in the presence of a staff from the Regional Board and a sanitary engineer from the State DHS, to ensure that CWRF is properly operating.

   e. Verify the modal contact time of the chlorination chamber, as defined under Title 22, Division 4, Chapter 3, Section 60301.600, through a tracer study to ensure that the effluent meets the requirements of Title 22. The results of this tracer study shall be submitted to the State DHS for review and approval.

3. The Recycled Water Agency shall do the following for all reuse sites:

   a. Enforce recycled water rules and regulations,

   b. Conduct recycled water reuse site compliance inspections in accordance with the program submitted in compliance with *Recycled Water Purveyance Requirements C.1b* of this Order,

   c. Notify the State DHS and the County DEH of any incidence of recycled water backflow into the potable water system as soon as possible, but in no case later than 24 hours of finding the incident, and

   d. Maintain a current list of all on-site recycled water supervisors.

D. FACILITY DESIGN AND OPERATION SPECIFICATIONS

1. PROPER OPERATION

The Recycled Water Agency shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Recycled Water Agency to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Order.

2. CERTIFICATION REPORT

The wastewater treatment and disposal facilities for the CWRF shall be completely constructed and operable prior to the initiation of the discharge. The complete facilities shall have adequate capacity for the full design flow of 4 MGD. A report from the design engineer certifying the adequacy of each component of the treatment, storage, and disposal facilities shall be submitted by the discharger prior to commencement of the discharge. The certification report shall contain a requirement-by-requirement analysis based on acceptable engineering practices, of how the process and physical designs of the facilities will ensure compliance with the master reclamation permit. The design engineer shall affix their signature and engineering license number to the certification report and should submit it prior to construction of the facilities. Recycled water shall not be purveyed to a user until all of the following have occurred:

a. The certification report is received and approved by the Regional Board Executive Officer,

b. The Regional Board Executive Officer has been notified that the Title 22 report and the rules and regulations for recycled water reuse are approved by the State DHS and County DEH,

c. The Regional Board Executive Officer has been notified of the completion of facilities by the Recycled Water Agency,

d. An inspection of the facilities has been made by staff of the Regional Board, and

e. The Regional Board Executive Officer notifies the Recycled Water Agency by letter that recycled water purveyance can be initiated.

3. ENGINEERING REPORT

Prior to discharge of recycled water from the CWRF, the discharger shall meet the design, operational, and reliability requirements of Articles 7, 8, 9 and 10 of the California Code of Regulations, Title 22, Division 4, Chapter 3. The discharger shall prepare an engineering report conforming to the California Code of Regulations, Title 22, Engineering Report Guidelines, sections 3 and 4. The engineering report shall be submitted to the State DHS, County DEH, and the Regional Board Executive Officer.

4. WET WEATHER STORAGE

The discharger shall provide adequate storage facilities to contain recycled water during and after periods of rainfall when disposal by irrigation cannot be successfully practiced and to prevent the discharge of treated or untreated recycled water to any surface water body.

5. DISINFECTION PROCESS

Disinfection of recycled water shall comply with all requirements of California Code of Regulations, Title 22, Division 4. Disinfection may be accomplished by either:

a. A chlorine disinfection process that provides a CT (chlorine concentration times modal contact time) value of not less than 450 mg-min/liter at all times with a modal chlorine contact time of at least 90 minutes based on peak dry weather design flow; or

b. A disinfection process, that, when combined with the filtration process, has been demonstrated to reduce the concentration of plaque-forming units of F-specific bacteriophage MS2, or polio virus, per unit volume of water in the wastewater to one hundred thousandths (1/100,000) of the initial concentration in the filter influent throughout the range of qualities of wastewater that will occur during the recycling process. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

6. OPERATION MANUAL

A copy of the facility operations manual shall be maintained at the Recycled Water Agency's facility and shall be available to operation personnel and Regional Board staff at all times. The following portions of the operations manual shall be posted at the treatment plant as a quick reference for treatment plant operators:

a. Alarm set points for secondary turbidity, tertiary turbidity and chlorine residual.

b. Levels at which flow will be diverted for secondary turbidity, tertiary turbidity and chlorine residual.

c. When to divert flow for high daily and weekly median total coliform.

d. When the authorities (State DHS, County DEH, Regional Board) will be notified of a diversion.

e. Names and numbers of those authorities to be notified in case of a diversion.

f. Frequency of calibration for turbidimeters and chlorine residual analyzers.

7. OPERATORS' CERTIFICATION

The Recycled Water Agency's wastewater treatment facilities shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to Chapter 3, Subchapter 14, Title 23 of the California Code of Regulations.

8. FLOOD PROTECTION

All waste treatment, storage and purveyance facilities shall be protected against 100-year peak stream flows as defined by the San Diego County flood control agency.

9. RUNOFF PROTECTION

All wastewater and recycled water storage facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm. An exemption from this requirement has been granted for the reclaimed water storage ponds at the North La Costa Golf Course, which shall be operated to prevent discharges of reclaimed water from the reservoirs to San Marcos Creek and Batiquitos Lagoon. The measures shall include the termination of the discharge to the reservoirs when there is a potential for overflow.

10. MONITORING AND REPORTING

The Recycled Water Agency shall comply with the attached Monitoring and Reporting Program No. 2001-352, and future revisions thereto as specified by the Executive Officer. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2001-352.

E. BIOSOLIDS SPECIFICATIONS

1. Collected screenings, sludges, other solids removed from liquid wastes, and filter backwash shall be disposed in a manner approved by the Executive Officer.

