

TECHNICAL REPORT

**TENTATIVE ORDER NO. R9-2009-0021
MASTER RECLAMATION PERMIT**

FOR

**SOUTHERN REGION TERTIARY TREATMENT PLANT
UNITED STATES MARINE CORPS, CAMP PENDLETON
SAN DIEGO COUNTY**

**IN COMPLIANCE
WITH THE
CALIFORNIA WATER CODE SECTIONS 13263 AND 13523.1**

March 11, 2009

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

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1. INTRODUCTION

The U.S. Marine Corps (USMC) submitted a written request February 14, 2008 for a Master Reclamation Permit to support its role as sole provider, purveyor and discharger of disinfected tertiary treated water for reuse as irrigation at Marine Corps Base Camp Pendleton (the Base). Tentative Order No. R9-2009-0021 includes Waste Discharge Requirements (WDR) that apply specifically to discharges from the Southern Region Tertiary Treatment Plant (SRTTP). The discharge of the treated wastewater (recycled water) could affect the quality of waters of the state. The tentative Order No. R9-2009-0021 requires that the USMC meet applicable water quality standards as well as ensuring proper and effective operation of wastewater treatment and conveyance systems. The appropriate uses of recycled water will reduce the potable water consumption and contribute to the Base's effort to achieve 100 percent water recycling. This Technical Report provides the rationale and factual information supporting the findings and directives of Order No. R9-2009-0021, "*Master Reclamation Permit for Southern Region Tertiary Treatment Plant.*"

2. BACKGROUND

The California Water Code sections 13511 and 13512 specifically describe the findings and intent of the State of California in the efficient use of water including conservation and reclamation. The State Water Resources Control Board (SWRCB) and California Regional Water Quality Control Board, San Diego Region (Regional Board) policies' encourage the development of recycled water facilities while recognizing the need to protect beneficial uses. Recycled water, resulting from adequate treatment of wastewater, is suitable for direct beneficial use. The Order establishes appropriate engineering and management controls for the discharge of tertiary treated wastewater at the Base.

In June 2004, the USMC announced its decision to consolidate sewage treatment operations of four formerly active Sewage Treatment Plants Numbers 1, 2, 3, and 13, for the purpose of producing tertiary treated wastewater. The SRTTP began operating in November 2006 and has been treating a portion of the wastewater flow for discharge to the ocean under a separate NPDES permit.

3. BASIS FOR FINDINGS AND DIRECTIVES

The basis for the findings and directives included in tentative Order No. R9-2009-0021 is provided below. The finding or directive is first stated in italics followed by an explanation of the Regional Board's basis for the finding or directive.

Findings

Findings 1, 2 and 3:

- 1. The United States Marine Corps (USMC), Camp Pendleton (Base) filed a Report of Waste Discharge (ROWD) dated February 14, 2008, including the*

Engineering Report for the Production, Distribution and Use of Recycled/Reused Water, as required by California Water Code section 13260(a) for persons discharging waste or proposing to discharge waste that could affect the quality of waters of the state. The ROWD also fulfills Water Code section 13522.5(a), which requires a report from any person recycling or proposing to recycle water, or using or proposing to use recycled water. The USMC was enrolled under Conditional Waiver No. 7- Discharges of Recycled Water to Land on October 1, 2008 limited to the period prior to issuance of this Order.

- 2. The USMC submitted the appropriate filing fee also required by section 13260(a). For the purposes of determining the appropriate filing fee, the discharge regulated by this Order is considered to have a threat to water quality rating of 3, and a complexity rating of B, as defined in California Code of Regulations (CCR), Title 23, Section 2200. The threat to water quality is based on potential for minor impairment of designated beneficial uses and complexity is based on a discharge of nontoxic waste that has physical, chemical, or biological treatment systems.*
- 3. The ROWD describes the necessary measures for the design and operation of a treatment and disposal system for municipal wastewater, which consists primarily of domestic sewage and minor quantities of industrial wastes. Municipal wastewater contains elevated concentrations of dissolved solids, suspended solids, biochemical oxygen demand, carbon, nitrogen, phosphorous, chlorides, alkalinity, and grease that must be adequately treated before discharging to the environment.*

Basis: Tertiary treated wastewater is a “waste”, under the definition provided in the California Water Code (CWC), section 13050(d):

“(d) “Waste” includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.”

CWC Section 13260 requires:

“(a) All of the following persons shall file with the appropriate regional board a report of the discharge, containing the information which may be required by the regional board:

- (1) Any person discharging waste, or proposing to discharge waste, within any region that could affect the quality of the waters of the state, other than into a community sewer system.
- (2) Any person who is a citizen, domiciliary, or political agency or entity of this state discharging waste, or proposing to discharge waste, outside the

boundaries of the state in a manner that could affect the quality of the waters of the state within any region.

(3) Any person operating, or proposing to construct, an injection well.

(b) No report of waste discharge need be filed pursuant to subdivision (a) if the requirement is waived pursuant to Section 13269.

(c) Every person subject to subdivision (a) shall file with the appropriate regional board a report of waste discharge relative to any material change or proposed change in the character, location, or volume of the discharge.

(d)(1)(A) Each person who is subject to subdivision (a) or (c) shall submit an annual fee according to a fee schedule established by the state board.”

California Code of Regulations (CCR) Title 23, Section 2200 provides the Regional Board with criteria to use in assessing the threat to water quality and complexity of proposed projects involving discharges of wastes:

“(1) Threat to water quality TTWQ and complexity CPLX of the discharge is assigned by the Regional Board in accordance with the following definitions:

Threat to Water Quality

Category "1" - Those discharges of waste that could cause the long-term loss of a designated beneficial use of the receiving water. Examples of long-term loss of a beneficial use include the loss of drinking water supply, the closure of an area used for water contact recreation, or the posting of an area used for spawning or growth of aquatic resources, including shellfish and migratory fish.

