

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

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ORDER NO. R5-2011-0055-01
NPDES NO. CA0084255

**WASTE DISCHARGE REQUIREMENTS FOR THE
LINCOLN CENTER ENVIRONMENTAL REMEDIATION TRUST
GROUNDWATER TREATMENT SYSTEM
SAN JOAQUIN COUNTY**

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	Lincoln Center Environmental Remediation Trust
Name of Facility	Groundwater Treatment System
Facility Address	6471 Pacific Avenue, Stockton, CA 95207
	San Joaquin 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 Lincoln Center Environmental Remediation Trust from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Treated Groundwater	38° 0' 0.89" N	121° 19' 54.10" W	Fourteen Mile Slough

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	4 August 2011
This Order shall become effective on:	23 September 2011
This Order shall expire on:	1 August 2016
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:	3 February 2016

I, **Pamela C. Creedon**, 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, Central Valley Region, on **4 August 2011**, and amended by Order R5-2014-0122 on **9 October 2014**, and Order R5-2015-0076 on **5 June 2015**

ORIGINAL SIGNED BY
PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	Lincoln Center Environmental Remediation Trust
Name of Facility	Groundwater Treatment System
Facility Address	6471 Pacific Avenue
	Stockton, CA 95207
	San Joaquin County
Facility Contact, Title, and Phone	Joe Niland, Trustee, (916) 637-8325
Mailing Address	3043 Gold Canal Dr., Suite 201, Rancho Cordova, CA 95670
Type of Facility	Groundwater Treatment System
Facility Design Flow	0.43 million gallons per day (MGD)

II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Regional Water Board), finds:

A. Background. The Lincoln Center Environmental Remediation Trust (hereinafter Discharger) is currently discharging pursuant to Order No. R5-2005-0144-01 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0084255. The Discharger submitted a Report of Waste Discharge, dated 2 April 2010, and applied for an NPDES permit renewal to discharge up to 0.43 MGD of treated wastewater from the Groundwater Treatment System, hereinafter Facility. The application was deemed complete on 2 November 2010. On 9 December 2014, the Discharger requested an amendment of this Order to: 1) modify the treatment system, 2) reduce the permitted discharge flow rate to 0.25 MGD, and 3) increase the electrical conductivity effluent limitations.

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 extraction and treatment system. The treatment system consists of an influent equalization tank and three liquid phase granulated activated carbon (LGAC) adsorption canisters. Wastewater is discharged from Discharge Point No. 001 (see table on cover page) to Fourteen Mile Slough, a water of the United States, via a San Joaquin County storm drain within the Sacramento-San Joaquin Delta. 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 Clean Water Act (CWA) and implementing regulations adopted by USEPA and chapter 5.5, division 7 of the California Water Code (CWC; 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 CWC (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 E and G through J are also incorporated into this Order.

E. California Environmental Quality Act (CEQA). Under CWC section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

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 (40 CFR 122.44), 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 40 CFR 125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.

G. Water Quality-based Effluent Limitations (WQBELs). Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

40 CFR 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 40 CFR 122.44(d)(1)(vi).

H. Water Quality Control Plans. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised September 2009)*, for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) 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. Beneficial uses applicable to the Sacramento-San Joaquin Delta, which includes Fourteen Mile Slough, are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Fourteen Mile Slough within the Sacramento-San Joaquin Delta	<u>Existing:</u> Municipal and domestic supply (MUN); agricultural supply, including irrigation and stock watering (AGR); industrial process supply (PROC); industrial service supply (IND); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm (SPWN); wildlife habitat (WILD); and navigation (NAV).

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as “...those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)” The Basin Plan also states, “Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.” The eastern portion of the Sacramento-San Joaquin Delta is listed on the 2010 303(d) list as impaired for chlorpyrifos, DDT, diazinon, Group A pesticides, invasive species, mercury, and unknown toxicity. The Deep Water Ship Channel is listed on the 2010 303(d) list as impaired for chlorpyrifos, DDT, diazinon, dioxin, furan compounds, Group A pesticides, invasive species, mercury, organic enrichment/low dissolved oxygen, polychlorinated biphenyls (PCBs), pathogens, and unknown toxicity.

The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) was adopted in May 1995 by the State Water Board superseding the 1991 Bay-Delta Plan. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection.

The Bay-Delta Plan attempts to create a management plan that is acceptable to the stakeholders while at the same time is protective of beneficial uses of the Sacramento – San Joaquin Delta. The State Water Board adopted Decision 1641 (D-1641) on 29 December 1999. D-1641 implements flow objectives for the Bay-Delta Estuary, approves a petition to change points of diversion of the Central Valley Project and the State Water Project in the Southern Delta, and approves a petition to change places of use and purposes of use of the Central Valley Project. The water quality objectives of the Bay-Delta Plan are implemented as part of this Order.

Requirements of this Order specifically implement the applicable Water Quality Control Plans.

- I. National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About 40 criteria in the NTR applied in California. On 18 May 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 13 February 2001. These rules contain water quality criteria for priority pollutants.
- J. State Implementation Policy.** On 2 March 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 28 April 2000 with respect to the priority pollutant criteria promulgated for California by 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 18 May 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 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 – Not Applicable**
- L. Alaska Rule.** On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. (40 CFR 131.21 and 65 FR 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 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 30 May 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 effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on benzene, ethylbenzene, methyl tertiary butyl ether, tetrachloroethylene, toluene, total petroleum hydrocarbons (as gasoline), trichloroethylene, cis-1,2-dichloroethylene, and xylenes. The WQBELs consist of restrictions on ammonia, arsenic, barium, chromium VI, 1,2-dichloroethane, electrical conductivity, lead, mercury and pH. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

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 water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures

for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 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 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless “*applicable water quality standards for purposes of the [Clean Water] Act*” pursuant to 40 CFR 131.21(c)(1). Collectively, this Order’s restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

- N. 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 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 40 CFR 131.12 and Resolution No. 68-16.
- O. Anti-Backsliding Requirements.** Sections 303(d)(4) and 402(o)(2) of the CWA and federal regulations at 40 CFR 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. Some effluent limitations in this Order are less stringent than those in Order No. R5-2005-0144-01. 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.** 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. CWC sections 13267 and 13383 authorize 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. The 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 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 discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 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 Fact Sheet.

- S. Provisions and Requirements Implementing State Law.** The provisions/requirements in section VI.A.2.o 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 WDRs 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.

THEREFORE, IT IS HEREBY ORDERED, that Order No. R5-2005-0144-01 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 CWC (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

- A.** Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.
- B.** The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).
- C.** Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the CWC.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001

- a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program:

Table 6. Final Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants					
pH	standard units	--	--	6.5	8.5
Priority Pollutants					
Arsenic, Total Recoverable	µg/L	--	23	--	--
Chromium VI, Total Recoverable	µg/L	7.8	16	--	--
1,2-Dichloroethane	µg/L	0.38	--	--	--
Lead, Total Recoverable	µg/L	11	22	--	--
Mercury, Total Recoverable	µg/L	0.050	0.10	--	--
	lbs/day ¹	0.00018	0.00036	--	--
Non-Conventional Pollutants					
Ammonia Nitrogen, Total (as N)	mg/L	0.72	2.1	--	--
	lbs/day ¹	2.6	7.5	--	--
Barium, Total Recoverable	µg/L	--	415	--	--
Electrical Conductivity @ 25°C	µmhos/cm	1,500	--	--	--
Total Petroleum Hydrocarbons (Gasoline Range)	µg/L	--	50	--	--
Volatile Organic Compounds ²	µg/L	--	0.5	--	--

¹ Mass-based effluent limitations are based on a permitted average daily discharge flow of 0.43 MGD.

² Includes all VOCs identified as constituents of concern in influent groundwater, including: benzene, 1,2-dichloroethane, 1,1-dichloroethylene, ethylbenzene, methyl tertiary butyl ether, tetrachloroethylene, toluene, trichloroethylene, cis-1,2-dichloroethylene, and xylenes. Note, average monthly effluent limitations also apply to 1,2-Dichloroethane.

- b. Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

- i. 70%, minimum for any one bioassay; and
- ii. 90%, median for any three consecutive bioassays.

- c. Chronic Whole Effluent Toxicity.** There shall be no chronic toxicity in the effluent discharge.

- d. **Mercury, Total Recoverable.** The total annual mass discharge of total mercury shall not exceed 0.0014 lbs.
- e. **Average Daily Discharge Flow.** The average daily discharge flow shall not exceed 0.25 MGD.

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications – Not Applicable

C. Reclamation Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

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 Fourteen Mile Slough:

1. **Bacteria.** The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 mL, nor more than 10 percent of the total number of fecal coliform samples taken during any 30-day period to exceed 400 MPN/100 mL.
2. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
5. **Dissolved Oxygen.** The dissolved oxygen concentration to be reduced below 5.0 mg/L at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.

9. Pesticides:

- a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
- b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
- c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;
- d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);
- e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;
- f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, division 4, chapter 15; nor
- g. Thiobencarb to be present in excess of 1.0 µg/L.

10. Radioactivity:

- a. Radionuclides to be present in concentrations that are harmful 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.
- b. Radionuclides to be present in excess of the maximum contaminant levels specified in Table 4 (MCL Radioactivity) of section 64443 of Title 22 of the California Code of Regulations.

11. Suspended Sediments. The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

12. Settleable Substances. Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

13. Suspended Material. Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

14. Taste and Odors. Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

15. Temperature. The natural temperature to be increased by more than 5°F.

16. Toxicity. Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

17. Turbidity. The turbidity to exceed the following limitations:

- a. Where natural turbidity is less than 1 Nephelometric Turbidity Units (NTU), controllable factors shall not cause the downstream receiving water to exceed 2 NTU;
- b. Where natural turbidity is between 1 and 5 NTUs, increases shall not exceed 1 NTU;
- c. Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed more than 20 percent;
- d. Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTU; nor
- e. Where natural turbidity is greater than 100 NTUs, increases shall not exceed more than 10 percent.

B. Groundwater Limitations – Not Applicable

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions (federal NPDES standard conditions from 40 CFR Part 122) included in Attachment D of this Order.
2. The Discharger shall comply with the following provisions:
 - a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.
 - b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
 - i. violation of any term or condition contained in this Order;
 - ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

iv. a material change in the character, location, or volume of discharge.

The causes for modification include:

- *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.
- *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.
- *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

The Regional Water Board may review and revise this Order at any time upon application of any affected person or the Regional Water Board's own motion.

- c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Regional Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

- d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
- i. contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or
 - ii. controls any pollutant limited in the Order.

The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

- e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
- f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.
- g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.
- h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.
- i. Safeguard to electric power failure:
 - i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.
 - ii. Upon written request by the Regional Water Board the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Regional Water Board.
 - iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Regional Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Regional Water Board that the existing safeguards are inadequate, provide to the Regional Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Regional Water Board, become a condition of this Order.
- j. The Discharger, upon written request of the Regional Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under Regional Water Board Standard Provision contained in section VI.A.2.i. of this Order.

The technical report shall:

- i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.
- ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.
- iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Regional Water Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

- k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Regional Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Regional Water Board may extend the time for submitting the report.
- l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
- m. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the CWC, including, but not limited to, sections 13385, 13386, and 13387.

- n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (CWC section 1211).
- o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Regional Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Regional Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].
- p. 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.
- q. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Regional Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the CWC. Transfer shall be approved or disapproved in writing by the Executive Officer.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

- a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including:
 - i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.
 - ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.
- b. 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.
- c. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if the TMDL for the Sacramento-San Joaquin Delta is approved, this Order shall be reopened and the mass effluent limitation modified (higher or lower). If the Regional Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.
- d. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a new chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.
- e. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for arsenic, chromium VI, and lead. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

- f. Performance-based Effluent Limitations for Arsenic and Barium.** If the Discharger submits a report describing changes in the concentration of arsenic or barium in groundwater influent to the treatment system that are expected or encountered due to naturally occurring processes (e.g., significant changes in precipitation patterns, increases or decreases in groundwater elevations, or changes in the distribution of VOCs requiring adjustment of pumping rates or installation of additional extraction wells), this Order may be reopened to modify the performance-based effluent limitations for arsenic and/or barium.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

- a. Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits toxicity, as described in subsection ii. below, the Discharger is required to initiate a TRE in accordance with an approved TRE Workplan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Workplan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.
- i. Toxicity Reduction Evaluation (TRE) Workplan.** Within 90 days of the effective date of this Order, the Discharger shall submit to the Regional Water Board a TRE Workplan for approval by the Executive Officer. The TRE Workplan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Workplan must be developed in accordance with USEPA guidance¹ and be of adequate detail to allow the Discharger to immediately initiate a TRE as required in this Provision.
- i. Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

¹ See the Fact Sheet (Attachment F, section VII.B.2.a.) for a list of USEPA guidance documents that must be considered in the development of the TRE Workplan.