2. Management of all solids and sludge must comply with all applicable requirements of 40 CFR Parts 257, 258, 501 and 503; CWA Part 405(d), and Title 27, CCR, including all monitoring, record keeping and reporting requirements. Since the State of California, hence the State and Regional Boards, has not been delegated the authority by the USEPA to implement the sludge program, enforcement of sludge requirements of CFR Part 503 is under USEPA's jurisdiction. Once sludge leaves a facility, it is subject to all applicable local, state and federal laws and regulations.

3. All solids and sludge not returned to the Encina Water Pollution Control Facility must be disposed of in a municipal solid waste landfill, reused by land application or disposed of in a sludge-only landfill accordance with 40 CFR Parts 503 and 258, and Title 27 CCR. If the discharger desires to dispose of solids or sludge by a different method, a request for permit modification must be submitted to the USEPA and this Regional Board 180 days prior to the initiation of the alternative disposal.

4. Solids and sludge treatment, storage, and disposal or reuse shall not create a nuisance, such as objectionable odors or flies, and shall not result in groundwater contamination.

5. The solids and sludge treatment site and storage site shall have facilities adequate to divert surface water runoff from adjacent areas, to protect the boundaries of the site from erosion, and to prevent drainage from the treatment and storage site. Adequate protection is defined as protection from at least a 100-year storm and protection from the highest possible tidal stage that may occur.

6. The discharge of sewage sludge and solids shall not cause waste material to be in a position where it is, or can be, conveyed from the treatment and storage sites and deposited in the waters of the state.

7. The Recycled Water Agency shall submit a copy of each of the annual reports required by 40 CFR 503 to this Regional Board Executive Officer at the same time those reports are submitted to USEPA. The Recycled Water Agency shall also submit an annual report of the quantity and disposition of sludge generated in the previous calendar year.

F. STANDARD PROVISIONS

1. ENFORCEMENT

The Regional Board may initiate enforcement action against the recycled water agency, which may result in the termination of the recycled water supply, if any person uses, transports, or stores such water in a manner which creates, or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.

2. DUTY TO COMPLY

The Recycled Water Agency must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for (a) enforcement action; (b) termination, revocation and reissuance, or modification of this Order; or (c) denial of a report of waste discharge in application for new or revised master reclamation permit requirements.

3. ENTRY AND INSPECTION

The Recycled Water Agency shall allow the Regional Board, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to do the following:

a. Enter upon the Recycled Water Agency's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this Order,

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order,

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this Order, and

d. Sample or monitor, at reasonable times for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

4. CIVIL MONETARY REMEDIES

The California Water Code provides that any person who intentionally or negligently violates any master reclamation permit requirements issued, reissued, or amended by this Regional Board shall be liable civilly in accordance with California Water Code section 13350 (d), (e), or (f).

5. PENALTIES FOR INVESTIGATION, MONITORING OR INSPECTION VIOLATIONS

The California Water Code provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or falsifying any information provided in the monitoring reports is guilty of a misdemeanor and is subject to a civil liability of up to 5,000 dollars for each day in which the violation occurs.

6. ENDANGERMENT OF HEALTH AND ENVIRONMENT

The Recycled Water Agency shall report any noncompliance that may endanger health or the environment. Any such information shall be provided orally to the Executive Officer within 24 hours from the time the Recycled Water Agency becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the Recycled Water Agency becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The following occurrence(s) must be reported to the Executive Officer within 24 hours:

a. Any bypass from any portion of the treatment facility. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility to other than a sewer system.

b. Any discharge of non-disinfected effluent or untreated wastewater resulting from sewer line breaks, obstruction, surcharge, or any other circumstances.

c. Any treatment plant upset which causes the effluent limitations of this Order to be exceeded including, but not limited to, the following:

(1) Failure of chlorination equipment

(2) Effluent total coliform bacteria greater than 240 MPN/100 ml

(3) Turbidity greater than 10 NTU

(4) CT less than 450 mg-min/L

7. PLANT OVERLFOW EVENTS

The discharger shall report all overflow events that occur at the CWRF. For purposes of this reporting requirement, an overflow event is defined as a discharge of treated or untreated wastewater at a location onsite and not authorized by waste discharge requirements and/or NPDES permit which results from a pump station failure, line break, obstruction, surcharge, or any other operational dysfunction. This reporting requirement applies to all overflow events other than those events subject to regulation under this Regional Board's Order No. 96-04, *General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies*. Overflows identified under this provision shall be reported to the Regional Board with the quarterly monitoring report for the period in which the overflow occurs.

8. UNAUTHORIZED DISCHARGES OF RECYCLED WATER

Any person who, without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water that has been treated to at least disinfected tertiary 2.2 recycled water or 1,000 gallons or more of recycled water that is treated at a level less than disinfected tertiary 2.2 recycled water in or on any waters of the state, or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the state, shall, as soon as (1) that person has knowledge of the discharge, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify this regional board in accordance with reporting requirements in standard provision F.6.

9. PRIOR NOTICE OF BYPASS

If a need for a discharge bypass is known in advance, the Recycled Water Agency shall submit prior notice (stating, at a minimum, the purpose, anticipated dates, duration, level of treatment, and volume of bypass) and, if at all possible, such notice shall be submitted at least 10 days prior to the date of the bypass. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility to other than a sewer system.

10. CORRECTIVE ACTION

The Recycled Water Agency shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.

11. TREATMENT FAILURE

In an enforcement action, it shall not be a defense for the Recycled Water Agency that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the Recycled Water Agency shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies for example, when the primary source of power of the treatment facility is failed, reduced, or lost.

12. HAZARDOUS RELEASES

Except for a discharge which is in compliance with these master reclamation permit requirements, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, shall as soon as (a) that person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Director of Environmental Health Services, County of San Diego in accordance with California Health and Safety Code section 5411.5 and the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Article 3.7 (commencing with section 8574.7) of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the State Board or the appropriate Regional Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of section 13271 of the Water Code unless the Recycled Water Agency is in violation of a prohibition in the applicable Water Quality Control Plan.