Category "2" - Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.

Category "3" - Those discharges of waste that could degrade water quality without violating water quality objectives, or could cause a minor impairment of designated beneficial uses as compared with Category 1 and Category 2.

Complexity

Category "A" - Any discharge of toxic wastes, any small volume discharge containing toxic waste or having numerous discharge points or ground water monitoring, or any Class 1 waste management unit.

Category "B" - Any discharger not included above that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal), or any Class 2 or Class 3 waste management units.

Category "C" - Any discharge for which waste discharge requirements have been prescribed pursuant to Section 13263 of the Water Code not included as a Category "A" or Category "B" as described above. Included would be discharges having no waste treatment systems or that must comply with best management practices, discharges having passive treatment and

disposal systems, or dischargers having waste storage systems with land disposal.”

The Regional Board assigned a threat to water quality for the proposed project as Category 3 because effluent could degrade water quality without violating water quality objectives. Secondary and tertiary treated effluent can be discharged through the Oceanside Ocean Outfall pursuant to the associated NPDES permit (see Finding 8). Approximately 93 percent of the discharge by volume will be to land in the Mission Hydrologic Subarea, where most water quality objectives are higher than the Ysidora Hydrologic Area. The Discharge Specifications in this tentative Order account for the more stringent water quality objectives.

Finding 4:

The Southern Region Tertiary Treatment Plant (SRTTP) is designed to receive and treat wastewater flows currently being processed at the Base's sewage treatment plants Nos. 1, 2, 3, and 13 upon completion of necessary pumps and piping. The SRTTP treatment process includes an oil/water separator, mechanical and manual bar screens, grit collectors, sequencing batch reactors, cloth disk filters, disinfectant contact basins, aerobic digestion, dewatering press, drying beds, and air biofilter. Solid waste consisting of screenings and dried sludge is hauled to a properly permitted landfill appropriate for the waste characterization of the solids. The design capacity of the SRTTP is 5 million gallons per day (mgd) and the USMC reports the initial operating flow will be 2.7 mgd, with plans to increase to the maximum permitted flow of 3.75 mgd.

Basis:

The information in the finding was provided in the “Engineering Report for the Production, Distribution and Use of Recycled/Reused Water” (Engineering Report) prepared jointly by Camp, Dresser, McKee (CDM), Naval Facilities Engineering Command (NAVFAC) Southwest Division, and Marine Corps Base, Camp Pendleton and dated February 14, 2008 in section 1.0, p. 1 and section 1.3, p. 2-5.

Finding 5:

Groundwater wells are located in the Las Pulgas Canyon and Santa Margarita River watershed. Potable water supply wells in the Santa Margarita River watershed are generally in the Chappo and Upper Ysidora Hydrologic Subareas, which are located upgradient of the proposed recycled water discharge areas described in Finding 6. With the exception of San Mateo Point housing, the USMC obtains all drinking water supplies from underground aquifers or basins. The USMC monitors for regulated and unregulated contaminants in drinking water pursuant to California Department of Public Health requirements CCR Title 22, Division 4, Chapter 15, section 64416. The total dissolved solids (TDS) concentration in groundwater supply wells is approximately 755 milligrams per liter (mg/L), which is greater than the water quality objective (see Finding 12).

The USMC has authorized funding for a military construction project that will reduce TDS in the drinking water supply. The USMC expects a correlated reduction of TDS in the SRTTP effluent. The project could occur as early as fiscal year 2009 (beginning October 1, 2008). Under these conditions, the discharge of recycled water with TDS concentrations above Basin Plan objectives will be temporary and localized, thereby having a reasonable affect on beneficial uses. Approximately 93 percent of recycled water by volume will be discharged to the Mission Hydrologic Subarea (HSA) that generally has higher water quality objectives. The discharge location in the Ysidora Hydrologic Area (HA), adjacent to Interstate 5 (water quality objectives do not apply west of Interstate 5), is not a planned or anticipated source of ground water for beneficial use due to saltwater intrusion from the Ocean, which is the ultimate down-gradient fate of the discharge¹. The design spray irrigation application rate (Finding 6) is less than the estimated evapotranspiration rate to limit the potential for recycled water to reach groundwater. Existing and planned vegetation exhibited normal growth with irrigation of 1,500 mg/L-TDS.

Footnote 1: The ground-water flow direction is based on data from nearby underground storage tank cases.

Basis:

San Mateo Point housing receives potable water from the South Coast Water District. The rest of the Base receives its water supply ground water. The background levels of TDS (755 mg/L) are approximately equal to the water quality objective for the Ysidora HA (see Findings 11 and 12). Therefore, in order to meet water quality objectives, the USMC plans to reduce the influent TDS by treating domestic supply water. See also the Basis for effluent limits in Specification B.4.

The information in the finding was provided in the Engineering Report (CDM 2008) in section 6, p. 22.

The information in the finding was provided in e-mail and telephone correspondence by Mr. Khalique Khan, Environmental Engineering Division Head, Assistant Chief of Staff, Environmental Security, Marine Corps Base Camp Pendleton, on July 15, 2008.

The requirements in this finding were established in CCR Title 22, Division 4, Chapter 3, section 64416.

Ground-water flow directions are based on underground storage tank case numbers T0607302930 (Building 21561), and T0607301679 (Building 21478). The gradient ranged from 0.004 to 0.024 toward the south-southwest. This information was provided in the Groundwater Monitoring Reports (Battelle 2007, Battelle 2008).