- ii. Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is $> 1 TU_C$ (where $TU_C = 100/NOEC$). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent toxicity.
- iii. Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14 days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four (4) chronic toxicity tests conducted once every 2 weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:
- (a)** If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is evidence of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.
- (b)** If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.
- (c)** If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:
- (1)** Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;
- (2)** Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
- (3)** A schedule for these actions.

3. Best Management Practices and Pollution Prevention

- a. Salinity Evaluation and Minimization Plan.** The Discharger shall prepare a salinity evaluation and minimization plan to identify and address sources of salinity from the Facility. The plan shall be completed and submitted to the Regional Water Board **within 9 months of the adoption date of this Order** for the approval by the Executive Officer.

4. Construction, Operation and Maintenance Specifications – Not Applicable

5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VII. COMPLIANCE DETERMINATION

- A. Total Mercury Mass Loading Effluent Limitations (Section IV.A.1.d).** The procedures for calculating mass loadings are as follows:

1. The total pollutant mass load for each individual calendar month shall be determined using an average of all concentration data collected that month and the corresponding total monthly flow. All effluent monitoring data collected under the monitoring and reporting program, pretreatment program and any special studies shall be used for these calculations. The total annual mass loading shall be the sum of the individual calendar months.
2. In calculating compliance, the Discharger shall count all non-detect measures at one-half of the detection level. If compliance with the effluent limitation is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance shall be evaluated with consideration of the detection limits.

- B. Chronic Whole Effluent Toxicity Effluent Limitation (Section IV.A.1.c).** Compliance with the accelerated monitoring and TRE/TIE provisions of Provision VI.C.2.a shall constitute compliance with effluent limitation IV.A.1.c for chronic whole effluent toxicity.
- C. Volatile Organic Compounds (VOCs) Maximum Daily Effluent Limitation (Section IV.A.1.a).** VOCs include all all VOCs identified as constituents of concern in influent groundwater, including: benzene, 1,1-dichloroethylene, 1,2-dichloroethane, ethylbenzene, methyl tertiary butyl ether, tetrachloroethylene, toluene, trichloroethylene, cis-1,2-dichloroethylene, and xylenes. The maximum daily effluent limitation of 0.5 µg/L applies to each VOC. Note, average monthly water quality-based effluent limitations also apply to 1,2-dichloroethane.
- D. Use of Delta Regional Monitoring Program and other Receiving Water Data to determine compliance with Receiving Water Limitations.** Delta Regional Monitoring Program data and other receiving water monitoring data that is not specifically required to be conducted by the Discharger under this permit, will not be used directly to determine that the discharge is in violation of this Permit. The Discharger may, however, conduct any site-specific receiving water monitoring deemed appropriate by the Discharger that is not conducted by the Delta RMP and submit that monitoring data. As described in Section VIII of Attachment E, such data may be used, if scientifically defensible, in conjunction with other receiving water data, effluent data, receiving water flow data, and other pertinent information to determine whether or not a discharge is in compliance with this Permit.

ATTACHMENT A – DEFINITIONS

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.

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 1 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.

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.

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 CWC 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).

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 40 CFR Part 136, Attachment B, revised as of 3 July 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 CWC 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.

Reporting Level (RL)

RL is 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 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. 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 RL.

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.

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;

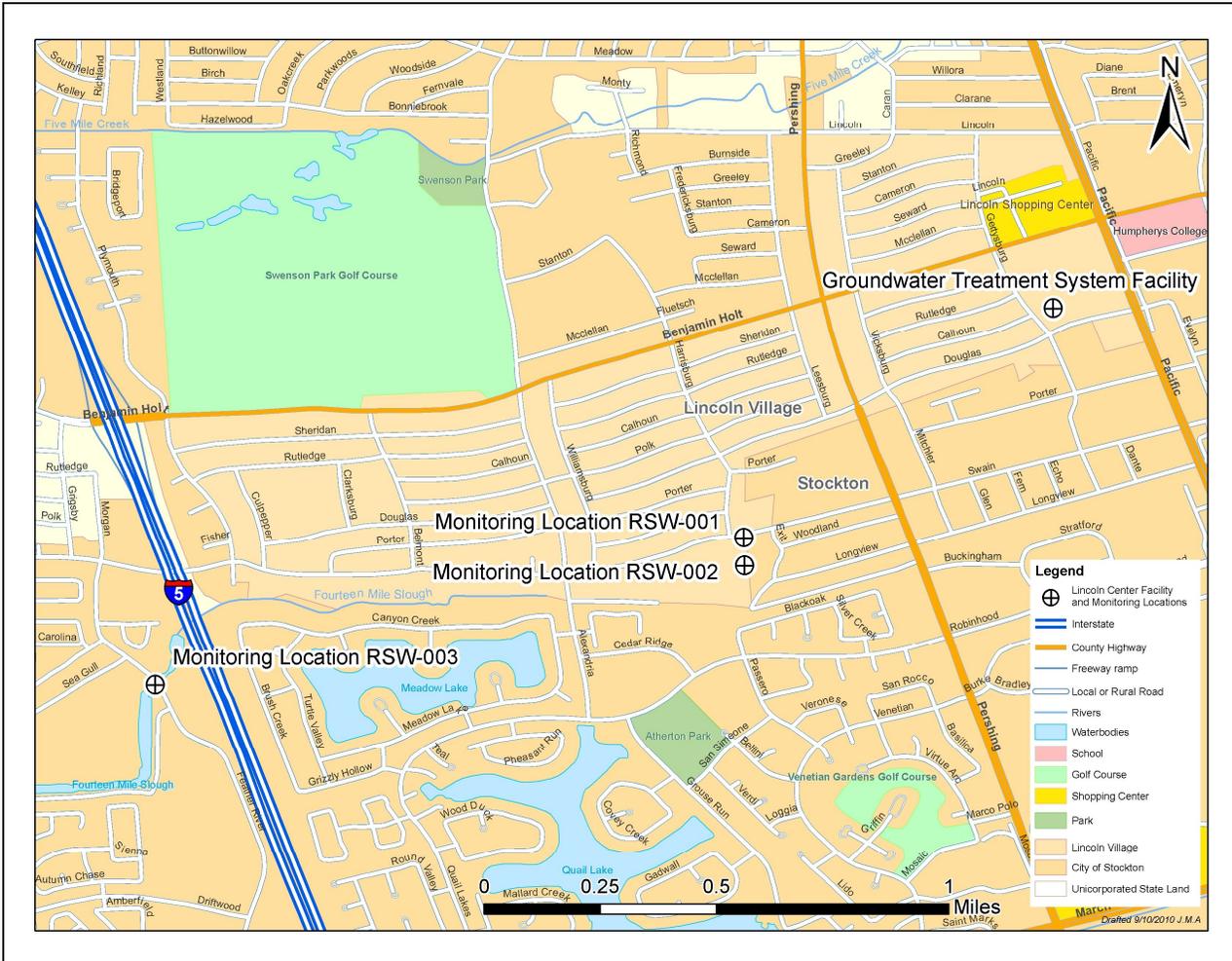
μ is the arithmetic mean of the observed values; and

n is the number of samples.

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.)

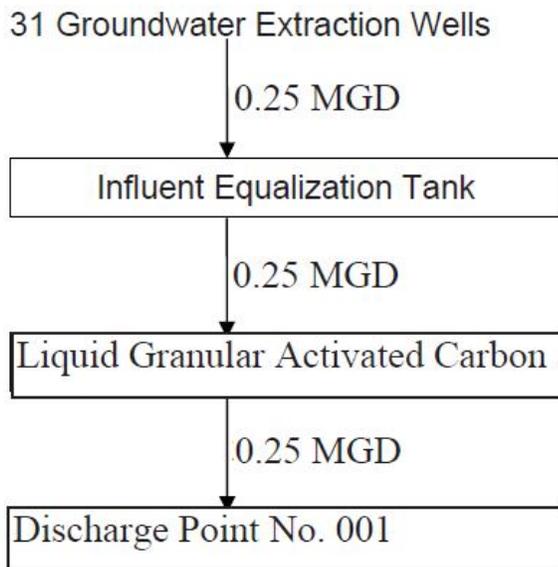
ATTACHMENT B – MAP



SITE LOCATION MAP

LINCOLN CENTER ENVIRONMENTAL REMEDIATION TRUST
GROUNDWATER TREATMENT SYSTEM
SAN JOAQUIN COUNTY

ATTACHMENT C – FLOW 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 (CWC) 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); CWC section 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 CWC, 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 CWC. (40 CFR 122.41(l)(3) and 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 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4) and 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 5 years (or longer as required by 40 CFR 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 a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (40 CFR 122.22(a)(1).)
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 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR 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. Two-Hour and Twenty-Four Hour Reporting

1. The Discharger shall notify the Office of Emergency Services any noncompliance that may endanger health or the environment within 2-hours from the time the Discharger becomes aware of the circumstances. Any information shall be provided by telephone or fax 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 40 CFR 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 not subject to effluent limitations in this Order. (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).)

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 CWC, 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)):
 - c.** 100 micrograms per liter ($\mu\text{g/L}$) (40 CFR 122.42(a)(1)(i));
 - d.** 200 $\mu\text{g/L}$ for acrolein and acrylonitrile; 500 $\mu\text{g/L}$ 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));

- e. 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
 - f. The level established by the Regional Water Board in accordance with 40 CFR 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)):
- g. 500 micrograms per liter ($\mu\text{g/L}$) (40 CFR 122.42(a)(2)(i));
 - h. 1 milligram per liter (mg/L) for antimony (40 CFR 122.42(a)(2)(ii));
 - i. 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
 - j. 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

Title 40 of the Code of Federal Regulations (CFR), section 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (CWC) sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program 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 monitored discharge. All samples shall be taken at the monitoring locations 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 locations shall not be changed without notification to and the approval of this Regional Water Board.
- B.** Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.
- C.** Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH; formerly the Department of Health Services). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Regional Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, turbidity, temperature and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, turbidity, temperature and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board.
- D.** 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. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.
- E.** Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

- F. Laboratories analyzing monitoring samples shall be certified by DPH, in accordance with the provision of CWC section 13176, and must include quality assurance/quality control data with their reports.
- G. The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.
- H. The Discharger shall file with the Regional Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.
- I. The results of all monitoring required by this Order shall be reported to the Regional Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

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
--	INF-001	Shall be located after the last connection before the wastes enter the treatment process.
001	EFF-001	Shall be located after the last connection through which wastes can be admitted into the outfall to the storm drain system.
--	RSW-002	In Fourteen Mile Slough, 200 feet downstream from the outfall from the storm drain system.
--	RSW-003	In Fourteen Mile Slough at the Feather River Drive Bridge, approximately 5,500 feet downstream from the outfall from the storm drain system. (37° 59' 48" N, 121° 21' 00" W)
--	RSW-004	In the San Joaquin River at Juggler's Island, approximately 6.4 miles downstream from the outfall from the storm drain system. (37° 59' 36" N, 121° 24' 48" W)

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent groundwater to the groundwater treatment system at Monitoring Location INF-001 as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Non-Conventional Pollutants				
Electrical Conductivity @ 25°C	µmhos/cm	Grab ²	1/Quarter	1
Total Petroleum Hydrocarbons (Gasoline Range)	µg/L	Grab	1/Quarter	1
Volatile Organic Compounds ³	µg/L	Grab	1/Quarter	1