13. PETROLEUM RELEASES

Except for a discharge which is in compliance with these master reclamation permit requirements, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) such person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan adopted pursuant to Article 3.5 (commencing with section 8574.1) of Chapter 7 of Division 1 of Title 2 of the Government Code. This requirement does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to section 311 of the Clean Water Act or the discharge is in violation of a prohibition in the applicable Water Quality Control Plan.

14. PERMIT REPOSITORY

A copy of this Order shall be maintained at the Recycled Water Agency's facility and shall be available to operating personnel at all times.

15. RETENTION OF RECORDS

The Recycled Water Agency shall retain records of all monitoring information, including all calibration and maintenance records, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board Executive Officer.

16. GENERAL REPORTING REQUIREMENT

The Recycled Water Agency shall furnish to the Executive Officer of this Regional Board, within a reasonable time, any information which the Executive Officer may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Recycled Water Agency shall also furnish to the Executive Officer, upon request, copies of records required to be kept by this Order.

17. PERMIT REVISION

This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this Order.

b. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts.

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge. The filing of a request by the Recycled Water Agency for the modification, revocation and reissuance, or termination of this Order, or notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

18. CHANGE IN DISCHARGE

The Recycled Water Agency shall file a new Report of Waste Discharge at least 120 days prior to the following:

a. Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the wastes.

b. Significant change in the treatment or disposal method (e.g., change in the method of treatment which would significantly alter the nature of the waste.)

c. Change in the disposal area from that described in the findings of this Order.

d. Increase in flow beyond that specified in this Order.

e. Other circumstances which result in a material change in character, amount, or location of the waste discharge.

f. Any planned change in the regulated facility or activity which may result in noncompliance with this Order.

19. CHANGE IN OWNERSHIP

This Order is not transferable to any person except after notice to the Executive Officer. The Recycled Water Agency shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Recycled Water Agency containing a specific date for the transfer of this Order's responsibility and coverage between the current Recycled Water Agency and the new Recycled Water Agency. This agreement shall include an acknowledgement that the existing Recycled Water Agency is liable for violations up to the transfer date and that the new Recycled Water Agency is liable from the transfer date on. The Regional Board may require modification or revocation and reissuance of this Order to change the name of the Recycled Water Agency and incorporate such other requirements as may be necessary under the California Water Code.

20. INCOMPLETE REPORTS

Where the Recycled Water Agency becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge or submitted incorrect information in a Report of Waste Discharge or in any report to the Regional Board, it shall promptly submit such facts or information.

21. REPORT DECLARATION

All applications, reports, or information submitted to the Executive Officer shall be signed and certified as follows:

a. The Report of Waste Discharge shall be signed as follows:

(1) For a corporation - by a principal executive officer of at least the level of vice-president.

(2) For a partnership or sole proprietorship - by a general partner or the proprietor, respectively.

(3) For a municipality, state, federal or other public agency - by either a principal executive officer or ranking elected official.

b. All other reports required by this Order and other information required by the Executive Officer shall be signed by a person designated in paragraph (a) of this provision, or by a duly authorized representative of that person. An individual is a duly authorized representative only if all of the following are true:

(1) The authorization is made in writing by a person described in paragraph (a) of this provision,

(2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, and

(3) The written authorization is submitted to the Executive Officer.

c. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

22. REGIONAL BOARD ADDRESS

The Recycled Water Agency shall submit reports required under this Order or other information required by the Executive Officer to the following address:

California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123

G. NOTIFICATIONS

1. VESTED RIGHTS

This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Recycled Water Agency from liability under federal, state or local laws, nor create a vested right for the Recycled Water Agency to continue the waste discharge.

2. U.S. EPA REVIEW

These requirements have not been officially reviewed by the United States Environmental Protection Agency and are not issued pursuant to section 402 of the Clean Water Act.

3. SEVERABILITY

The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.

4. PREVIOUS ORDER

The requirements prescribed in this Order supercede the requirements prescribed in Order No. 98-200. This Order becomes effective on the date of adoption by the San Diego RWQCB.

5. EFFECTIVE DATE

This Order becomes effective on the date of adoption by the San Diego RWQCB.

I, David W. Gibson, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on December 12, 2001, and amended on February 8, 2012.

DAVID W. GIBSON
Executive Officer

ATTACHMENT NO. 1

TO

ORDER NO. 2001-352

RULES AND REGULATIONS FOR RECYCLED WATER USE PROJECTS

Pursuant to California Water Code (CWC) section 13523.1(b)(3), this Order requires the recycled water agency to establish and to enforce rules and regulations governing the design, construction and use of recycled water distribution and disposal systems by its customers. The rules and regulations shall be consistent with the following criteria:

- Title 22, Division 4, Chapter 3, *Wastewater Reclamation Criteria;*
- Title 17, Division 1, Chapter 5, Group 4, Article 1 & 2, of the California Code of Regulations;
- The State Department of Health Services (State DHS) *Guidelines For Use of Recycled Water, Guidelines for Use of Recycled Water for Construction Purposes, and the County of San Diego Department of Environmental Health (County DEH) Recycled Water Plan Check and Inspection Manual*;
- Any measures that are deemed necessary for protection of public health, such as the American Water Works Association (AWWA) California/Nevada section, *Guidelines for the Distribution of Non-Potable Water and Guidelines for Retrofitting To Recycled Water* or alternate measures that are acceptable to the State DHS.