Finding 6:

The combined tertiary treated recycled water will be reused only for spray irrigation initially on 374 acres in the following areas on Base:

TABLE 1

Irrigation Site	Area (acre)	Latitude (approx.)	Longitude (approx.)	Delivery Rate Design (acre-feet/yr)
<i>Front Gate/ Recreation Fields</i>	34	33°13'36" N	117°23'27" W	124
<i>Marine Memorial Golf Course</i>	180	33°15'53" N	117°22'26" W	963
<i>Horse Pasture</i>	142	33°17'15" N	117°18'24" W	517
<i>Mainside Parade Grounds</i>	18	33°18'18" N	117°18'36" W	66

Basis:

The information in the finding was provided in the Engineering Report (CDM 2008) in section 10.0, p. 27.

Finding 7:

The USMC will recycle as much disinfected tertiary treated wastewater in the southern part of the Base as practically feasible. The USMC anticipates that the volume of wastewater will increase with the construction of planned housing units, which may necessitate additional areas for discharges of recycled water. Planned and potential recycled water discharge areas were analyzed in the Final Environmental Impact Statement for the Tertiary Treatment Plant and Associated Facilities, MCB Camp Pendleton (EIS) prepared for the USMC in April 2004.

Basis:

The Regional Board acknowledges that as wastewater flow increases in the future, the increased volume of recycled water may require additional reuse areas. An increased volume of irrigation could exceed the current ground-water recharge rates causing unauthorized discharge of runoff. Additional proposed reuse areas have been analyzed but not approved for discharges of recycled water by the Base or the Regional Board. Should the Base need additional reuse areas, an amended Report of Waste Discharge is required.

The information in the finding was provided in the EIS (MCBCP 2004) in section 1.2, p. 1-1; Section 2.2.3, p. 2-7 through 2-10.

Finding 8:

The SRTTP treated effluent currently is discharged to the Oceanside Ocean Outfall via the Lemon Grove Pump Station pursuant to National Pollutant Discharge Elimination System (NPDES) Permit No. CA0109347, Order No. R9-2003-0155, which the USMC renewed under Order R9-2008-0096. The

USMC currently discharges ~~secondary treated wastewater from Sewage Treatment Plant (STP) No. 1 (Headquarters Plant) and No. 2 (San Luis Rey Plant)~~ to the Marine Memorial Golf Course, Horse Pasture, and Mainside Parade Grounds under Conditional Waiver No. 7- Discharges of Recycled Water to Land. ~~pursuant to Order No. 2000-45.~~ The use of the Oceanside Ocean Outfall is the fail-safe discharge point in the event the capacity of the Lemon Grove Ponds and the permitted recycled water discharge areas are exceeded.

Basis:

The USMC has a storage capacity of 300 acre-feet (approximately 100 million gallons) in the Lemon Grove Ponds alone. The available volume is equivalent to approximately 84 days of wet-weather storage given the current peak influent of 2.7 mgd and the expected discharge rate of approximately 1.5 mgd. The maximum design influent of 3.75 mgd, and probable peak discharge of 1.72 mgd would allow approximately 50 days of storage. In anticipation of the expected influent increase, the USMC has evaluated additional discharge areas (noted in Finding 7). The USMC also retains the ability to discharge treated wastewater effluents into the Oceanside Ocean Outfall to augment to the available wet-weather storage volume.

The information in the finding was provided in the Engineering Report (CDM 2008) in section 1.0, p. 1.

Finding 9:

The USMC administers a Source Control Program (“Program”, see Part D of Order No. R9-2003-0155) to identify, characterize, and eliminate sources of pollutants entering sewage treatment plants. The Program includes industrial waste surveys, a contract for inspection and maintenance of oil and water separators, a Base order informing and instructing food and hospitality services on proper practices, and public education for Base housing residents. The Program allows the USMC to limit oil and grease concentrations in effluent² despite being unable to reliably meet the influent concentration limit of 25 mg/L for oil and grease established Order No. R9-2003-0155, therefore the Regional Board removed the influent limitation for the renewal in Order No. R9-2008-0096.

Footnote: 2. The USMC reported two detections greater than 5 mg/L of oil and grease in monthly samples collected since September 2003.

Basis:

The information in the finding was provided in the Engineering Report (CDM 2008) in section 3.2-3.3, p. 12-14; Enclosure 1.

Finding 10:

The Regional Board, under authority of Water Code section 13244, adopted the Water Quality Control Plan for the San Diego Basin (9) (Basin Plan) on September 8, 1994. The State Water Resources Control Board (SWRCB)

subsequently approved the Basin Plan on December 13, 1994. Subsequent amendments to the Basin Plan have also been adopted by the Regional Board and approved by the SWRCB. The Basin Plan contains beneficial uses and water quality objectives, and a policy for regulating the discharge of reclaimed (or recycled) water to comply with water quality objectives. The requirements of this Order are consistent with those Basin Plan requirements for discharges of reclaimed water.

Basis:

The requirements of the Basin Plan were used to develop applicable waste discharge Prohibitions, Discharge Specifications, and Provisions in this tentative Order.

Finding 11:

The Basin Plan establishes the following beneficial uses of groundwater for the affected Hydrologic Areas (HA) and Subareas (HSA) of the Santa Margarita Hydrologic Unit (HU) and the San Luis Rey HU:

TABLE 2

Hydrologic Area (Hydrologic Subarea)	Basin Number	Designated Beneficial Uses
Ysidora HA (Lower Ysidora HSA ^a)	902.10	Municipal (MUN), Agricultural (AGR), Industrial Service (IND) and industrial process (PROC)
Lower San Luis HA (Mission HSA ^b)	903.10	Municipal (MUN), Agricultural (AGR) and Industrial Service (IND)

^a = Location of the Front Gate discharge area.