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

² A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

³ All volatile organic compounds (VOCs) listed as USEPA Priority Pollutants using Analytical Method 8260B, as listed in Attachment I.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor treated groundwater at Monitoring Location EFF-001 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

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous	--
Conventional Pollutants				
pH	standard units	Grab	1/Month	1,2
Priority Pollutants				
Arsenic, Total Recoverable	µg/L	Grab	1/Month	1,3
Chromium VI, Total Recoverable	µg/L	Grab	1/Monthly	1,3
Lead, Total Recoverable	µg/L	Grab	1/Month	1,3
Mercury, Total Recoverable	µg/L	Grab	1/Quarter	1,3,4
Methylene Chloride	µg/L	Grab	1/Quarter	1,3

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Methylmercury	µg/L	Grab	1/Quarter	1,4
Priority Pollutants and Other Constituents of Concern ^{5,6}	µg/L	24-Hour Composite ^{7,8}	9	1,3,10
Non-Conventional Pollutants				
Ammonia Nitrogen, Total (as N)	mg/L	Grab	1/Month ^{11,12}	1
Barium, Total Recoverable	µg/L	Grab	1/Month	1
Chloride	mg/L	Grab	1/Quarter	1
Dissolved Oxygen	mg/L	Grab	1/Month	1
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	1
Hardness, Total (as CaCO ₃)	mg/L	Grab	1/Month	1
Sulfate	mg/L	Grab	1/Quarter	1
Temperature	°C	Grab	1/Month	1,2
Total Dissolved Solids	mg/L	Grab	1/Quarter	1
Total Petroleum Hydrocarbons (Gasoline Range)	µg/L	Grab	1/Month	1
Volatile Organic Compounds ¹³	µg/L	Grab	1/Month	1,3

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

² A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

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 Unfiltered methylmercury and total mercury samples shall be taken using clean hands/dirty hands procedures, as described in USEPA method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by USEPA method 1630/1631 (Revision E) with a method detection limit of 0.02 ng/L for methylmercury and 0.2 ng/L for total mercury.

⁵ See List of Priority Pollutants and Other Pollutants of Concern in Attachment I.

⁶ Priority pollutants are defined as USEPA priority toxic pollutants and other constituents listed in the 10 September 2001 CWC Section 13267 letter issued by the Executive Officer.

⁷ 24-hour flow proportioned composite.

⁸ Volatile constituents shall be sampled in accordance with 40 CFR Part 136.

⁹ Priority pollutants and other constituents of concern shall be sampled quarterly during the third or fourth year following the date of permit adoption at Monitoring Location EFF-001, and shall be conducted concurrently with receiving water monitoring for priority pollutants, hardness (as CaCO₃), and pH at Monitoring Location RSW-004. The Discharger is not required to conduct effluent monitoring for priority pollutants that have already been sampled in a given year, as required in Table E-3. See Attachment I for more detailed requirements related to performing the priority pollutant monitoring.

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
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¹⁰ In order to verify if bis (2-ethylhexyl) phthalate is truly present in the effluent discharge, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected pollutant.

¹¹ Concurrent with whole effluent toxicity monitoring.

¹² pH and temperature shall be recorded at the time of ammonia sample collection.

¹³ All VOCs listed as USEPA Priority Pollutants using Analytical Method 8260B, as listed in Attachment I.

2. If the groundwater treatment system has a scheduled or unscheduled shutdown lasting longer than 7 days, or which could result in noncompliance upon startup regardless of the downtime, the Discharger shall monitor the influent and effluent for the total petroleum hydrocarbons and VOCs listed in Table E-3 above upon startup of the treatment system as follows:
 - a. Immediately upon startup;
 - b. Daily for the first 2 days of operation; and
 - c. Monthly or quarterly thereafter in accordance with Table E-3.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the following acute toxicity testing requirements:

1. Monitoring Frequency – The Discharger shall perform annual acute toxicity testing, concurrent with effluent ammonia sampling.
2. Sample Types – For static non-renewal and static renewal testing, the samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001.
3. Test Species – Test species shall be fathead minnows (*Pimephales promelas*).
4. Methods – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
5. Test Failure – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. Chronic Toxicity Testing. The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:

1. Monitoring Frequency – The Discharger shall perform semi-annual three species chronic toxicity testing.
2. Sample Types – Effluent samples shall be flow proportional 24-hour composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001.
3. Sample Volumes – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.
4. Test Species – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:
 - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
 - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
 - The green alga, *Selenastrum capricornutum* (growth test).
5. Methods – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002.*
6. Reference Toxicant – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.
7. Dilutions – For regular and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and two controls. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. Laboratory water may be used as the diluent.

Table E-4. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water (RSW-004)	Laboratory Water
% Effluent	100	75	50	25	12.5	0	0
% Receiving Water (RSW-004)	0	25	50	75	87.5	100	0
% Laboratory Water	0	0	0	0	0	0	100

8. Test Failure – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

- a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or
- b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI. 2.a.iii. of the Order.)

C. WET Testing Notification Requirements. The Discharger shall notify the Regional Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

D. WET Testing Reporting Requirements. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Regional Water Board within 30 days following completion of the test, and shall contain, at minimum:
 - a. The results expressed in TUc, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.
 - b. The statistical methods used to calculate endpoints;
 - c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);
 - d. The dates of sample collection and initiation of each toxicity test; and
 - e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the quarterly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the quarterly discharger self-monitoring reports and reported as percent survival.

3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Workplan.
4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:
 - a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.
 - b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.
 - c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS – NOT APPLICABLE

VII. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

The Discharger shall implement the Receiving Water Monitoring Requirements in Attachment E, Sections VIII.A.1, VIII.A.2, VIII.B.1 and VIII.C.1 of this Order. However, in lieu of conducting the individual monitoring specified in Attachment E, Sections VIII.A.1, VIII.A.2, VIII.B.1 and VIII.C.1 of this Order (including visual observations), the Discharger may elect to participate in the Delta Regional Monitoring Program. The Discharger may choose to conduct all or part of the receiving water monitoring through the Delta Regional Monitoring Program. If the Discharger elects to cease all or part of the individual receiving water monitoring and instead participates in the Delta Regional Monitoring Program, the Discharger shall submit a letter signed by an authorized representative informing the Board that the Discharger will participate in the Delta Regional Monitoring Program, and the date on which individual receiving water monitoring required under Attachment E, Sections VIII.A.1, VIII.A.2, VIII.B.1 and VIII.C.1 will cease, or be modified, and specific monitoring locations and constituent combinations that will no longer be conducted individually. Written approval of the Discharger's request, by the Executive Officer, is required prior to discontinuing part or all of individual receiving water monitoring. Approval by the Executive Officer is not required prior to participating in the Delta Regional Monitoring Program.

If the Discharger participates in the Delta Regional Monitoring Program in lieu of conducting individual receiving water monitoring, the Discharger shall continue to participate in the Delta Regional Monitoring Program until such time as the Discharger informs the Board that participation in the Delta RMP will cease and individual monitoring is reinstated. Receiving water monitoring under Attachment E, Sections VIII.A.1, VIII.A.2, VIII.B.1 and VIII.C.1, is not required under this Order so long as the Discharger adequately supports the Delta Regional Monitoring Program. If the

Discharger fails to adequately support the Delta Regional Monitoring Program, as defined by the Delta RMP Steering Committee, the Discharger shall reinstitute individual receiving water monitoring under Attachment E, Sections VIII.A.1, VIII.A.2, VIII.B.1 and VIII.C.1, upon written notice from the Executive Officer. During participation in the Delta RMP, the Discharger may conduct and submit any or part of the receiving water monitoring included in this Monitoring and Reporting Program that is deemed appropriate by the Discharger.

Delta RMP data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Permit. Delta RMP monitoring stations are established generally as “integrator sites” to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta RMP monitoring stations would not normally be able to identify the source of any specific constituent, but would be used to identify water quality issues needing further evaluation. Delta RMP monitoring data, along with individual Discharger data, may be used to help establish background receiving water quality for Reasonable Potential analyses in an NPDES Permit after evaluation of the applicability of the data for that purpose. Delta RMP data, as with all environmental monitoring data, can provide an assessment of water quality at a specific place and time that can be used in conjunction with other information, such as other receiving water monitoring data, spatial and temporal distribution and trends of receiving water data, effluent data from the Discharger’s discharge and other point and non-point source discharges, receiving water flow volume, speed and direction, and other information to determine the likely source or sources of a constituent that resulted in exceedance of a receiving water quality objective.

During the period of participation in the Delta Regional Monitoring Program, the Discharger shall continue to report any individually conducted receiving water monitoring data in the Electronic Self-Monitoring Reports (eSMR) according to the Monitoring and Reporting Program. In addition, 1) with each submitted eSMR, the Discharger’s eSMR cover letter shall state that the Discharger is participating in the Delta Regional Monitoring Program in lieu of conducting the individual receiving water monitoring program required by the permit, and 2) with each annual report, the Discharger shall attach a copy of the letter originally submitted to the Central Valley Water Board describing the monitoring location(s) and constituent combinations that will no longer be conducted individually.

A. Monitoring Location RSW-002

1. The Discharger shall monitor Fourteen Mile Slough at Monitoring Location RSW-002 as follows:

Table E-5. Receiving Water Monitoring Requirements – Monitoring Location RSW-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Tide Stage	--	--	1/Quarter	--

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Conventional Pollutants				
pH	standard units	Grab	1/Month	1,2
Non-Conventional Pollutants				
Dissolved Oxygen	mg/L	Grab	1/Quarter	1,2
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	1,2
Hardness, Total (as CaCO ₃)	mg/L	Grab	1/Quarter	1
Temperature	°F/°C	Grab	1/Month	1,2
Turbidity	NTU	Grab	1/Quarter	1,2

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

² A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

2. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions. Attention shall be given to the presence or absence of:
 - a. Floating or suspended matter;
 - b. Discoloration;
 - c. Bottom deposits;
 - d. Aquatic life;
 - e. Visible films, sheens, or coatings;
 - f. Fungi, slimes, or objectionable growths; and
 - g. Potential nuisance conditions.

Notes on receiving water conditions shall be summarized in the monitoring reports.

B. Monitoring Location RSW-003

1. The Discharger shall monitor Fourteen Mile Slough at Monitoring Location RSW-003 as follows:

Table E-6. Receiving Water Monitoring Requirements – Monitoring Location RSW-003

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow Conditions	MGD	Observation	1/Quarter	--
Tide Stage	--	--	1/Quarter	--
Conventional Pollutants				
pH	standard units	Grab	1/Quarter	1,2
Priority Pollutants				
Arsenic, Dissolved	µg/L	Grab	1/Quarter	1,3
Non-Conventional Pollutants				
Barium, Dissolved	µg/L	Grab	1/Quarter	1

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen	mg/L	Grab	1/Quarter	1,2
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Quarter	1,2
Temperature	°F/°C	Grab	1/Quarter	1,2
Turbidity	NTU	Grab	1/Quarter	1,2

¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.

² A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

³ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Appendix 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.

C. Monitoring Location RSW-004

1. The Discharger shall monitor the San Joaquin River at Juggler's Island at Monitoring Location RSW-004 as follows:

Table E-7. Receiving Water Monitoring Requirements – Monitoring Location RSW-004

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Conventional Pollutants				
pH	standard units	Grab	1/Year	1,2
Priority Pollutants				
Arsenic, Dissolved	µg/L	Grab	1/Year	1,3
Priority Pollutants and Other Constituents of Concern ⁴	µg/L	Grab	5	1,3,6
Non-Conventional Pollutants				
Barium, Dissolved	µg/L	Grab	1/Year	1
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Year	1,2
Temperature	°F/°C	Grab	1/Year	1,2

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
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- ¹ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136.
- ² A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.
- ³ Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest minimum levels (MLs) specified in Appendix 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.
- ⁴ See List of Priority Pollutants and Other Pollutants of Concern in Attachment I.
- ⁵ Priority pollutants shall be sampled quarterly during the third or fourth year following permit adoption at Monitoring Location RSW-004 and shall be conducted concurrently with effluent monitoring for priority pollutants. See Attachment I for more detailed requirements related to performing the priority pollutant monitoring.
- ⁶ In order to verify if bis (2-ethylhexyl) phthalate is truly present in the receiving water, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected pollutant.