At a minimum, the rules and regulations shall notify the users that:

1. The use of recycled water shall not cause pollution, contamination, or nuisance, as defined by section 13050 of the California Water Code.
2. The Recycled Water Agency, the Regional Board, the State DHS, and the County DEH or an authorized representative of these parties, upon presentation of proper credentials, shall have the right to enter upon the recycled water use site during reasonable hours, to verify that the user is complying with the Recycled Water Agency's rules and regulations.
3. The recycled water user shall provide written notification, in a timely manner, to the Recycled Water Agency of any material change or proposed change in the character of the use of recycled water.
4. Prior to the initiation of recycled water service, the recycled water user shall

submit plans and specifications for recycled water distribution facilities to the Recycled Water Agency.

5. The recycled water user shall designate a recycled water supervisor who is responsible for the recycled water system at each use area under the user's control. Specific responsibilities of the recycled water supervisor include the proper installation, operation, and maintenance of the irrigation system; compliance of the project with the Recycled Water Agency's rules and regulations, prevention of potential hazards and preservation of the recycled water distribution system plans in "as built" form. Designated recycled water supervisors shall obtain instruction in the use of recycled water from an institution approved by the State DHS and County DEH. Additional guidance regarding recycled water supervisor responsibilities and instruction requirements is provided in Attachments 17 and 18 of the *Recycled Water Plan Check and Inspection Manual* developed by the County DEH, and which are incorporated herein by reference.

6. The Recycled Water Agency may terminate service to a recycled water user who uses, transports, or stores such water in violation of the Recycled Water Agency's rules and regulations.

7. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm unless the Regional Board Executive Officer approves relaxed storm protection measures for the facility.

8. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against 100 - year frequency peak stream flows as defined by the San Diego County flood control agency unless the Regional Board Executive Officer approves relaxed storm protection measures for the facility. An exemption from this requirement has been granted for the reclaimed water storage ponds at the North La Costa Golf Course, which shall be operated to prevent discharges of reclaimed water from the reservoirs to San Marcos Creek and Batiquitos Lagoon. The measures shall include the termination of the discharge to the reservoirs when there is a potential for overflow.

9. The Regional Board may initiate enforcement action against any recycled water user who discharges recycled water in violation of any applicable discharge requirement prescribed by the Regional Board or in a manner which creates or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.

10. A copy of the recycled water rules and regulations, irrigation system layout

map, and a recycled water system operations manual shall be maintained at the use area. These documents shall be available to operating personnel at all times.

11. Irrigation with disinfected tertiary recycled water shall not take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:

    a. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.

    b. The well contains an annular seal that extends from the surface into the aquitard.

    c. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.

    d. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.

    e. The owner of the well approves of the elimination of the buffer zone requirement.

12. Impoundment of disinfected tertiary recycled water shall not occur within 100 feet of any domestic water supply well.

13. Irrigation with, or impoundment of, disinfected secondary-2.2 or disinfected secondary -23 recycled water shall not take place within 100 feet of any domestic water supply well.

14. Irrigation with, or impoundment of, undisinfected secondary recycled water shall not take place within 150 feet of any domestic water supply well.

15. Reclaimed water facilities shall be operated in accordance with best management practices (BMP's) to prevent direct human consumption of reclaimed water and to minimize misting, ponding, and runoff. BMP's shall be implemented that will minimize both public contact and discharge onto areas not under customer control.

16. Irrigation with reclaimed water shall be during periods of minimal human use of the service area. Consideration shall be given to allow an adequate dry-out time before the irrigated area will be used by the public.

17. All drinking fountains located within the approved use area shall be protected by location and/or structure from contact with recycled water spray, mist, or runoff. Protection shall be by design, construction practice, or system operation.

18. Facilities that may be used by the public, including but not limited to eating surfaces and playground equipment and located within the approved use areas, shall be protected to the maximum extent possible by siting and/or structure from contact by irrigation with recycled water spray, mist, or runoff. Protection shall be by design, construction practice or system operation.

19. Spray irrigation with recycled water, other than disinfected tertiary recycled water, shall not take place within 100 feet of the property line of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.

20. All use areas where recycled water is used and that are accessible to the public shall be posted with conspicuous signs, in a size no less than 4 inches by 8 inches, that include the following wording and picture in a size no less than 4 inches high by 8 inches wide: "RECYCLED WATER - DO NOT DRINK". See Attachment No. 2 for the acceptable symbol. The sign(s) shall be of a size easily readable by the public.

21. No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.

22. The recycled water piping system shall not include any hose bibs. Quick couplers that are different from that used on the potable water system may be used.

23. The public water supply shall not be used as a backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602(a) and 7603(a) of Title 17 and the approval of the public water system has been obtained. If a "Swivel-ell" type connection is used it must be used in accordance with the provisions of the Department of Health Services Policy Memo 95-004. Approved backflow prevention devices shall be provided, installed, tested, and maintained by the recycled water user in accordance with the applicable provisions of Title 17, Division 1, Chapter 5, Group 4, Article 2.

24. No person other than the Recycled Water Agency shall deliver recycled water to a facility. Connection to the irrigation system by an individual residence is prohibited.

25. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with Chapter 7.9, section 4049.54 of the California Health and Safety Code.

26. Reuse site shut down tests and inspections shall be monitored by the County DEH or the State DHS.

27. Customer complaints concerning recycled water use that may involve public illness shall be reported to the County DEH and the State DHS, and to the Recycled Water Agency who shall maintain a log of all customer complaints regarding recycled water.

28. Any backflow prevention device installed to protect the public water system shall be inspected and maintained in accordance with section 7605 of Title 17.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

**MONITORING AND REPORTING PROGRAM NO. 2001-352
AS AMENDED BY ORDER NO. R9-2012-0027
FOR CARLSBAD MUNICIPAL WATER DISTRICT
CARLSBAD WATER RECYCLING FACILITY
SAN DIEGO COUNTY**

A. MONITORING PROVISIONS

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this Order and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water or substance. Monitoring points shall not be changed without notification to and the approval of the Executive Officer.

2. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than +10 percent from true discharge rates throughout the range of expected discharge volumes.

3. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved under Title 40, Code of Federal Regulations (CFR), Part 136, "Guidelines Establishing Test Procedures for Analysis of Pollutants Under the Clean Water Act" as amended, unless other test procedures have been specified in this Order.

4. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services or a laboratory approved by the Executive Officer.

5. Monitoring results must be reported on discharge monitoring report forms approved by the Executive Officer.

6. If the discharger monitors any pollutants more frequently than required by this Order, using test procedures approved under 40 CFR, Part 136, or as

specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the discharger's monitoring report. The increased frequency of monitoring shall also be reported.

7. The discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board Executive Officer.

8. Records of monitoring information shall include the following:

   a. The date, exact place, and time of sampling or measurements,
   b. The individual(s) who performed the sampling or measurements,
   c. The date(s) analyses were performed,
   d. The individual(s) who performed the analyses,
   e. The analytical techniques or method used, and
   f. The results of such analyses.

9. All monitoring instruments and devices that are used by the discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

10. The discharger shall report all instances of noncompliance not reported under Provision F.6 of Order No. 2001-352 at the time monitoring reports are submitted. The reports shall contain the information described in Provision F.6.

11. The monitoring reports shall be signed by an authorized person as required by Provision F.21.

12. A composite sample is defined as a combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, aliquot must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquot may be collected manually or automatically.

13. A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding 15 minutes.

14. Sampling and analysis shall, at a minimum, be conducted in accordance with Article 6 of California Code of Regulations, Title 22, Division 4, Chapter 3 (Reclamation Criteria).

B. EFFLUENT MONITORING

1. Samples of the effluent discharged from the Carlsbad Water Recycling Facility (CWRF) shall be collected at a point downstream of the disinfection process and prior to any dilution.

2. The discharger is responsible for monitoring and reporting in accordance with the following criteria:

CONSTITUENT	UNIT	TYPE OF SAMPLE	SAMPLING FREQUENCY[3]	REPORTING FREQUENCY
Flowrate[1]	Gallons/Day	Continuous	Continuous	Monthly
Turbidity	NTU	Continuous	*	Monthly
Chlorine Residual[2]	mg/L	Continuous	**	Monthly
Chlorine Contact Time (CT)[2]	mg-min/L	Continuous	**	Monthly
Total Coliform	MPN/100ml	Grab	***	Monthly
Biochemical Oxygen Demand (BOD_5 @ 20°C)	mg/L	Composite	Once every 30 days	Quarterly
Total Suspended Solids	mg/L	Composite	Once every 30 days	Quarterly
Volatile Suspended Solids	mg/L	Composite	Once every 30 days	Quarterly
pH	Unit	Grab	Once every 30 days	Quarterly
Total Dissolved Solids	mg/L	Composite	Once every 30 days	Quarterly
Chloride	mg/L	Composite	Once every 30 days	Quarterly
Sulfate	mg/L	Composite	Once every 30 days	Quarterly
Boron	mg/L	Composite	Once every 30 days	Quarterly
Percent Sodium	%	Composite	Quarterly	Quarterly
Adjusted Sodium Adsorption Ratio[4]	---	Composite	Quarterly	Quarterly
EC	dS/m	Composite	Quarterly	Quarterly
Iron	mg/L	Composite	Once every 30 days	Quarterly
Manganese	mg/L	Composite	Once every 30 days	Quarterly
Methylene Blue Active Substances	mg/L	Composite	Annually	Annually
Aluminum	mg/L	Composite	Annually	Annually
Arsenic	mg/L	Composite	Annually	Annually
Barium	mg/L	Composite	Annually	Annually
Cadmium	mg/L	Composite	Annually	Annually
Chromium	mg/L	Composite	Annually	Annually
Copper	mg/L	Composite	Annually	Annually
Fluoride	mg/L	Composite	Annually	Annually
Lead	mg/L	Composite	Annually	Annually
Mercury	mg/L	Composite	Annually	Annually
Nickel	mg/L	Composite	Annually	Annually
Selenium	mg/L	Composite	Annually	Annually
Silver	mg/L	Composite	Annually	Annually
Zinc	mg/L	Composite	Annually	Annually

Notes: MPN/100 ml = Most Probable Number per 100 milliliters
mg/L = milligrams per liter
NTU = Nephelometric Turbidity Units
dS/m = deciseimens per meter

1 Report the daily total for influent, reclaimed effluent, recycled flows to Encina Water Pollution Control Facility, and discharge to the Encina Ocean Outfall.

2 Required if chlorine disinfection process is used. Disinfection using UV Irradiation will require additional monitoring requirements not currently specified in Order No. 2001-352.

3 The discharger shall increase the sampling frequency from once every 30 days to once every 7 days, from quarterly to monthly, and from annually to quarterly for any noted constituent that exceeds the limit specified by Discharge Specification B.1, B.2, B.3, and B.5 of Order No. 2001-352. The increased frequency of monitoring shall continue until the discharger achieves compliance with the limitations for three consecutive periods. After compliance is achieved, the discharger shall resume sampling at the specified frequency.

4 The adjusted sodium adsorption ratio (Adj. SAR) is calculated as follows:

$$\text{Adj. SAR} = \frac{Na}{\sqrt{(Ca_x + Mg)/2}}$$

where Na, Ca_x, and Mg are in milliequivalent per liter (meq/L)

Ca_x is a modified Ca value calculated using Table 3-2 contained in *Irrigation with Reclaimed Municipal Wastewater, A Guidance Manual*.