^b = Location of the Golf Course, Horse Pasture, and Mainside Parade Grounds discharge areas.

Basis:

The information in the finding is from the Basin Plan (Chapter 2: Beneficial Uses) and provided in the Engineering Report (CDM 2008) in Figure 1-1.

Finding 12:

The Basin Plan establishes the following water quality objectives for the Ysidora Hydrologic Area of the Santa Margarita River watershed and Mission Hydrologic Subarea of the San Luis Rey River watershed:

TABLE 3

Constituent	Concentration not to be exceeded more than 10% of the time in one year		
	Units	Mission HSA (903.11)^a	Ysidora HA (902.10)^a
Total Dissolved Solids	mg/L	1500 ^{cd}	750 ^c
Chlorine	mg/L	500 ^{cd}	300 ^c
Sulfate	mg/L	500 ^{cd}	300 ^c
Percent Sodium	%	60	60

Nitrate	mg/L	45 ^{cd}	10 ^c
Iron	mg/L	0.85 ^{cd}	0.3 ^c
Manganese	mg/L	0.15 ^{cd}	0.05 ^c
Methylene Blue Active Substances	mg/L	0.5 ^{cd}	0.5
Boron	mg/L	0.75 ^{cd}	0.75 ^c
Odor	None		
Turbidity	NTU	5	5
Color	Units	15 ^{cd}	15
Fluoride	mg/L	1.0 ^{cd}	1.0

From the Basin Plan notes:

- ^a The water quality objectives do not apply westerly of the easterly boundary of Interstate Highway 5. The objectives for the remainder of the Hydrologic Area (Subarea) are shown.
- ^c The recommended plan would allow for measurable degradation of groundwater in this basin to permit continued agricultural land use. Point sources, however, would be controlled to achieve effluent quality corresponding to the tabulated number.
- ^d A portion of the Upper Mission Basin is being considered as an underground potable water storage reservoir for treated imported water. The area is located north of Highway 76 and the boundary of hydrologic subareas 3.11 and 3.12. If this program is adopted, local objectives approaching the quality of the imported water would be set and rigorously pursued.

Basis:

The information in the finding on water quality objectives for ground water was obtained from the Basin Plan (Table 3-3).

Finding 13:

A discharge in compliance with this Order is consistent with standards, policies, and regulations established in CCR, Title 22, Division 4, Chapter 3, Reclamation Criteria, and Water Code Division 7, Chapter 7, Water Recycling Law. The discharge of reclaimed water under this Order conforms to State Water Resources Control Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining the High Quality of Waters in California. The USMC submitted rules and regulations for recycled water use in the ROWD (see Engineering Report for the Production, Distribution and Use of Recycled/Reused Water) that are consistent with the State regulations.

Basis: The requirements in the finding are established in CCR Title 22, Division 4, Chapter 3, Section 60313 and the Water Code Division 7, Chapter 7, Article 7 and Resolution No. 68-16. The following narrative explains the basis for Finding 13:

1. The SRTTP reliability features comply with requirements found in CCR Title 22, Division 4, Chapter 3, sections 60333 to 60355 for general

design, alarm systems for loss of power, and failure of treatment and disinfection processes. Mechanical, electrical and control components are operated by automated equipment, and overseen by daytime operator staff and 24-hour emergency staff.

The information in this finding, concerning reliability features for wastewater treatment and distribution systems, was provided in the Engineering Report (CDM 2008) in section 1.3, p. 2-5; Section 4, p. 15-17; Section 5, p. 18-21; Section 6, p. 22; Section 8, p. 25.

2. The SRTTP, storage, and conveyance systems and all discharge points are located within the boundaries of the Base where public access is limited. The USMC is the sole user of recycled water produced by the SRTTP. The Base is a secure military facility that effectively restricts public access, thereby providing increased levels of control for the discharges/uses of recycled water. Only military personnel and families live on Base, providing a limited audience within which to focus public education about management and uses of recycled water.

In addition, the golf course and recreational fields do not contain eating areas or drinking water fountains that would be exposed to fugitive spray or mist from the irrigation systems. This reduces the routes of exposure and human health risk for ingestion of recycled water. All areas that are accessible to the public, where recycled water is discharged, will be posted with signs that are visible to the public. The signage will be printed in a size no less than 4 inches high by 8 inches wide, that includes the following wording: "RECYCLED WATER - DO NOT DRINK". Each sign shall display an international symbol similar to that shown in figure 60310-A of CCR Title 22, Division 4, Chapter 3. These requirements are established in CCR Title 22, Division 4, Chapter 3, section 60310.

The information in the finding was provided in the Engineering Report (CDM 2008) in section 11.3, p. 29-30.

3. Irrigation systems using recycled water exist at the golf course and Mainside Parade Grounds. The USMC will install additional piping to convey recycled water for use of recycled water for irrigation at the Front Gate and Horse Pasture. Tertiary treated water from the SRTTP will be pumped through Gooseneck Lake and Horse Lake before being discharged for irrigation uses at the golf course and Horse Pasture, and through Reservoir 16151 before being discharged for irrigation uses at the Mainside Parade Grounds. Tertiary treated water from the SRTTP will be stored in the Lemon Grove Ponds before being discharged for irrigation uses at the Front Gate.

The discharges of recycled water (tertiary treated wastewater from the SRTTP) will be used only for irrigation. Dual-plumbed installations are not necessary for the proposed project. The conveyance system is designed to prevent recycled water backflows from impacting potable water supplies.

The information in the finding was provided in the Engineering Report (CDM 2008) in section 11.0, p. 28; Section 12, p. 31.