IX. OTHER MONITORING REQUIREMENTS – NOT APPLICABLE

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. Upon written request of the Regional Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).
3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Regional Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the compliance time schedule.
4. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State Water Board or the 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 Monitoring and Reporting Program 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	Permit effective date	All	First day of second calendar month following month of sampling.
1/Month	Permit effective date	First day of calendar month through last day of calendar month	First day of second calendar month following month of sampling.
1/Quarter	Permit effective date	1 January through 1 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	1 May 1 August 1 November 1 February
2/Year	Permit effective date	1 January through 30 June 1 July through 31 December	1 August 1 February
1/Year	Permit effective date	1 January through 31 December	1 February

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 40 CFR 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 in Attachment A of this Order. For purposes of reporting and administrative enforcement by the Regional Water Board and the State Water Board, 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, AWEL, 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:

- 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:

Regional Water Quality Control Board
Central Valley Region
NPDES Compliance and Enforcement Unit
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670-6114

8. Reports must clearly show when discharging to Discharge Point No. 001 or other permitted discharge locations. Reports must show the date and time that the discharge started and stopped at each location.

C. Other Reports

1. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, TRE/TIE, PMP, or Pollution Prevention Plans required by Special Provisions VI.C of this Order. The Discharger shall submit reports with the first quarterly SMR scheduled to be submitted on or immediately following the report due date.
2. Within 60 days of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP.
3. **Annual Operations Report.** By 30 January of each year, the Discharger shall submit a written report to the Executive Officer containing the following:
 - a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.

- b.** The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.
- c.** A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.
- d.** A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.
- e.** The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in the Findings 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	5B391080001
Discharger	Lincoln Center Environmental Remediation Trust
Name of Facility	Groundwater Treatment System
Facility Address	6471 Pacific Avenue
	Stockton, CA 95207
	San Joaquin County
Facility Contact, Title and Phone	Joe Niland, Trustee, (916) 637-8325
Authorized Person to Sign and Submit Reports	Joe Niland, Trustee, (916) 637-8325
Mailing Address	3043 Gold Canal Dr., Suite 201, Rancho Cordova, CA 95670
Billing Address	Same as mailing address
Type of Facility	Groundwater extraction and treatment system
Major or Minor Facility	Minor
Threat to Water Quality	2
Complexity	B
Pretreatment Program	Not applicable
Reclamation Requirements	Not applicable
Facility Permitted Flow	0.25 million gallons per day (MGD)
Facility Design Flow	0.25 MGD
Watershed	Sacramento-San Joaquin Delta
Receiving Water	Fourteen Mile Slough
Receiving Water Type	Sacramento-San Joaquin Delta

- A. The Lincoln Center Environmental Remediation Trust (hereinafter Discharger) is the owner and operator of the Lincoln Center Environmental Remediation Trust Groundwater Treatment System (hereinafter Facility), a groundwater extraction and treatment system.

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 Fourteen Mile Slough, a water of the United States, and is currently regulated by Order No. R5-2005-0144-01 which was adopted on 21 October 2005, amended on 29 July 2010, and expired on 1 October 2010. 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 2 April 2010. Supplemental information was requested on 23 August 2010 and 21 October 2010 and received on 30 August 2010, 10 September 2010, and 21 October 2010. A site visit was conducted on 30 August 2010 to observe operations and collect additional data to develop permit limitations and conditions.
- D.** On 9 December 2014, the Discharger requested an amendment of this Order to: 1) modify the treatment system, 2) reduce the permitted discharge flow rate to 0.25 MGD, and 3) increase the electrical conductivity effluent limitations.

II. FACILITY DESCRIPTION

The Lincoln Center Environmental Remediation Trust was formed in 2003 to manage environmental remediation activities at Lincoln Center in Stockton, California resulting from historical releases from dry cleaning facilities and a sewer leak at the site. Prior to formation of the trust, the named discharger was The Settling Dry Cleaning Defendants, as defined by Consent Decree No. CIV-S-91 DFL (GGH) filed 18 January 1996 with the U.S. District Court, Eastern District of California.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility is a ground water extraction and treatment system designed to remove volatile organic compounds (VOCs), petroleum products and lead from groundwater. The treatment system also treats residual fluids generated during the continuing investigation, remediation, and monitoring activities at the site. Constituents of concern in the influent groundwater include benzene, cis-1,2-dichloroethylene, 1,2-dichloroethane, 1,1-dichloroethylene, ethylbenzene, lead, methyl tertiary butyl ether, tetrachloroethylene, toluene, total petroleum hydrocarbons (as gasoline), trichloroethylene, and xylene.

The groundwater treatment system (GWTS) consists of an influent equalization tank and three liquid phase granulated activated carbon (LGAC) adsorption canisters. The activated carbon is regenerated or disposed of off-site. The treatment system is designed for a flow of 0.43 MGD of extracted groundwater and the Discharger was permitted to discharge an average daily discharge flow of 0.43 MGD. However, based on discharge flow data from January 2012 – September 2014 the discharge flow was generally less than 0.25 MGD. Furthermore, the Discharger utilized a site-specific

groundwater model to evaluate plume capture of the GWTS and determined that plume capture could be maintained at pumping rates between 0.08 MGD and 0.25 MGD. Therefore, the permitted average daily flow was reduced to 0.25 MGD by amending Order R5-2015-0076 adopted by the Central Valley Water Board on 5 June 2015.

The GWTS originally included a low profile air stripper prior to the LGAC for VOC removal. In addition, a vapor phase granular activated carbon vessel was used to absorb the VOCs prior to discharge to the atmosphere. Since initiation of operation of the groundwater cleanup in 1999, the constituents of concern (i.e., primarily PCE and petroleum hydrocarbons) have been reduced substantially. The significant reduction meant that the air stripper was no longer needed. The Discharger conducted a test of the GWTS in February 2015 to evaluate the treatment efficiency using only the LGAC. The test indicated LGAC alone is capable of removing VOCs to the levels required in this Order. On 5 June 2015, the Central Valley Water Board adopted amending Order R5-2015-0076 modifying the facility description as shown in this Order.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 21, T2N, R6E, MDB&M, as shown in Attachment B, a part of this Order.
2. Treated wastewater is discharged at Discharge Point No. 001 to a San Joaquin County storm drain located at Lincoln Center. The storm drain flows approximately 2 miles and terminates at the San Joaquin County Storm Pump Station #1 (SJCPS #1), located at the head of Fourteen Mile Slough at latitude 38° 0' 0.89" N and longitude 121° 19' 54.10" W. Fourteen Mile Slough is a water of the United States and a tributary to the Stockton Deep Water Ship Channel portion of the San Joaquin River within the Sacramento-San Joaquin Delta.

C. Summary of Historical Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in Order No. R5-2005-0144-01 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order No. R5-2005-0144-01 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From January 2006 To June 2010)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Flow	MGD	--	--	0.43	--	--	0.25
pH	standard units	6.5 - 8.5			7.67 – 8.6		
Ammonia Nitrogen, Total (as N)	mg/L	0.59	--	2.1 ¹	1.1	--	1.1
	lbs/day ²	2.1	--	7.5 ¹	NR	--	NR
Arsenic, Total Recoverable	µg/L	--	--	23 ³	--	--	23
	lbs/day ²	--	--	0.08 ³	--	--	NR

Parameter	Units	Effluent Limitation			Monitoring Data (From January 2006 To June 2010)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
Barium, Total Recoverable	µg/L	--	--	415 ³	--	--	390
	lbs/day ²	--	--	1.5 ³	--	--	NR
Chromium VI, Total Recoverable	µg/L	--	--	80 ⁴	--	--	16 ⁵
		8 ⁶	--	16 ⁶	3.4	--	3.4 ⁷
	lbs/day ²	--	--	0.29 ⁴	--	--	NR
0.029 ⁶		--	0.057 ⁶	NR	--	NR	
Copper, Total Recoverable	µg/L	4.2	--	8.4	6.9	--	6.9
	lbs/day ²	0.015	--	0.03	NR	--	NR
Electrical Conductivity @ 25°C	µmhos/cm	900	--	--	910	--	--
Iron, Total Recoverable	µg/L	300	--	--	300	--	--
	lbs/day ²	1.2	--	--	NR	--	--
Iron, Dissolved	µg/L	--	--	300	--	--	270
	lbs/day ²	--	--	1.2	--	--	NR
Lead, Total Recoverable	µg/L	1.3	--	2.6	1.5	--	1.5
	lbs/day ²	0.005	--	0.009	NR	--	NR
Manganese, Total Recoverable	µg/L	50	--	--	1.8	--	--
	lbs/day ²	0.18	--	--	NR	--	--
Manganese, Dissolved	µg/L	--	--	50	--	--	5.8
	lbs/day ²	--	--	0.18	--	--	NR
Mercury, Total Recoverable	µg/L	0.05 ⁶	--	--	0.0016	--	--
	lbs/day ²	0.0002 ⁶	--	--	NR	--	--
Tetrachloroethene	µg/L	<0.5 ⁸	--	--	--	--	0.53
Trichloroethene	µg/L	<0.5 ⁸	--	--	--	--	<0.041 ¹³
1,1-Dichloroethylene	µg/L	<0.5 ⁸	--	--	--	--	<0.074 ¹³
Methylene Chloride	µg/L	<0.5 ⁸	--	--	--	--	0.4
1,2-Dichloroethane	µg/L	<0.38 ⁸	--	--	--	--	<0.041 ¹³
Total Volatile Organic Compounds	µg/L	--	--	1.0 ⁹	--	--	1.33
Benzene	µg/L	<0.5 ⁸	--	--	--	--	<0.0578 ¹³
Toluene	µg/L	<0.5 ⁸	--	--	--	--	<0.017 ¹³
Ethylbenzene	µg/L	<0.5 ⁸	--	--	--	--	<0.04 ¹³
Xylene	µg/L	<0.5 ⁸	--	--	--	--	<0.04 ¹³
Sum of Benzene, Ethylbenzene, Toluene, and Xylene	µg/L	--	--	1.0 ¹⁰	--	--	<0.02 ¹³
Total Petroleum Hydrocarbons	µg/L	<50 ⁸	--	100	--	--	<10 ¹³
Acute Toxicity	% Survival	--	--	11	--	--	95 ¹²

Parameter	Units	Effluent Limitation			Monitoring Data (From January 2006 To June 2010)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge

NR = Not Reported

¹ Applied as a 1-hour average effluent limitation.

² The mass emissions rate is based on a maximum flow of 0.43 MGD and is calculated as follows:
Flow (MGD) x Concentration (mg/L) x 8.34 (conversion factor) = lbs/day.

³ Reflects final effluent limitations in Order No. R5-2005-0144-01, as amended by Resolution No. R5-2010-0083 adopted on 29 July 2010.

⁴ Interim effluent limitation effective until 28 February 2010.

⁵ Represents monitoring data collected between January 2006 and February 2010.

⁶ Final effluent limitation effective 1 March 2010.

⁷ Represents monitoring data collected between March 2010 and June 2010.

⁸ Applied as a monthly median effluent limitation.

⁹ The sum of concentrations of volatile organic compounds in a single sample shall not exceed 1.0 µg/L.

¹⁰ The sum of the concentrations of benzene, toluene, ethylbenzene, and xylene in a single sample shall not exceed 1.0 µg/L.

¹¹ Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay: 70%

Median for any three or more consecutive bioassays: 90%

¹² Represents the minimum value reported.

¹³ Represents lowest reported laboratory method detection limit.