* Effluent turbidity analyses shall be conducted continuously using a continuous monitoring and recording turbidimeter. Compliance with the daily average operating filter effluent turbidity limit of 2 NTU shall be determined by averaging the recorded turbidity levels at a minimum of four-hour intervals over a 24-hour period. Compliance with the turbidity standard of not exceeding 5 NTU more than 5 percent of the time over a 24-hour period shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2-hours over a 24-hour period. Should the continuous turbidity meter and/or recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24 hours. The discharger shall report monthly results of four-hour turbidity readings, average effluent turbidity (24-hours), 95 percentile effluent turbidity (24-hours), and daily maximum turbidity readings. Continuous turbidity monitoring must also be provided prior to filtration to ensure adequate process control, and automatically actuate coagulant feed when the turbidity of the secondary treated effluent is greater than 10 NTU.

** Chlorine concentrations shall be recorded by a continuous recording meter. Calculated CT (chlorine concentration multiplied by modal contact time) values shall be collected and recorded continuously. Compliance with CT requirements shall be determined at least daily. Minimum daily chlorine residual shall be reported monthly.

*** Samples for total coliform bacteria shall be collected at least daily and at a time when wastewater characteristics are most demanding on the treatment facilities and disinfection procedures. Results of daily total coliform bacteria monitoring, running 7-day median determination, and maximum daily coliform reading in each of previous 12 months shall be reported monthly.

3. The discharger shall review the monitoring results for compliance with Order No. 2001-352 and submit a statement of compliance as part of the Monitoring and Reporting Program No. 2001-352. The statement of compliance shall identify and report all effluent limitation violations of Discharge Specifications B.1, B.2, B.3, and B.5 of this Order.

C. FILTRATION PROCESS MONITORING

If coagulation is not used as part of the treatment process, the turbidity of the filter influent and effluent shall be continuously measured. The discharger shall report orally to the Regional Board staff within 24-hours if effluent turbidity exceeds 2 NTU or if the influent turbidity exceeded 5 NTU, and shall describe the measures taken to automatically activate chemical addition or to divert wastewater should the turbidity of the influent to the filters exceed 5 NTU. The discharger shall submit a written report of the incident as part of the monthly monitoring report.

D. SEWAGE SOLIDS AND BIOSOLIDS

A record of the type, quantity, and manner of disposal and/or reuse of solids removed in the course of sewage treatment shall be maintained at the CWRF and be made available to Regional Board staff upon request.

A biosolids certification, certifying that the use and disposal of biosolids complies with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503 shall be submitted annually.

E. STORAGE PONDS

The Recycled Water Agency shall record storage pond monthly inflow and outflow, the volume of water in storage at the end of each month, the monthly volume of ground, municipal, and recycled water used, and total water consumption.

F. RECYCLED WATER USERS SUMMARY REPORT

1. The Recycled Water Agency shall submit a quarterly recycled water users summary report containing the following information:

    a. Total volume of recycled water supplied to all recycled water users for each month of the reporting period,
    b. Total number of recycled water use sites,

c. Address of the recycled water use sites and
d. Basin Plan name and number of hydrologic subarea underlying the recycled water use site.

2. The Recycled Water Agency shall submit an annual recycled water users compliance report containing the following information:

a. Recycled water use site summary report.

(1) Name of the reclaimed water reuse site
(2) Owner of the reclaimed water use facility
(3) Address of the reuse site
(4) Name of the reclaimed water user supervisor
(5) Phone number of the on-site water user supervisor
(6) Mailing address of the recycled water use supervisor, if different from site address
(7) Volume of reclaimed water delivered to the reuse site on a monthly basis

b. Recycled water user site inspections.

Number of reclaimed water reuse site inspections conducted by discharger/producer staff and identification of sites inspected for the year.

c. Recycled water user violations of the Recycled Water Agency's rules and regulations.

The Recycled Water Agency shall identify all recycled water users known to be in violation of the Recycled Water Agency's rules and regulations for recycled water users. The report shall include a description of the noncompliance and its cause, including the period of noncompliance, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

G. REPORT SCHEDULE

Monitoring reports shall be submitted to the Executive Officer in accordance with the following schedule:

Reporting Frequency	Report Period	Report Due
Monthly	January, February, March, April, May, June, July, August, September, October, November, December	By the 1st day of the second month following the month of sampling
Quarterly	January - March April - June July - September October - December	May 1st August 1st, November 1st February 1st
Annually	January-December	February 1st

Monitoring reports shall be submitted to:

California Regional Water Quality Control Board
San Diego Region
9174 Sky Park Court, Suite 100
San Diego, CA 92123