Finding 14:

The Regional Board, in establishing the requirements contained herein, 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 which affect water quality in the area;*
- g. *Economic considerations;*
- h. *The need for additional housing within the region; and*
- i. *Need to develop and use recycled water.*

Basis:

The Regional Board considered the factors in establishing water quality objectives in the Basin Plan, pursuant to Water Code section 13241 (relating to Finding 14d-i); and section 13263 for waste discharge requirements (relating to Finding 14a-c). Additional information for consideration of these issues was presented in the ROWD and Engineering Report (CDM 2008).

Finding 15:

As specified by Water Code section 13523.1, this Order includes the following:

- a. *Waste discharge requirements adopted pursuant to Water Code, Article 4, section 13260;*
- b. *Requirement that the discharger comply with the uniform statewide criteria established by the State Department of Health Services pursuant to Water Code section 13521 and other applicable permit conditions for the use of recycled water;*
- c. *Requirement that the discharger establish and enforce rules and regulations for recycled water users in accordance with statewide reclamation criteria;*

- d. *Requirement that the discharger submit quarterly recycled water use summary reports;*
- e. *Requirement that the discharger conduct periodic inspections of the recycled water use sites; and*
- f. *Other requirements determined to be appropriate by this Regional Board.*

Basis:

The information in the finding is established in the Water Code Division 7, Chapter 7, sections 13523.2, and 13260, and the CCR Title 22, Division 4, Chapter 3, and the Basin Plan (Chapter 4: pp. 4-18 and 4-19). The requirements of the cited statutes were used to develop applicable waste discharge Prohibitions, Discharge Specifications, and Provisions in this tentative Order.

Findings 16, 17, and 18:

16. *The Regional Board has notified the USMC at Camp Pendleton and all known interested parties of the intent to prescribe a master reclamation permit for the proposed discharge whereby the USMC is the recycled water agency.*

17. *The USMC, as a federal facility subject to the National Environmental Policy Act (NEPA) prepared the EIS (see Finding 7). The EIS satisfies the California Environmental Quality Act (CEQA) requirements and thereby serves as the Environmental Impact Report (EIR) in accordance with CCR, Title 14, Article 14, section 15221. The USMC circulated the EIS for public review as broadly as CEQA requires pursuant to CCR, Title 14, section 15087(a). The Regional Board circulated a notice stating that the EIS meets the requirements of CEQA and stating that the Regional Board intends to rely on the EIS in place of an Environmental Impact Report pursuant to CCR, Title 14, section 15087. Public notice was published in the San Diego Union-Tribune on July 26, 2008, posted on the Regional Board web site on August 11, 2008, and attached to letters or emails sent to selected federal, state and local agencies on August 13, 2008.*

18. *The Regional Board received and considered written comments from the USMC dated August 27, 2008, November 4 and 6, 2008, and the California Department of Public Health (CDPH) on September 15 and 17, 2008. The USMC submitted a Tracer Test Report dated September 3, 2008 and a revised Engineering Report for the Production, Distribution and Use of Recycled/Reused Water dated October 23, 2008 to address changes required by the CDPH. The Regional Board in a public meeting on November 12, 2008 March 11, 2009 heard and considered all comments pertaining to its proposed discharge.*

Basis:

According to CCR, Title 14, Article 14, section 15221:"(a) When a project will require compliance with both CEQA and NEPA, state or local agencies

should use the EIS or Finding of No Significant Impact rather than preparing an EIR or Negative Declaration if the following two conditions occur:
(1) An EIS or Finding of No Significant Impact will be prepared before an EIR or Negative Declaration would otherwise be completed for the project; and
(2) The EIS or Finding of No Significant Impact complies with the provisions of these Guidelines.
(b) Because NEPA does not require separate discussion of mitigation measures or growth inducing impacts, these points of analysis will need to be added, supplemented, or identified before the EIS can be used as an EIR.”

The Final EIS (MCBCP 2004) includes consideration of mitigation measures discussed in the Executive Summary in Table ES-2. The consideration of growth inducing impacts is discussed in the Final EIS section 6.5.

The Regional Board received comments from the following persons: [list persons]

IT IS HEREBY ORDERED THAT, United States Marine Corps, Camp Pendleton (hereinafter the discharger), for the Southern Region Tertiary Treatment Plant, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following for the treatment, storage and discharge of recycled wastewater at the “Irrigation Areas” identified in Finding 6 of this Order:

A. Prohibitions

Prohibition 1:

Discharges of recycled water, including incidental runoff and spray, to lands which have not been specifically described in the ROWD, and for which valid waste discharge requirements are not in force, are prohibited.

Basis:

The prohibition was established in the CCR Title 22, Division 4, Chapter 3, section 60310(e), Basin Plan waste discharge prohibitions (Chapter 4: p. 4-19), and by statutory requirements found in the Water Code, sections 13260 to 13264.

The ROWD describes engineering controls and best management practices for the given irrigation areas. These measures may not be protective of water quality if the discharge points are modified.

Prohibition 2:

Neither the treatment, nor storage, nor disposal of waste shall create a condition of pollution, contamination or nuisance, as defined by Water Code Section 13050.

Basis:

The prohibition was established in waste discharge prohibitions in the Basin Plan (Chapter 4: p. 4-20) using the definitions of pollution and nuisance found in the Water Code, section 13050.

Prohibition 3:

Discharges of treated or untreated solid or liquid waste into a navigable water or tributary of a navigable water are prohibited, unless as authorized by an NPDES permit issued by this Regional Board.

Basis:

The prohibition (including recycled water discharges) was established in waste discharge prohibitions in the Basin Plan (Chapter 4: p. 4-20).

Prohibition 4:

Impoundment of disinfected tertiary recycled water within 100 feet of any domestic water supply well is prohibited.