D. Compliance Summary

On 4 September 2008, the California Regional Water Quality Control Board, Central Valley Region (hereinafter Regional Water Board) issued the Discharger a Notice of Violation and draft Record of Violations for effluent limitation violations for the period 1 January 2000 through 30 April 2008. The Regional Water Board issued Administrative Civil Liability (ACL) Complaint No. R5-2008-0612 on 21 November 2008 which proposed to assess an administrative liability of \$18,000 against the Discharger for violations of the effluent limitations for tetrachloroethylene in Order Nos. 98-062 and R5-2005-0144 between 1 January 2000 through 30 April 2008.

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in the Findings in section II of this Order. The applicable plans, policies, and regulations relevant to the discharge include the following:

A. Legal Authorities

This Order is issued pursuant to regulations in the Clean Water Act (CWA) and the California Water Code (CWC) as specified in the Finding contained at section II.C of this Order.

B. California Environmental Quality Act (CEQA)

This Order meets the requirements of CEQA as specified in the Finding contained at section II.E of this Order.

C. State and Federal Regulations, Policies, and Plans

- 1. Water Quality Control Plans.** This Order implements the following water quality control plans as specified in the Finding contained at section II.H of this Order.
 - a. *Water Quality Control Plan, Fourth Edition (Revised September 2009), for the Sacramento and San Joaquin River Basins* (Basin Plan)
 - b. *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan)
 - c. *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan)

The State Water Resources Control Board (State Water Board) adopted the Thermal Plan on 18 May 1972, and amended this plan on 18 September 1975. The Thermal Plan contains temperature objectives for surface waters. The discharge does contain thermal waste or elevated temperature waste. Therefore, the requirements of the Thermal Plan do not apply to this discharge.

- 2. National Toxics Rule (NTR) and California Toxics Rule (CTR).** This Order implements the NTR and CTR as specified in the Finding contained at section II.I of this Order.
- 3. State Implementation Policy (SIP).** This Order implements the SIP as specified in the Finding contained at section II.J of this Order.
- 4. Alaska Rule.** This Order is consistent with the Alaska Rule as specified in the Finding contained at section II.L of this Order.
- 5. Antidegradation Policy.** As specified in the Finding contained at section II.N of this Order and as discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.), the discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.
- 6. Anti-Backsliding Requirements.** This Order is consistent with anti-backsliding policies as specified in the Finding contained at section II.O of this Order. Compliance with the anti-backsliding requirements is discussed in the Fact Sheet (Attachment F, Section IV.D.3).
- 7. Storm Water Requirements.** The U.S. Environmental Protection Agency (USEPA) promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program does

not regulate storm water discharges from environmental cleanup service (SIC Code 4959) facilities. This Order does not contain storm water requirements.

8. **Endangered Species Act.** This Order is consistent with the Endangered Species Act as specified in the Finding contained at section II.P of this Order.

D. Impaired Water Bodies on CWA 303(d) List

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 12 November 2010 USEPA gave partial approval to California's 2010 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "...*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR Part 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The eastern portion of the Sacramento-San Joaquin Delta is listed on the 2010 303(d) list as impaired for chlorpyrifos, DDT, diazinon, Group A pesticides, invasive species, mercury, and unknown toxicity. The Deep Water Ship Channel is listed on the 2010 303(d) list as impaired for chlorpyrifos, DDT, diazinon, dioxin, furan compounds, Group A pesticides, invasive species, mercury, organic enrichment/low dissolved oxygen, polychlorinated biphenyls (PCBs), pathogens, and unknown toxicity.
2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Regional Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. The following TMDLs for methylmercury and total mercury, chlorpyrifos and diazinon, and dissolved oxygen are applicable to the Facility.
 - a. **Methylmercury and Mercury.** The Regional Water Board adopted Resolution No. R5-2010-0043, *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary*, on 22 April 2010. The TMDL has not yet been approved by the State Water Board, the Office of Administrative Law (OAL), or USEPA. See section IV.C.3.c.xi of this Fact Sheet for a discussion of the effluent limitations established for mercury.
 - b. **Chlorpyrifos and Diazinon.** The Regional Water Board adopted Resolution No. R5-2006-0061, *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Diazinon and Chlorpyrifos Runoff in the Sacramento-San Joaquin Delta*, on 23 June 2006, which became effective 10 October 2007. The TMDL established water quality

objectives and WLAs for point source discharges for chlorpyrifos and diazinon. Chlorpyrifos and diazinon were not detected in the effluent in sampling conducted on 16 March 2010. These constituents were not identified as constituents of concern in the extracted groundwater. Therefore, this Order does not establish effluent limitations for chlorpyrifos and diazinon. This Order requires monitoring for chlorpyrifos and diazinon quarterly during the third year following the date of permit adoption with priority pollutants and other constituents of concern, as detailed in Attachment I.

c. Dissolved Oxygen. The Regional Water Board adopted Resolution No. R5-2005-0005, *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control Program for Factors Contributing to the Dissolved Oxygen Impairment in the Stockton Deep Water Ship Channel*, on 27 January 2005, which became effective 27 February 2007. WLAs for oxygen demanding substances were not established in the TMDL. The phased implementation plan does not allow any increase in the discharge of oxygen demanding substances after 28 January 2005 and prohibits the discharge of oxygen demanding substances after 31 December 2011 when flow in the Deep Water Ship Channel is less than 3,000 cubic feet per second (cfs) unless dissolved oxygen objectives are being met. This Order includes effluent limitations for ammonia, receiving water limitations for dissolved oxygen, and effluent and receiving water monitoring requirements for ammonia and dissolved oxygen.

3. The 303(d) listings and TMDLs have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C.3 of this Fact Sheet.

E. Other Plans, Policies and Regulations – Not Applicable

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that “*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality.*” Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that “[w]here a state has not established a water quality criterion for a specific chemical pollutant that is present in an

effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits."

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: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00, contains an implementation policy, "*Policy for Application of Water Quality Objectives*", that specifies that the Regional Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.*" This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Regional Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Regional Water Board's "*Policy for Application of Water Quality Objectives*") (40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At a minimum, "*...water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*" in Title 22 of CCR. The Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

A. Discharge Prohibitions

1. This Order prohibits discharge of wastewater at a location or in a manner different from that described in the Findings. This prohibition allows the Discharger to discharge waste only in accordance with WDRs. It is based on CWA sections 301 and 402 and CWC section 13263.

2. As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define “bypass” as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board’s prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation, provided that the bypass does not cause violation of effluent and/or receiving water limitations.
3. This Order prohibits creation of a nuisance by the discharge and its treatment. This prohibition is based on CWC section 13050.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR 122.44 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 40 CFR 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. CWA section 402(a)(1) and 40 CFR 125.3 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 40 CFR 125.3.

2. Applicable Technology-Based Effluent Limitations

- a. **VOCs.** Liquid Granular Activated Carbon (LGAC) treatment systems are commonly used to remove VOCs from extracted groundwater at cleanup sites. The Facility utilizes LGAC and is capable of dependably removing the groundwater contaminants to concentrations that are non-detectable by current analytical technology. Order No. R5-2005-0144-01 included technology-based effluent limitations for VOC constituents of concern, including benzene, 1,2-dichloroethane, 1,1-dichloroethylene, ethylbenzene, tetrachloroethylene, toluene, trichloroethylene, and xylene, based on the ability of groundwater treatment technology to remove the groundwater contaminants to concentrations that are non-detectable by current analytical technology. The technology-based effluent limitations contained in Order No. R5-2005-0144-01 consisted of monthly median effluent limitations and were based on the analytical capability at that time (as represented by the analytical method reporting level). Order No. R5-2005-0144-01 did not include effluent limitations for methyl tertiary butyl ether, however Order No. R5-2005-0144-01 did identify methyl tertiary butyl ether as a constituent of concern. Order No. R5-2005-0144-01 also established a maximum daily effluent limitation (MDEL) for Total VOCs of 1.0 µg/L, which applied to the sum of the concentrations of VOCs in any single sample.

State Water Board Resolution No. 68-16 requires implementation of best practicable treatment and control (BPTC) to ensure that the highest water quality is maintained consistent with the maximum benefit to the people of the State. BPTC for groundwater cleanup of VOCs provides that the pollutants should be discharged at concentrations no higher than quantifiable levels for each pollutant. For the purposes of this Order, BPTC for VOCs requires meeting effluent limitations based on the Minimum Levels (MLs) defined in Appendix 4, Table 2a of the SIP. Several dischargers, including the Discharger, in the Central Valley Region have implemented BPTC groundwater treatment systems and have been able to consistently treat VOCs in the wastewater to concentrations below the MLs in the SIP.

According to the SIP, if no ML value is below the effluent limitation, the applicable ML value shall be the lowest ML value listed in Appendix 4 of the SIP. VOC concentrations below the MLs are generally considered unquantifiable. Therefore, application of technology-based effluent limitations for VOCs at groundwater cleanup sites requires effluent to meet MLs.

With respect to the specific discharges permitted herein, the following have been considered as required in 40 CFR 125.3 for establishing effluent limitations based on BPJ:

- i. Appropriate Technology for Category or Class of Discharges.** LGAC is commonly used to remove VOCs from extracted groundwater at cleanup sites. Properly operated and maintained systems perform reliably and ensure essentially complete removal of VOCs. The Discharger employs LGAC.
- ii. Unique Factors Relating to the Discharger.** The Discharger has not identified any unique factors that would justify discharges equaling or exceeding quantifiable concentrations of VOCs.
- iii. Age of Equipment.** The Discharger has not identified any concerns related to the ability to treat the contaminated groundwater due to the age of the equipment.
- iv. Non-water Quality Environmental Impacts.** The LGAC should reliably remove VOCs to concentrations of less than 0.5 µg/L and should not create additional non-water quality impacts (e.g., air emissions), or undue financial costs for the Discharger.

LGAC is an appropriate technology for VOC removal from extracted groundwater. The above supports the conclusion that the Discharger can meet a MDEL of 0.5 µg/L. Therefore, an MDEL for VOCs of 0.5 µg/L is established in this Order to reflect BPTC and BPJ.

- b. Total Petroleum Hydrocarbons (Gasoline Range).** The SIP does not specify an ML for total petroleum hydrocarbons (gasoline range). Therefore, this Order establishes an MDEL of 50 µg/L, which reflects the commonly achieved reporting level for this constituent.
- c. Flow.** A technology-based effluent limitation for flow is established in this Order to monitor the performance of the groundwater treatment system from the standpoint of volumes being treated. The average daily flow rate in Order No. R5-2005-0144-01 was established at 0.43 MGD based on the design flow and is retained in this Order when the permit was renewed in August 2011. The permitted average daily flow rate was subsequently reduced to 0.25 MGD by amending Order R5-2015-0076 adopted by the Central Valley Water Board on 5 June 2015. 40 C.F.R. 122.45(2)(i) requires that, "...calculation of any permit limitations, standards, or prohibitions which are based on production (or other measure of operation) shall be based not upon the designed production capacity but rather upon a reasonable measure of actual production of the facility." Based on discharge flow data from January 2012 – September 2014 the flow was generally less than 0.25 MGD. Furthermore, the Discharger utilized a site-specific groundwater model to evaluate plume capture of the GWTS and determined that plume capture could be maintained at pumping rates between 0.08 MGD and 0.25 MGD.

Table F-3. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	MGD	--	0.25 ²	--	--
Non-Priority Pollutants					
Total Petroleum Hydrocarbons (Gasoline Range)	µg/L	--	50	--	--
Volatile Organic Compounds ¹	µg/L	--	0.5	--	--

¹ This effluent limitation applies to VOCs identified as constituents of concern in influent groundwater, including: benzene, 1,1-dichloroethylene, 1,2-dichloroethane, ethylbenzene, methyl tertiary butyl ether, tetrachloroethylene, toluene, trichloroethylene, cis-1,2-dichloroethylene, and xylenes. Note, average monthly water quality-based effluent limitations also apply to 1,2-dichloroethane.

² Average daily discharge flow rate.