Ordered by: David W. Gibson
DAVID W. GIBSON
Executive Officer

Date: December 12, 2001, amended on, February 8, 2012

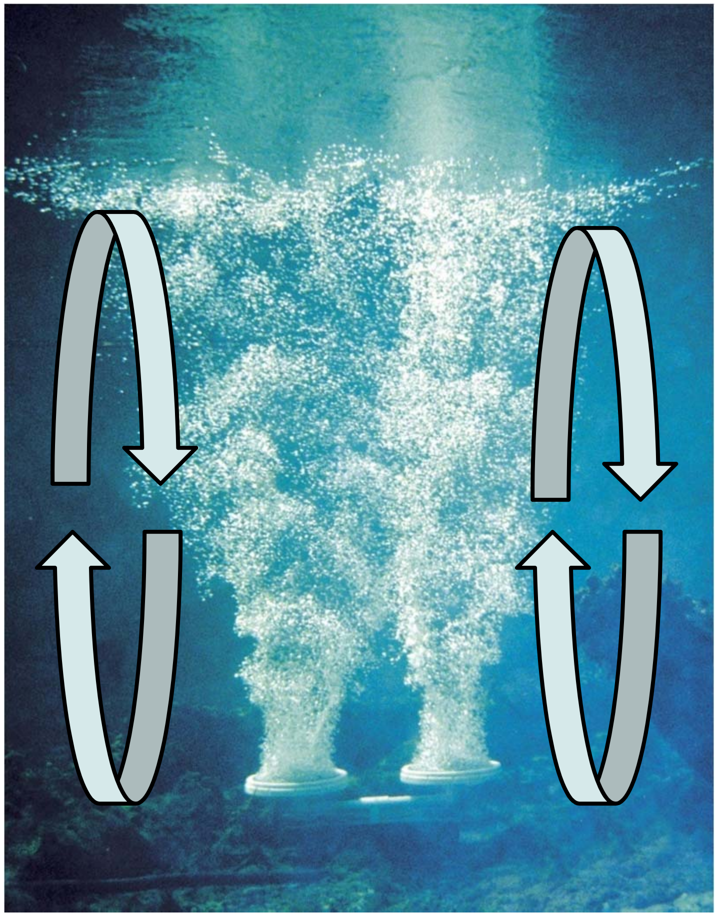
Enhancing Local Water Supplies in an Era of Uncertainty

Santa Fe Irrigation District

San Dieguito Reservoir Aeration

Aeration Diffusers

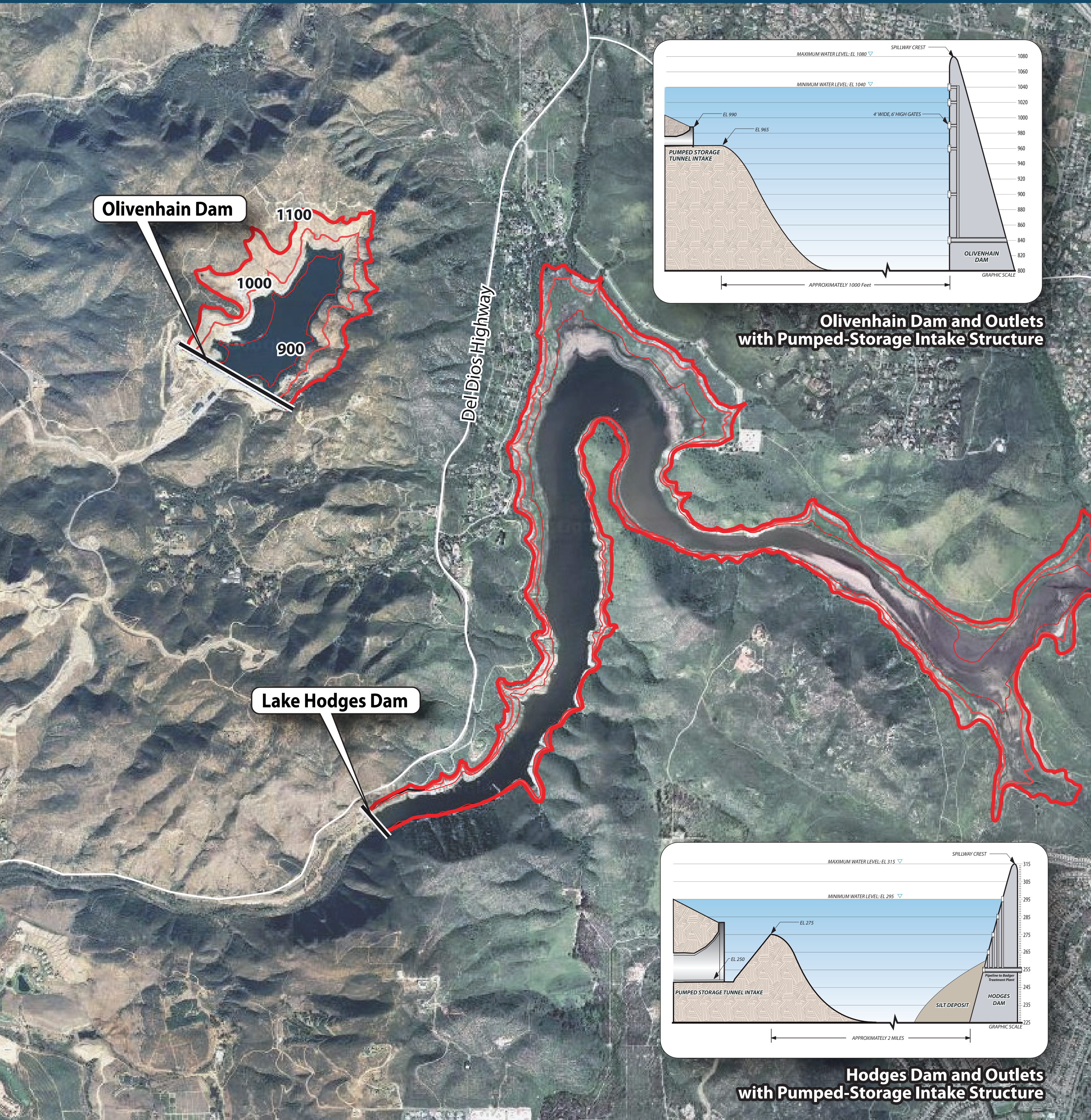
- Seven disks Installed
- De-stratify SDR
- Three lake turnovers per day



San Dieguito Reservoir
Solar Bee Mixer

Lake Hodges and Olivenhain Reservoir Limnology Study

April 2007



San Diego County Water Authority
4677 Overland Ave.
San Diego, CA 92123-1233
Contact: Dave Chamberlain,
858/522-6811
dchamberlain@sdcwa.org

Jones & Stokes

Final
Lake Hodges and Olivenhain Reservoir
Limnology Study

Prepared for:

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April 2007

mixing coefficient indicated that a 5% daily mixing produced too much warming in the bottom of Lake Hodges. Additional calibration of these coefficients for other reservoirs would help confirm these values because this representation of vertical mixing is unique to this model. Appendix A describes the inflow, outflow, and mixing processes included in the model.