Basis:

The prohibition was established in the CCR Title 22, Division 4, Chapter 3, Section 60310(b).

Prohibition 5:

Irrigation with disinfected tertiary recycled water within 50 feet of any domestic supply well is prohibited.

Basis:

The prohibition was established in the CCR Title 22, Division 4, Chapter 3, Section 60310(a, c).

B. DISCHARGE SPECIFICATIONS

Specification 1:

The 30-day average daily dry weather flow to the SRTTP shall not exceed the 5.0 mgd design capacity of the facility.

Basis:

The Discharge Specification was established with consideration of a finding concerning dry weather flow, as provided in the EIS (MCBCP 2004) in section 2.2.1, p. 2-1 through 2-2.

Specification 2:

Recycled water effluent shall be treated to the level of disinfected tertiary

recycled water in compliance with CCR, Title 22, Division 4, Chapter 3, section 60301.230. Disinfection will provide a CT (the product of total chlorine residual and modal contact time measured at the same point) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow. Peak dry weather flow shall not exceed a total flow of 4.0 mgd through both chlorine contact basins. The flow through a single chlorine contact basin shall not exceed 2.0 mgd. The water level at the exit of the chlorine contact basins during peak dry weather flow shall be a minimum of 10 feet. The minimum chlorine residual shall be 3.0 mg/l at all times.

The median concentration of total coliform bacteria measured in the disinfected effluent will not exceed a most probable number (MPN) of 2.2 total coliform bacteria 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 does not exceed an MPN of 23 total coliform bacteria per 100 milliliters in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.

Basis:

The specification was established in the CCR Title 22, Division 4, Chapter 3, Section 60301.230. In letters dated September 15 and 17, 2008 the California Department of Public Health (CDPH 2008a, 2008b) provided additional requirements based on the testing methods used to determine the modal contact time. The method for sampling must remain consistent to provide reliable data.

Specification 3:

Turbidity of the disinfected tertiary recycled water shall not exceed a daily average value of 2 NTU (nephelometric turbidity units) based on the average of turbidity measurement at 4-hour intervals over a 24-hour period. Turbidity shall not exceed 5 NTU for more than 15 minutes and shall not exceed 10 NTU at any time.

Basis:

The specification was established in the CCR Title 22, Division 4, Chapter 3, Section 60301.320.

Specification 4:

The recycled water discharged from SRTTP to the Irrigation Areas shall not contain constituents in excess of the following discharge specifications:

TABLE 4

Constituent	Units	30-Day Average^{1a}	Daily Maximum^{2b}
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Biochemical Oxygen Demand (BOD at 20° C)	mg/l	30	45
Total Suspended Solids	mg/l	30	45
pH	pH Units	Within the limits of 6.5 to 8.5 at all times	
Chloride	mg/l	NA	325
Sulfate	mg/l	NA	325
Percent Sodium	%	NA	60
Total Nitrogen (as N)	mg/L	NA	3.3
Iron	mg/l	NA	0.3
Manganese	mg/l	NA	0.05
Methylene Blue Active Substances	mg/L	NA	0.5
Boron	mg/l	NA	0.6
Color	Units	NA	15
Fluoride	mg/l	NA	0.7

Table 4 notes:

^{1-a} The 30-day average discharge specification shall apply to the arithmetic mean of the results all samples collected during any 30 consecutive calendar day period.

^{2-b} The daily maximum discharge specification shall apply to the results of a single composite or grab sample.

Basis: The effluent limits in this Discharge Specification were developed based upon the following considerations:

1. BOD, total suspended solids and pH water quality objectives are based upon the minimum standards for secondary treatment as promulgated by the USEPA. The daily maximum is used in lieu of the 7-day average to reduce the redundancy of samples. See Code of Federal Regulations Title 40, Volume 19, Chapter 1, section 133.102.
2. The discharge specifications may be modified based on future data from the SRTTP, under authority of Water Code section 13263(e), and incorporated into Standard Provision E.13. of this Order. As detailed in Finding 5, the USMC has planned projects that are expected to improve the influent TDS concentrations.
3. The Basin Plan specifies that water quality objectives listed in Table 3 (Finding 12) are concentrations not to be exceeded more than 10 percent of the time in one year. This corresponds to 36 days, which is approximated by a calendar month. The concentration represents the 90

percent confidence limit, or the value at which 90 percent of the samples must be beneath. Daily samples would be required for calculations of a 30-day average concentration. Therefore, to reduce the amount of redundant sampling, the daily maximum is taken to be the 99 percent confidence limit of the sample data.

4. The latest available nine months of data from STP 1 and 2 were used to approximate the average and standard deviation of effluent concentration for chloride, sulfate, fluoride, iron, manganese, and boron. Flow to these STPs is approximately 25 percent (by volume) of the wastewater to be diverted to the SRTTP while the remaining flow is derived from similar uses and processes, thereby providing a reasonable characterization of the wastewater. The SRTTP treatment processes include a greater level of treatment for wastewater, so effluent water quality will generally meet or be better than treated wastewater effluents from the STPs.
5. The average chloride and sulfate concentrations were above the 90 percent limit, so the 99 percent limit would not be protective of water quality. The expected average for these constituents was back-calculated by setting the Table 3 values as the 90 percent limit and using a proportional standard deviation. The expected average was then used to calculate the discharge specifications.
6. Fluoride, iron, manganese and boron's 99 percent confidence limits were lower than the water quality objective, so the 99 percent confidence limit was used. Percent sodium, methylene blue active substances and color did not have available data so the water quality objective was used.