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 permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

40 CFR 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 40 CFR 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

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. In addition, the Basin Plan implements 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 Basin Plan on page II-1.00 states: “*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning...*” and with respect to disposal of wastewaters states that “*...disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*”

The federal CWA section 101(a)(2), states: “*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*” Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. Receiving Water and Beneficial Uses. The Facility discharges to a San Joaquin County storm drain located at Lincoln Center which flows approximately 2 miles and terminates at a pump station operated and maintained by San Joaquin County at the head of Fourteen Mile Slough. Fourteen Mile Slough is tidally influenced such that the upper reaches can be inundated during high tide and dry during low tide. Fourteen Mile Slough is within the eastern portion of the Sacramento-San Joaquin Delta and is a tributary to the San Joaquin River within the Stockton Deep Water Ship Channel (DWSC). The distance from the head of Fourteen Mile Slough to the confluence with the San Joaquin River is approximately 7 miles.

Beneficial uses applicable to the Sacramento-San Joaquin Delta, which includes Fourteen Mile Slough, are as follows:

Table F-4. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Fourteen Mile Slough within the Sacramento-San Joaquin Delta	<u>Existing:</u> Municipal and domestic supply (MUN); agricultural supply, including irrigation and stock watering (AGR); industrial process supply (PROC); industrial service supply (IND); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm (SPWN); wildlife habitat (WILD); and navigation (NAV).

b. Effluent and Ambient Background Data. The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from July 2007 through June 2010, which includes effluent and ambient background data submitted in monthly self-monitoring reports (SMRs), the ROWD, and other reports.

The Facility discharges to a storm drain that terminates at the head of Fourteen Mile Slough. Therefore, there is no physical upstream receiving water monitoring location and it is infeasible to collect upstream receiving water samples. Pursuant to the existing permit, the Discharger monitored Fourteen Mile Slough at Monitoring Location RSW-002 which is located 200 feet downstream from the outfall of the storm drain. However, samples taken at Monitoring Location RSW-002 are expected to be primarily comprised of effluent, except under wet weather conditions, and are not representative of background conditions. Therefore, monitoring data collected at Monitoring Location RSW-002 was not used for the RPA. The Discharger’s dilution/mixing zone study for arsenic and barium indicated that the San Joaquin River at Juggler’s Island (i.e., the confluence of Fourteen Mile Slough and the San Joaquin River), where the tidally influenced waters originate for Fourteen Mile Slough, is a more representative location for ambient background receiving water sampling. When amended in July 2010, Order No. R5-2005-0144-01 established annual receiving water monitoring requirements at this location (Monitoring Location RSW-004) for electrical conductivity, pH, temperature, arsenic, and barium only. Thus, monitoring data at Monitoring Location RSW-004 is limited to data collected as part of the Discharger’s mixing/zone study and a sample collected on 7 September 2010, which was used to conduct the RPA. To ensure sufficient background data for the remaining priority pollutants and other constituents of concern is available for the next permit reissuance, this Order establishes receiving water monitoring requirements at Monitoring Location RSW-004 quarterly during the third year of the permit term.

c. Priority Pollutant Metals

i. Hardness-dependent CTR Metals. The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary

as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP,¹ the CTR,² and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of “receiving water” or “actual ambient” hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4), Table 4, note 4.) The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Regional Water Board thus has considerable discretion in determining ambient hardness (Id., p.10.).

The hardness values must also be protective under all flow conditions (Id., pp. 10-11). Scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces criteria that ensure these metals do not cause receiving water toxicity, while avoiding criteria that are unnecessarily stringent.

A 2006 Study³ developed procedures for calculating the effluent concentration allowance (ECA)⁴ for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g., high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. Simply using the lowest recorded upstream receiving water hardness to calculate the ECA may result in over or under protective WQBELs.

The 2006 Study assumes the availability of upstream receiving water hardness data, outside the influence of the discharge. However, as described above, there is no physical upstream receiving water monitoring location in Fourteen Mile Slough and it is infeasible to collect upstream receiving water

¹ The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

² The CTR requires that, for waters with a hardness of 400 mg/L (as CaCO₃), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

³ Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. *California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations*. WEFTEC, Chicago, Ill.

⁴ The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.

monitoring data. The effluent hardness ranged from 370 mg/L to 430 mg/L (as CaCO₃), based on 13 samples from July 2007 to June 2010. The downstream receiving water hardness at Monitoring Location RSW-002 varied from 310 mg/L to 400 mg/L (as CaCO₃), based on 13 samples from July 2007 to June 2010. Thus, water quality criteria for hardness-based metals were conservatively calculated using the reasonable-worst case ambient hardness, represented by the minimum observed downstream receiving water hardness of 310 mg/L (as CaCO₃).

- ii. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria.

d. Assimilative Capacity/Mixing Zone

The CWA directs states to adopt water quality standards to protect the quality of its waters. USEPA's current water quality standards regulation authorizes states to adopt general policies, such as mixing zones, to implement state water quality standards (40 CFR 122.44 and 122.45). The USEPA allows states to have broad flexibility in designing its mixing zone policies. Primary policy and guidance on determining mixing zone and dilution credits is contained in the SIP and the Basin Plan. The Regional Water Board may also rely on the guidance in USEPA's *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001) (TSD).

The allowance of mixing zones by the Regional Water Board is discussed in the Basin Plan's Policy for Application of Water Quality Objectives, which states, in part, "*In conjunction with the issuance of NPDES and storm water permits, the Regional Board may designate mixing zones within which water quality objectives will not apply provided the discharger has demonstrated to the satisfaction of the Regional Board that the mixing zone will not adversely impact beneficial uses. If allowed, different mixing zones may be designated for different types of objectives, including, but not limited to, acute aquatic life objectives, chronic aquatic life objectives, human health objectives, and acute and chronic whole effluent toxicity objectives depending in part on the averaging period over which the objectives apply. In determining the size of such mixing zones, the Regional Board will consider the applicable procedures and guidelines in the EPA's Water Quality Standards Handbook and the [TSD]. Pursuant to EPA guidelines, mixing zones designated for acute aquatic life objectives will generally be limited to a small zone of initial dilution in the immediate vicinity of the discharge.*"

Section 1.4.2 of the SIP states, in part, "...with the exception of effluent limitations derived from TMDLs, in establishing and determining compliance with

effluent limitations for applicable human health, acute aquatic life, or chronic aquatic life priority pollutant criteria/objectives or the toxicity objective for aquatic life protection in a basin plan, the Regional Board may grant mixing zones and dilution credits to dischargers ... The applicable priority pollutant criteria and objectives are to be met throughout a water body except within any mixing zone granted by the Regional Board. The allowance of mixing zones is discretionary and shall be determined on a discharge-by-discharge basis. The Regional Board may consider allowing mixing zones and dilution credits only for discharges with a physically identifiable point of discharge that is regulated through an NPDES permit issued by the Regional Board."

For completely-mixed discharges, the Regional Water Board may grant a mixing zone and apply a dilution credit in accordance with Section 1.4.2.1 of the SIP. For incompletely-mixed discharges, the Discharger must perform a mixing zone study to demonstrate to the Regional Water Board that a dilution credit is appropriate. In granting a mixing zone, the SIP states that a mixing zone shall be as small as practicable, and meet the conditions provided in Section 1.4.2.2 of the SIP.

The Discharger conducted a mixing zone study to determine if the discharge would be "completely-mixed". The SIP defines a completely mixed discharge as, "...not more than a 5 percent difference, accounting for analytical variability, in the concentration of a pollutant exists across a transect of the water body at a point within two stream/river widths from the discharge point." The discharge is not completely-mixed discharge because the receiving water does not flow past and mix with the outfall discharge water, rather the discharge is tidally mixed with the receiving water as the San Joaquin River water moves in and out of Fourteen Mile Slough due to tidal action. Complete mixing occurs far downstream of the discharge, so the discharge is classified as an "incompletely-mixed" discharge in accordance with the SIP.

If limited or no dilution is available, effluent limitations may be set equal to the applicable water quality criteria or objectives, which are applied at the point of discharge so the discharge will not cause the receiving water to exceed water quality objectives established to protect the beneficial uses. In situations where receiving water flows are substantially greater than effluent flows, dilution may be considered in establishing effluent limitations. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality criteria or objectives that are applied at the point of discharge such that the discharge will not cause or contribute to a receiving water excursion above water quality objectives established to protect the beneficial uses.

Fourteen Mile Slough is a dead end, tidally influenced slough within the eastern portion of the Sacramento-San Joaquin Delta. The eastern portion of the Sacramento-San Joaquin Delta is listed as impaired for numerous pollutants,

including unknown toxicity. The storm drain outfall, which conveys the treated groundwater effluent, discharges to Fourteen Mile Slough via the SJGPS #1. During a site visit in November 2004, Regional Water Board staff observed some pooled water but no discernable receiving water flow immediately downgradient in the vicinity of this outfall location. Further downgradient, staff observed increasing volumes of water in Fourteen Mile Slough, likely under tidal influence. During a site visit on 30 August 2010 performed by PG Environmental on behalf of the Regional Water Board, the pump station was not discharging to Fourteen Mile Slough; however, some flow was noted in Fourteen Mile Slough downstream of the pump station. Considering the hydraulic characteristics of the receiving water, results of effluent and ambient receiving water monitoring, and the location of the discharge outfall to the beginning of Fourteen Mile Slough, the Regional Water Board has evaluated the need for WQBELs for pollutants without benefit of dilution in this Order, with the exception of arsenic and barium.

The Basin Plan contains specific water quality objectives for arsenic and barium for the Sacramento-San Joaquin Delta. On 25 September 2009, the Discharger submitted a *Work Plan for Dilution/Mixing Zone Study for Arsenic and Barium, Lincoln Center, Stockton, California* (Work Plan), detailing how the Discharger planned to conduct a dilution/mixing zone study for arsenic and barium in Fourteen Mile Slough. The study was performed in accordance with the SIP, USEPA's Water Quality Standards Handbook, and the TSD. The study consisted of a field survey of the receiving water (to identify the intakes or outfalls in the proposed mixing zone), and an empirical study of arsenic and barium concentrations along Fourteen Mile Slough (to characterize the extent of dilution). Tidally influenced receiving waters, such as Fourteen Mile Slough, exhibit complex mixing behavior and unsteady hydraulics. Fourteen Mile Slough generally experiences two high tides and two low tides during each tidal cycle, and each tidal cycle lasts approximately 24.8 hours. Periods of "spring" and "neap" tides occur in conjunction with the lunar cycle and refer to the tidal range or amplitude. During spring tides, the high tides are higher and the low tides are lower, while during neap tides, the range is more confined.

The dilution/mixing of constituents in Fourteen Mile Slough is complex because flow direction along Fourteen Mile Slough reverses with tides and flow is unsteady. Therefore, the study was designed to provide empirical dilution data and the critical design conditions monitored were based on the tides. There is no upstream flow in Fourteen Mile Slough during non-storm events, so only tidal flushing is available for dilution. To meet the critical design conditions when dilution and mixing are at a minimum, the study was conducted while a neap tide cycle was occurring and was conducted during a period of no rainfall, so there were no storm water flows to dilute the discharge. The reason for conducting the study during a neap tide cycle is that over the course of an entire neap tide cycle, it is presumed that the tides provide less dilution (due to lower tidal amplitude) than all other tidal cycles. During this neap tide cycle, a slack water condition occurs at low tide. The slack water condition produces little or no horizontal

motion of receiving waters, which is considered the critical design condition or minimum occurrence of dilution and mixing.

On 28 and 29 September 2009, during the neap tide cycle, the dilution/mixing zone study was performed. The study consisted of multiple components, including:

- Field survey of Fourteen Mile Slough from the outfall of SJCPS #1 to the Village Marina;
- Composite sampling at the outfall of SJCPS #1, Footbridge, Riverbank Park, Village Marina, and Juggler's Island stations;
- Grab sampling of the system effluent and I-5 overpass station;
- Water levels recorded by pressure transducer at all monitoring locations except Juggler's Island station;
- Depth cross-section measurements at the I-5 overpass station;
- Velocity estimates at the I-5 overpass station;
- Continuous conductivity measurements at the I-5 overpass station;
- Conductivity transects at the Footbridge and I-5 overpass stations;
- Field screening of grab samples for conductivity, pH, and temperature.