The temperature calibration for Lake Hodges was considered to be successful for 2005. The measured bottom temperatures showed a slight warming during the year, from about 54ºF to 56ºF. The model bottom temperatures remained constant at the initial condition of 54ºF. The simulated fall cooling and vertical mixing was too strong. The model cooled the reservoir to 54ºF by the end of the year; full mixing was confirmed with the February 7, 2006, measurements but with a temperature of 56.5ºF.

EC Calibration. EC calibration involved adjusting the initial EC value (2,000 µS/cm) and the monthly inflow EC values to match the EC profiles observed later in the year. The large inflow during January through March 2005 placed the fresh water on top of the higher salinity water, producing a very strong salinity gradient of 2,000 µS/cm at the bottom and 600 µS/cm near the surface on March 8. The January inflow EC was assumed to be 750 µS/cm, the February inflow EC was assumed to be 500 µS/cm, and the March inflow EC was assumed to be 750 µS/cm. This provided a reasonable match with the EC gradients in the spring. The surface increase in EC was caused by the combination of evapo-concentration from evaporation and wind mixing that mixed deeper water with higher salinity into the surface layer. The simulated vertical mixing, which did not change the bottom temperature during the summer stratified period, was sufficient to reduce the bottom EC from about 2,000 µS/cm in March to 1,500 µS/cm at the end of August. The measured EC gradient provided a check on the simulated vertical mixing, since no other process changes EC in Lake Hodges. The simulated vertical mixing was stronger than measured EC indicates. The measured EC remained stratified, with an EC of 1,250 µS/cm at the surface and more than 1,500 µS/cm at the bottom on December 8. The EC profile was fully mixed with a value of 1,330 µS/cm on February 7, 2006.

DO Calibration. The DO calibration involved the stratification from temperature and EC, as well as algal growth and surface reaeration in the surface mixed layer and sediment oxygen demand (SOD), algal respiration, and non-algal biochemical oxygen demand (BOD) decay in the water column. For Lake Hodges in 2005, the DO was depleted for the entire year below the thermocline. The thermocline depth was about 20 feet deep throughout the summer, so fish habitat was limited to this upper 20 feet of the reservoir. The model was able to match this pattern, which is governed by the strong stratification and the high rates of assumed SOD (0.5 g/m^2) and assumed BOD decay (0.05 mg/l/day). The model does not match some periods of supersaturated DO at the surface (from algae photosynthesis), and the DO concentrations were lower than simulated during the fall when the anaerobic chemicals and BOD from the anaerobic zone is mixed into the surface layer and consumes DO. The simulated full vertical mixing in December was not measured; measured DO remained depleted below elevation 275 feet on December 8, 2005, below elevation 265 on January 10, 2006, and remained less than 2 mg/l below elevation 255 on February 7, 2006.

Figure 15 shows these calibrated temperature, EC, and DO profiles for Lake Hodges in 2005. The simulated profiles were reasonably close to the measured profiles (provided by City of San Diego) in most respects.

Calibration of turbidity, TOC, coliform, nitrate, ammonia, manganese, algae biomass, and pH profiles was more difficult because there were less data and more uncertainty in the physical and biochemical processes, but the general behavior of Lake Hodges (i.e., temperature, EC, and DO) can be confidently used to simulate these other water quality parameters, which are important for water treatment evaluations.

Figure 16 shows the simulated profiles of algae biomass, pH, and nitrate in Lake Hodges for 2005. The measured pH was elevated in the surface mixed layer in May, once the turbidity from the January and February inflow had settled. The simulated pH was not elevated until June, but the sensitivity of the pH to reaeration of CO_2 and the net growth of algae made matching the measured pH profiles difficult. Algae biomass was measured with fluorescence profiles, which are assumed to be equivalent to chlorophyll. Algae biomass is assumed to contain 1% chlorophyll. The simulated periods of elevated surface algae were generally similar to the profiles. Algae biomass was highest early in the spring and decreased during the summer period. There were no measured nitrate concentrations. An initial nitrate concentration of 0.25 mg/l was assumed based on the 2004 nitrate data. The model simulates depleted nitrate by mid-summer, with decreasing nutrients caused by algae uptake and subsequent settling from the surface mixed layer.

Figure 17 shows the simulated profiles of turbidity, TOC, and manganese in Lake Hodges for 2005. Simulated turbidity was assumed to be 100 nephelometric turbidity units (NTU) in the inflow period of January through March. Surface turbidity was about 50 NTU in February but settled to about 10 NTU by the end of May when the first period of algae growth was simulated. There are no turbidity profiles for 2005. There are no manganese measurements for 2005, and the simulated profile is the result of an anoxic release rate of 0.05 $g/m^2/day$. The TOC was assumed to be 10 mg/l at the beginning of the year and about 10 mg/l in the inflow period of January through March. The TOC of 10 mg/l in Lake Hodges is quite different from the aqueduct value of 3 to 4 mg/l. Because TOC is assumed to be conservative (no sources or sinks within Lake Hodges or Olivenhain Reservoir), TOC will be used to track the exchange of water between Lake Hodges and Olivenhain Reservoir for the PS and ESP operations.

Observed Olivenhain Reservoir Water Quality Conditions

CWA collected water quality measurements in Olivenhain Reservoir during 2005, the first year that Olivenhain Reservoir was filled. Figure 18 shows the seasonal variations in temperature, DO, EC, pH, turbidity, and algae. Measurements were made at the surface and at each outlet elevation.