Example calculations, chloride:

μ =Data Average=314.9; σ =Standard Deviation=26.1; 90th percentile probability score= z_{90} =1.65; 99th percentile probability score= z_{99} =2.58

WQO=Water Quality Objective = 300;

PSD = Proportional Standard Deviation = $WQO * \sigma / \mu = 24.9$;

EA = Expected Average = $WQO - z_{90} * PSD = 258.9$

Daily Maximum = $EA + z_{99} * PSD = 323.2 \sim 325$

Similar calculations were used for sulfate, while one data point greater than three standard deviations was omitted from the set for each constituent.

Specification 5:

The recycled water discharged from SRTTP to the Irrigation Areas shall not contain TDS in excess of 1,200 mg/L as a 12-month average² or 1,300 mg/L as a daily maximum through November 12, 2013. From ~~November 13, 2013~~ March 12, 2014 on, recycled water discharged from SRTTP to the Front Gate/Recreation Fields shall not contain TDS in excess of 800 mg/L as a daily maximum.

Footnote: 2. The 12-month average discharge specification shall apply to the arithmetic mean of the results of all samples collected during the current calendar month and the preceding 11 calendar months.

Basis:

1. The discharge specifications may be modified based on future data from the SRTTP, under authority of Water Code section 13263(e), and incorporated into Standard Provision E.13. of this Order. As detailed in Finding 5, the USMC has planned projects that are expected to improve the influent TDS concentrations.
2. The latest available nine months of data from STP 1 and 2 were used to approximate the average and standard deviation of effluent concentration for TDS. The last twelve months of TDS data from the SRTTP (flow diverted from former STP 13) were also weighted into the TDS data. The SRTTP treatment processes include a greater level of treatment for wastewater, so effluent water quality will generally meet or be better than treated wastewater effluents from the STPs.
3. The Basin Plan specifies that water quality objectives listed in Table 3 (Finding 12) are concentrations not to be exceeded more than 10 percent of the time in one year. This corresponds to 36 days, which is approximated by a calendar month. The concentration represents the 90 percent confidence limit, or the value at which 90 percent of the samples must be beneath. Daily samples would be required for calculations of a 30-day average concentration. Therefore, to reduce the amount of redundant sampling, the daily maximum is taken to be the 99 percent confidence limit of the sample data.
4. Since the discharges to each hydrologic (sub)area will come from only one treatment system (source), discharge specifications are based on the more conservative values. Under the conditions of Finding 5, the discharge of recycled water with TDS concentrations above Basin Plan objectives will be temporary and localized, thereby having a reasonable affect on beneficial uses.
5. Operating data indicates that SRTTP treatment will easily comply with the water quality objective in the Lower San Luis HA. Therefore, the discharge specification is based on the established treatment capabilities.

The average TDS concentration in potable water, derived from the southern portion of the Base water supply system, was approximately 756 mg/L. During an overlapping time period the average of the TDS concentration in effluent from the SRTTP was 993 mg/L, with a 99 percent confidence limit of 1,123 mg/L that is 367 mg/L greater than ground-water supply for domestic use. Given the site specific conditions described in Finding 5 and the conservative assumptions made in considerations 1 through 4 above, an incremental increase of 450 mg/L over the water quality objective (WQO) for TDS is reasonable for the long term average to ensure precise treatment processes. The 1,300 mg/L daily maximum is reasonable to ensure accurate treatment processes. As of March 12, 2014 the discharge specification for the Front Gate/Recreation Fields will default to 800 mg/L, which is the 99% confidence limit of the WQO. This default limitation ensures the long-term protection of beneficial uses in the Ysidora HA by enforcing the temporary condition of the discharge of recycled water with TDS at concentrations above WQO. The discharges to the remaining Irrigation Areas are unaffected because the 1,200 mg/L discharge specification is already protective of long-term beneficial uses.

Specification 6:

The recycled water discharged from SRTTP to the Irrigation Areas shall not contain total nitrogen (as N) in excess of 5.0 mg/L as a daily maximum. From March 12, 2014 on, recycled water discharged from SRTTP to the Front Gate/Recreation Fields shall not contain total nitrogen (as N) in excess of 4.1 mg/L.

Basis:

1. The discharge specifications may be modified based on future data from the SRTTP, under authority of Water Code section 13263(e), and incorporated into Standard Provision E.13. of this Order. As detailed in Requirement C.4, the USMC must plan projects that are expected to improve the influent nitrogen concentrations. The USMC will have 5 years to enact the plans.
2. The latest available seventeen months of data from the SRTTP (flow diverted from former STP 13) were used to approximate the average and standard deviation of effluent concentration for total nitrogen. The waste streams are not expected to vary between STPs so the SRTTP data are a reasonable expectation for the combined flow when all flow is treated by the SRTTP.
3. The Basin Plan specifies that water quality objectives listed in Table 3 (Finding 12) are concentrations not to be exceeded more than 10 percent of the time in one year. This corresponds to 36 days, which is approximated by a calendar month. The concentration represents the 90 percent confidence limit, or the value at which 90 percent of the samples

must be beneath. Daily samples would be required for calculations of a 30-day average concentration. Therefore, to reduce the amount of redundant sampling, the daily maximum is taken to be the 99 percent confidence limit of the sample data.