Results of these study components are further detailed in the *Revised Fourteen-Mile Slough Dilution/Mixing Zone Study, Lincoln Center, Stockton, California* (prepared by LFR, Inc, 17 November 2009). During the field survey of Fourteen Mile Slough it was observed that the Alexandria Place pump station was discharging intermittently during the study. Discharges lasted approximately 5 minutes and occurred every 90 minutes. The estimated total daily flow from this discharge is 99,000 gallons per day. Analysis of a grab sample indicated that arsenic and barium concentrations were 16 µg/L and 150 µg/L, respectively, from this discharge. These analytical results are greater than analytical results from samples collected upstream of the discharge at the Footbridge. Therefore, the discharge from the Alexandria Place pump station may, if at all, slightly reduce the calculated dilution by increasing the concentrations of arsenic and barium present in Fourteen Mile Slough.

Water levels recorded at the Footbridge, I-5 overpass, Riverbank Park, and Village Marina indicated all stations are tidally influenced and tidally ranged within 3 feet. The outfall of SJCPS #1 was not tidally influenced during the study period. Conductivity measurements transecting the Footbridge and I-5 overpass stations were collected to evaluate whether conditions varied appreciably over the width of Fourteen Mile Slough. The variability was approximately 0.5 percent which is less than 8 percent that is the cut off for considering the data representative of the entire width of the water body.

The following table presents the summary of analytical results for composite sampling as well as treatment system samples. Composite values for the I-5 overpass station were created by averaging the grab sample results. The

effective dilution factor was calculated from the analytical data using the following equation:

$$DF = (C_e - C_a) / (C_p - C_a)$$

Where:

- DF = dilution factor
- C_e = effluent concentration
- C_a = background concentration at Jugglers Island
- C_p = concentration at given location

Table F-5. Analytical Results and Effective Dilution Factors

Sample Location	Arsenic (µg/L)	Barium (µg/L)	Dilution Factor for Arsenic	Dilution Factor for Barium
System Discharge ¹	11	290	--	--
Footbridge	8.6	130	1.4	2.8
I-5 Overpass	5.0 ²	73 ²	3.0	8.3
Riverbank Park	5.8	59	2.4	15.4
Village Marina	3.7	51	5.3	30.9
Juggler's Island ³	2.0	43	--	--

¹ Effluent concentration (C_e).

² Composite values for the I-5 station were created by averaging the grab sample results.

³ Background concentration (C_a).

Once the dilution factors were determined, effluent concentration allowance (ECA) values were calculated following Step 1 of the process for developing WQBELs in accordance with the steady state model described in Section 1.4 of the SIP and Chapter 5 of the TSD. For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C > B, \text{ and}$$

$$ECA = C \quad \text{where } C \leq B$$

Where:

- ECA = effluent concentration allowance
- D = dilution credit
- C = the priority pollutant criterion/objective
- B = the ambient background concentration.

The background concentrations of arsenic and barium were less than the applicable Basin Plan objectives; therefore, the effective dilution factor (DF) for the dilution credit (D) was substituted in the equation for the ECA that include dilution. The resulting ECAs based on dilution credits for arsenic and barium are as follows:

Table F-6. ECA Based on Dilution Credits

Sample Location	Dilution Factor for Arsenic	ECA for Arsenic (µg/L)	Dilution Factor for Barium	ECA for Barium (µg/L)
Footbridge	1.4	21	2.8	260
I-5	3.0	34	8.3	570
Riverbank Park	2.4	29	15.4	980
Marina	5.3	52.4	30.9	1,900

Using the dilution factor as the “D” in the SIP’s ECA equation is conservative, because the maximum background constituent concentrations are essentially “double counted”. The maximum ambient background concentration is a factor in the calculation of the dilution factor and again accounted for in the SIP’s ECA equation.

The Discharger’s dilution/mixing zone study indicates that the San Joaquin River at Juggler’s Island (i.e., the confluence of Fourteen Mile Slough and the San Joaquin River) where the tidally influenced waters originate for Fourteen Mile Slough is a more representative location for ambient background receiving water sampling. The Discharger compared arsenic concentrations at Juggler’s Island with arsenic concentrations in the San Joaquin River collected by the City of Stockton during 2002 and the City of Manteca from 2006 and 2008. Based on background monitoring at Juggler’s Island during the study, the maximum background concentration of arsenic was 2.0 µg/L. Updated monitoring at Juggler’s Island conducted on 7 September 2010 indicated a background concentration of 2.5 µg/L. The background concentration of arsenic at Juggler’s Island is within the range of concentrations observed by the City of Stockton (0.5 µg/L to 4.1 µg/L), which is approximately 15 miles upstream. The background concentration of arsenic at Juggler’s Island is also within the range of concentrations observed by the City of Manteca (0.1 µg/L to 1.6 µg/L), which is approximately 20 miles upstream. Data collected in a study performed by the San Francisco Estuary Institute near Antioch indicated a mean arsenic concentration of 1.97 µg/L, based on 62 samples collected between 1993 and 2007. Therefore, samples collected by the Discharger at Juggler’s Island are considered representative of background receiving water conditions. The background concentration of arsenic at Juggler’s Island of 2.5 µg/L is below the Basin Plan water quality objective for arsenic of 10 µg/L as a maximum concentration, and indicates that assimilative capacity for arsenic is available in the receiving water. Based on the fact that assimilative capacity exists and the results of the dilution/mixing zone study, the Regional Water Board finds that a dilution factor of 3.0 is appropriate for arsenic. This dilution factor corresponds to a mixing zone extending approximately 0.9 miles and ending at the I-5 overpass.

Based on background monitoring at Juggler’s Island during the study, the maximum background concentration of barium was 43 µg/L. Updated monitoring at Juggler’s Island conducted on 7 September 2010 indicated a background concentration of 48 µg/L. The background concentration of barium at Juggler’s Island of 48 µg/L is below the Basin Plan water quality objective for barium of

100 µg/L as a maximum concentration, and indicates that assimilative capacity for barium is available in the receiving water. Based on the fact that assimilative capacity exists and the results of the dilution/mixing zone study, the Regional Water Board finds that a dilution factor of 8.3 is appropriate for barium. This dilution factor corresponds to a mixing zone extending approximately 0.9 miles and ending at the I-5 overpass.

The discharge will not adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws, because all aquatic life criteria must be met at the end-of-pipe (i.e., no dilution allowed). The discharge will not produce undesirable or nuisance aquatic life, result in floating debris, oil, or scum, produce objectionable color, odor, taste, or turbidity, cause objectionable bottom deposits, or cause nuisance, because this Order requires effluent limitations and discharge prohibitions, which prevent these from occurring.

As suggested by the SIP, in determining the extent of or whether to allow a mixing zone and dilution credit, the Regional Water Board has considered the presence of pollutants in the discharge that are carcinogenic, mutagenic, teratogenic, persistent, bioaccumulative, or attractive to aquatic organisms, and concluded that the allowance of the mixing zone and dilution credit is adequately protective of the beneficial uses of the receiving water. Furthermore, no drinking water intakes are located within the mixing zone.

The mixing zone therefore complies with the SIP. The mixing zone also complies with the Basin Plan, which requires that the mixing zone not adversely impact beneficial uses. Beneficial uses will not be adversely affected for the same reasons discussed above. In determining the size of the mixing zone, the Regional Water Board has considered the procedures and guidelines in the EPA's Water Quality Standards Handbook, 2d Edition (updated July 2007), Section 5.1, and Section 2.2.2 and 4.3.3. of the TSD. The SIP incorporates the same guidelines.

Based on the results of the study, the Regional Water Board adopted Order No. R5-2010-0083 on 29 July 2010, amending Order No. R5-2005-0144 to revise effluent limitations for arsenic and barium. The study concluded that the edge of the mixing zone in Fourteen Mile Slough for arsenic and barium is located at the I-5 overpass. The Regional Water Board finds that the mixing zones and dilution credits supported by the study continue to be applicable to the discharge. This Order allows a mixing zone for arsenic and barium approximately 0.9 miles downstream of the discharge at the I-5 overpass (Monitoring Location RSW-003) and includes effluent limitations allowing credit for dilution for arsenic and barium.

The study was conducted during tidal and meteorological conditions that were intended to represent the critical design condition; however, the data set is limited. Order No. R5-2005-0144-01 required the Discharger to collect additional data to verify its findings in the dilution/mixing zone study. This Order retains the additional monitoring requirements to verify its findings in the dilution/mixing zone

study. This Order may be reopened and the mixing zones/dilution modified, as necessary, based on the results of the receiving water monitoring.

3. Determining the Need for WQBELs

- a. The Regional Water Board conducted the RPA in accordance with section 1.3 of the SIP except for some non-CTR constituents as otherwise described in sections IV.C.3.b and IV.C.3.c of this Fact Sheet. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control.¹ The SIP states in the introduction “*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.*” Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents except for some non-CTR constituents as otherwise described in sections IV.C.3.b and IV.C.3.c of this Fact Sheet. The RPA was based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.
- b. **Constituents with No Reasonable Potential.** WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential; however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.
 - i. **Bis (2-ethylhexyl) Phthalate.** The CTR includes a criterion of 1.8 µg/L for bis (2-ethylhexyl) phthalate for the protection of human health for waters from which both water and organisms are consumed. Bis (2-ethylhexyl) phthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected bis (2-ethylhexyl) phthalate may be from plastics used for sampling or analytical equipment. Based on detections of bis (2-ethylhexyl) phthalate in the receiving water above the CTR criterion, Provision E.5 of Order No. R5-2005-0144-01 required the Discharger to conduct a study of bis (2-ethylhexyl) phthalate. The Discharger submitted a work plan and time schedule for the bis (2-ethylhexyl) phthalate monitoring study on 21 April 2006. In accordance with the work plan and time schedule, the Discharger conducted quarterly monitoring of the effluent and receiving water from July 2006 to April 2007, implementing corrective measures to prevent contamination during sample collection, handling, and analytical procedures. Bis (2-ethylhexyl) phthalate was not detected in any effluent or receiving water samples during the study. Therefore, the discharge does not have reasonable potential to cause or contribute to an exceedance of a water quality standard.

¹ See Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

- ii. **Copper.** Order No. R5-2005-0144-01 established effluent limitations for copper based on the CTR criteria for the protection of freshwater aquatic life. The CTR criteria are hardness-dependent and are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Using the reasonable worst-case downstream hardness of 310 mg/L as CaCO₃, as described in section IV.C.2.c of this Fact Sheet, and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum 4-day average concentration) is 25 µg/L and the applicable acute criterion (maximum 1-hour average concentration) is 41 µg/L, as total recoverable. Table III-1 of the Basin Plan contains a water quality objective for the Sacramento-San Joaquin Delta for dissolved copper of 10 µg/L as a maximum concentration. Using the USEPA recommended acute dissolved-to-total translator, the Basin Plan water quality objective for total copper is 10.4 µg/L.

The MEC for total recoverable copper was 6.9 µg/L, based on 37 samples collected between July 2007 and June 2010. Because concentrations of copper in the effluent do not exceed the applicable criteria, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for protection of freshwater aquatic life or the Basin Plan water quality objective for copper and effluent limitations have not been retained in this Order.

- iii. **Iron.** The Secondary Maximum Contaminant Level (MCL) – Consumer Acceptance Limit for iron is 300 µg/L, which is used to implement the Basin Plan’s chemical constituent objective for the protection of municipal and domestic supply. Table III-1 of the Basin Plan contains a water quality objective for the Sacramento-San Joaquin Delta for dissolved iron of 300 µg/L, as a maximum concentration. In the absence of a specific translator for iron, a translator of 1 is assumed (i.e., the applicable objective for total iron is equal to 300 µg/L). Order No. R5-2005-0144-01 established an AMEL of 300 µg/L for total iron based on the Secondary MCL and an MDEL of 300 µg/L for dissolved iron based on the Basin Plan water quality objective.