4. The effluent numerical objective for total nitrogen is based on the groundwater quality objective for nitrate (10 mg/L as NO_3^- or 2.3 mg/L as N) with considerations for the transformation of nitrogen species. Nitrogen in treated effluent may be in nitrate form or in other forms that eventually convert to nitrate. Once in nitrate form, some nitrogen is lost through denitrification in the unsaturated soil zone (vadose zone), but the majority remains as nitrate which may eventually reach groundwater. A typical denitrification rate of 30% has been applied in deriving the total nitrogen effluent discharge specification which is equivalent to stating that 70% of nitrates are expected to reach groundwater. Consequently, as an example, the effluent numerical objective for total nitrogen is 2.3 mg/L divided by the factor 0.7 which equals 3.3 mg/L. The effluent numerical objective was used to determine the daily maximum with the 99 percent confidence interval based on the standard deviation of existing operating data. The amount of nitrate that reaches groundwater may be further reduced by vegetation uptake of nitrogen if followed by removal or harvesting of the vegetation; however, the total nitrogen discharge specification was derived with the assumption that vegetation is not removed from recycled water use sites.
5. Since the discharges to each hydrologic (sub)area will come from only one treatment system (source), discharge specifications are based on the more conservative values. The initial phase total nitrogen (as N) discharge specification of 5.0 mg/L was provide as requested by the USMC. As of March 12, 2014, the discharge specification for the Front Gate/Recreation Fields will default to 4.1 mg/L, which is the 99% confidence limit of the WQO. The phasing period allows the USMC to develop and implement the nutrient management plan required in requirement C.4, while the default limitation protects long-term beneficial uses. Under the conditions of Finding 6, the discharge of recycled water with nitrogen/nitrate concentrations above Basin Plan objectives will be temporary and localized, thereby having a reasonable affect on beneficial uses.

Specification 6Z:

The Delivery Rate Design (ac-feet/yr) stated in Finding 6 shall be maintained near the evapotranspiration rate determined for recycled water discharges to the irrigation areas.

Basis:

The irrigation delivery rate is limited to prevent the TDS from reaching

groundwater and affecting beneficial uses. The delivery rate must be modified as actual recycled water discharges evapotranspiration data is determined in the field. TDS will remain in the soil and accumulate although the rate of accumulation will decrease after the default discharge specification in Specification 5 takes effect. As stated in Finding 5, the irrigated vegetation is salt tolerant at 1,500 mg/l. The long-term effect of salt accumulation will be managed by the discharger in the future through alternative land use or other appropriate method.

Specification 78:

Collected screenings, sludge, other solids removed from liquid wastes, and filter backwash shall be disposed in a manner described in the Findings of this Order. Sewage sludge treatment and disposal shall comply with all pertinent paragraphs of Part 503, Subchapter O, Chapter I of Title 40 Code of Federal Regulations under the U.S. Environmental Protection Agency's (USEPA's) jurisdiction.

Basis:

The Base will use dumpsters to collect screenings for landfill disposal. Sludge will be processed through dewatering belt presses and drying beds before landfill disposal. The receiving facility must be in compliance with Clean Water Act 405(d) requirements. Since the State of California, hence the SWRCB and Regional Board, 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 the SRTTP, it is subject to all applicable local, state and federal laws and regulations.

The information in the finding was provided in the Engineering Report (CDM 2008) in section 1.3, p. 4. Also see the requirements established in the Code of Federal Regulations Title 40, Volume 19, Chapter 1, Part 133.

C. RECYCLED WATER PURVEYANCE REQUIREMENTS

Requirement 1:

The discharger must do the following for all reuse sites:

- a. Enforce rules and regulations for recycled water use established in the ROWD (see Engineering Report for the Production, Distribution and Use of Recycled/Reused Water);*
- b. Within 30 days of adoption of this Order, develop and submit a program to conduct compliance inspections of recycled water reuse sites to the Regional Board, CDPH and San Diego County Department of Environmental Health;*
- c. Inspect recycled water reuse sites in accordance with the program submitted for Section C.1.b. of this Order;*
- d. Provide quarterly summary reports of recycled water use to the Regional Board;*

- e. *Maintain a current list of all on-site recycled water supervisors.*
- f. *All pipes that are designed to carry recycled water shall be colored purple or distinctively wrapped with purple tape. Underground piping may also be stenciled in purple with the words "RECYCLED WATER – DO NOT DRINK". The Lemon Grove Ponds, Reservoir 16151, Horse Lake, and Gooseneck Lake shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording: "RECYCLED WATER – DO NOT DRINK – NO BODY CONTACT – NO WADING OR SWIMMING".*

Basis:

The Base is the "recycled water agency" as defined by CCR Title 22, section 60301.700 which owns and operates the recycled water system, and that delivers or proposes to deliver recycled water. As a recycled water agency, the Base is able to enforce this specification required for a master reclamation permit. The base provided the rules and regulations in the Engineering Report.

Requirements 2 and 3:

2. The discharger, within 30 days of adoption of this Order and prior to providing recycled water to a new use site, shall certify that the project conforms with what is described by the rules and regulations established in requirement C.1.a of this order. A certification report shall document that all criteria described in rules and regulations has been submitted to and approved by the State Department of Public Health and County Department of Environmental Health.

3. The discharger, within 30 days of adoption of this Order, shall certify that the SRTTP can comply with Discharge Specifications in section B. The certification report shall document compliance with each specification individually.

Basis:

The discharger must certify that the requirements of the master reclamation permit can be met by the existing facility and recycled water reuse site. The certification serves as the USMC acknowledgement of this master reclamation permit.

Requirement 4:

The discharger, by March 11, 2013, shall submit a plan to achieve compliance with the phased total nitrogen discharge specification B.6. The discharger shall certify that the SRTTP will be in compliance with phased discharge specifications as of March 12, 2014. The nutrient management plan may include but is not limited to: enhanced treatment, source identification and removal, loading estimates, nutrient fate and transport, groundwater monitoring, and best management practices.

Basis:

The discharger must certify that the requirements of the master reclamation permit can be met by the existing facility and/or implementation of the nutrient management plan. The plan must be submitted 1 year before the phased total nitrogen specification to allow time for Regional Board review.

See also: Basis for Specification 6.

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