The MEC for total iron was 260 µg/L, based on 13 samples collected between July 2007 and June 2010. The MEC for dissolved iron was 190 µg/L, based on 12 samples collected between July 2007 and June 2010. Because concentrations of total and dissolved iron in the effluent do not exceed the applicable criteria, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL or Basin Plan water quality objective for iron and effluent limitations have not been retained in this Order.

- iv. **Manganese.** The Secondary MCL – Consumer Acceptance Limit for manganese is 50 µg/L, which is used to implement the Basin Plan’s chemical constituent objective for the protection of municipal and domestic supply. Table III-1 of the Basin Plan contains a water quality objective for the

Sacramento-San Joaquin Delta for dissolved manganese of 50 µg/L, as a maximum concentration. In the absence of a specific translator for manganese, a translator of 1 is assumed (i.e., the applicable objective for total manganese is equal to 50 µg/L). Order No. R5-2005-0144-01 established an AMEL of 50 µg/L for total manganese based on the Secondary MCL and an MDEL of 50 µg/L for dissolved manganese based on the Basin Plan water quality objective.

The MEC for total manganese was 1.8 µg/L, based on 13 samples collected between July 2007 and June 2010. The MEC for dissolved manganese was 5.8 µg/L, based on 12 samples collected between July 2007 and June 2010. Because concentrations of total and dissolved manganese in the effluent do not exceed the applicable criteria, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL or Basin Plan water quality objective for manganese and effluent limitations have not been retained in this Order.

- v. **Methylene Chloride.** The CTR criterion for protection of human health for consumption of water and organisms for methylene chloride is 4.7 µg/L. Order No. R5-2005-0144-01 established a monthly median effluent limitation of <0.5 µg/L based on analytical capability (as represented by the analytical method reporting level), which is consistent with the lowest ML in the SIP. Methylene chloride was detected, but not quantified, in the effluent in seven of 47 samples collected between July 2007 and June 2010 as shown in the table below.

Table F-7. Methylene Chloride Concentrations

Date	Methylene Chloride (µg/L)		
	Influent	Effluent	Blank
8 June 2009	0.9 J	0.3 J	0.6 J
2 September 2009	--	0.2 J	<0.2
10 September 2009	1.3 J	0.4 J	0.5 J
28 October 2009	0.4 J	0.3 J	0.4 J
14 January 2010	1.3 J	0.2 J	0.4 J
2 March 2010	1.3 J	0.1 J	0.2 J
10 March 2010	--	0.2 J	<0.2

J = Detected, but not quantified.

Each of the detections occurred after the Discharger changed laboratories to Curtis & Tompkins, Ltd. in May 2009. The Discharger provided a 24 August 2010 letter from Curtis & Tompkins, Ltd. stating that the reporting limit for methylene chloride is unrealistic on a routine basis in a full-service environmental laboratory. Methylene chloride is the primary extraction solvent for the extraction of semi-volatile organics from soil and water samples. Curtis & Tompkins, Ltd. stores the solvent in a separate laboratory in the same building and mitigates cross-contamination through separate air-handling systems, positive versus negative pressure in different laboratories, and physical isolation of the solvent. However, the letter stated that occasional

excursions of the applicable reporting limit occur, leading to false positive results in laboratory blanks and/or samples.

Methylene chloride was not detected in the effluent above the CTR criteria for human health of 4.7 µg/L. Furthermore, the unquantifiable results summarized in Table F-7 are suspect based on potential laboratory contamination. Therefore, methylene chloride does not have reasonable potential to cause or contribute to an exceedance of the CTR criteria and WQBELs are not included in this Order. This Order also discontinues the technology-based effluent limitation for methylene chloride, as discussed in section IV.D.3. This Order will require quarterly monitoring for methylene chloride to verify that methylene chloride is not present in the effluent.

vi. 1,2-Dichloroethane. 1,2-Dichloroethane has not been detected in the effluent, therefore, based on the SIP the discharge does not have reasonable potential to cause or contribute to an exceedance of a water quality objective and WQBELs are not required. However, Order No. R5-2005-0144-01 identified 1,2-dichloroethane as a constituent of concern in the influent groundwater and established a water quality-based average monthly effluent limit (AMEL) of 0.38 µg/L based on the CTR criterion. The AMEL has been carried forward from the previous Order to satisfy federal Antidegradation requirements.

c. Constituents with Reasonable Potential. The Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, arsenic, barium, chromium VI, electrical conductivity, lead, mercury, and pH. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. Ammonia

(a) WQO. The National Ambient Water Quality Criteria (NAWQC) for the protection of freshwater aquatic life for total ammonia recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. USEPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because Fourteen Mile Slough has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in Fourteen Mile Slough is likely, the recommended criteria for waters where salmonids and early life stages

are present were used.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

The Discharger monitored the pH and temperature of the effluent on a monthly basis. The maximum observed temperature and the maximum observed pH of the effluent were used to calculate the 30-day CCC. The maximum observed effluent temperature at Monitoring Location RSW-002 was 24.6°C) and the maximum observed effluent pH value was 8.5. Using a pH value of 8.5 and the worst-case temperature value of 24.6°C), the resulting 30-day CCC is 0.57 mg/L (as N). The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 0.57 mg/L (as N), the 4-day average concentration that should not be exceeded is 1.43 mg/L (as N).

- (b) RPA Results.** Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. The MEC for ammonia was 1.1 mg/L, which exceeds the 30-day CCC. Therefore, ammonia in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.
- (c) WQBELs.** The Regional Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day CCC. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day CCC was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day CCC, and 30-day CCC is then selected for deriving the AMEL and the MDEL. The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. This Order contains a final AMEL of 0.72 mg/L and MDEL of 2.1 mg/L for ammonia as shown in Table F-10 of this Fact Sheet, based on protection of the Basin Plan's narrative toxicity objective.
- (d) Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 1.1 mg/L is less than the applicable MDEL, but greater than the applicable AMEL. However, effluent ammonia exceeded the AMEL only once based on 36 samples collected between July 2007 and

June 2010. The Regional Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ii. Arsenic

(a) WQO. The Primary MCL for arsenic is 10 µg/L, which is used to interpret the Basin Plan's chemical constituent objective for the protection of the MUN beneficial use. Table III-1 of the Basin Plan contains a specific water quality objective for the Sacramento-San Joaquin Delta for arsenic of 10 µg/L as a maximum concentration.

(b) RPA Results. The MEC for arsenic was 23 µg/L. Therefore, arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan water quality objective.

(c) WQBELs. As described in section IV.C.2.d of this Fact Sheet, assimilative capacity is available and a dilution credit of 3.0 is appropriate for calculating effluent limitations for arsenic. Following the procedures established by the SIP for calculating WQBELs and applying a dilution credit of 3.0 to the Basin Plan water quality objective, the resulting AMEL for arsenic is 33 µg/L. However, effluent limitations may only be as high as is justified under State and federal antidegradation policies. The 99th percentile of the effluent data for arsenic between October 2005 and February 2010 is 19 µg/L (assuming a normal distribution). The MEC observed during the same period was 23 µg/L. This Order retains the performance-based effluent limitation of 23 µg/L established in Order No. R5-2005-0144-01.

(d) Plant Performance and Attainability. The effluent limitations established in this Order for arsenic are based on the performance of the treatment system. The Regional Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iii. Barium

(a) WQO. The Primary MCL for barium is 1,000 µg/L, which is used to interpret the Basin Plan's chemical constituent objective for the protection of the MUN beneficial use. Table III-1 of the Basin Plan contains a specific water quality objective for the Sacramento-San Joaquin Delta for barium of 100 µg/L as a maximum concentration.

(b) RPA Results. The MEC for barium was 390 µg/L. Therefore, barium in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan water quality objective.

(c) WQBELs. As described further in section IV.C.2.d of this Fact Sheet, assimilative capacity is available and a dilution credit of 8.3 is appropriate for calculating effluent limitations for barium. Following the procedures

established by the SIP for calculating WQBELs and applying a dilution credit of 8.3 to the Basin Plan water quality objective, the resulting AMEL for barium is 532 µg/L. However, effluent limitations may only be as high as is justified under State and federal antidegradation policies. The MEC observed between October 2005 and February 2010 was 390 µg/L, less than the dilution-based ECA. The 99.9th percentile concentration of the effluent data (415 µg/L, assuming a log-normal distribution) was used to establish a performance-based effluent limitation for barium. The performance-based limitation of 415 µg/L is greater than the MEC of 390 µg/L. Therefore, this Order retains the performance-based effluent limitation of 415 µg/L from Order No. R5-2005-0144-01.

(d) Plant Performance and Attainability. The effluent limitations established in this Order for barium are based on the performance of the treatment system. The Regional Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iv. Chromium VI

(a) WQO. The CTR includes maximum 1-hour average and 4-day average criteria of 16 µg/L and 11 µg/L, respectively, for chromium VI for the protection of freshwater aquatic life.

(b) RPA Results. The MEC for chromium VI was 16 µg/L (as total recoverable). Therefore, chromium VI in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of freshwater aquatic life.

(c) WQBELs. This Order contains a final AMEL and MDEL of 7.8 µg/L and 16 µg/L, respectively, for chromium VI as shown in Table F-10 of this Fact Sheet, based on the CTR criterion for the protection of freshwater aquatic life.

(d) Plant Performance and Attainability. Chromium VI was detected in the effluent at a concentration equivalent to the applicable MDEL and greater than the applicable AMEL in one of 37 samples collected between July 2007 and June 2010. The remaining samples were below the applicable AMEL and MDEL. The Regional Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

v. Lead

(a) WQO. The CTR includes hardness dependent criteria for the protection of freshwater aquatic life for lead. Using the default conversion factors and reasonable worst-case downstream hardness, as described in section IV.C.2.c of this Fact Sheet, the applicable acute (1-hour average) criterion

is 345 µg/L and the applicable chronic (4-day average) criterion is 13 µg/L, as total recoverable.

- (b) RPA Results.** Order No. R5-2005-0144-01 identified lead as a constituent of concern in the influent groundwater and established effluent limitations. Lead was detected twice out of 37 samples with an MEC of 1.5 µg/L (as total recoverable). Lead was not detected in the influent groundwater in 11 samples. Based on this information, the discharge does not have reasonable potential to cause or contribute to an exceedance of a water quality objective. However, the RPA procedures in Section 1.3 of the SIP allow the Regional Water Board to consider other information to determine if WQBELs are necessary to protect the beneficial uses of the receiving water. Because lead is a constituent of concern, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for protection of aquatic life.
- (c) WQBELs.** This Order contains a final AMEL and MDEL for lead as shown in Table F-10 of this Fact Sheet based on the CTR criterion for the protection of freshwater aquatic life.
- (d) Plant Performance and Attainability.** The MEC for lead of 1.5 µg/L is less than the applicable effluent limitations. The Regional Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vi. Mercury

- (a) WQO.** The current NAWQC for protection of freshwater aquatic life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion (based on a threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that “...*more stringent mercury limits may be determined and implemented through use of the State’s narrative criterion.*” In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The eastern portion of the Sacramento-San Joaquin Delta and the Deep Water Ship Channel have been listed as impaired water bodies pursuant to CWA section 303(d) because of mercury. The Central Valley Water Board adopted Resolution No. R5-2010-0043, *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary*, on 22 April 2010. The

TMDL has not yet been approved by the State Water Board, the Office of Administrative Law (OAL), or USEPA. Upon approval, the Discharger will be subject to the TMDL.

(b) RPA Results. The maximum observed effluent mercury concentration was 0.0011 µg/L. Mercury bioaccumulates in fish tissue and, therefore, the discharge of mercury to the receiving water may contribute to exceedances of the narrative toxicity objective and impact beneficial uses.

(c) WQBELs. Order No. R5-2005-0144-01 established concentration-based effluent limitations for mercury based on the CTR criterion for protection of human health. Although monitoring data indicates that the discharge has not exceeded the CTR criterion, the existing effluent limitations based on the CTR human health criterion for mercury must be retained because the Sacramento-San Joaquin Delta is not in attainment with water quality objectives.

In addition to the concentration-based effluent limitations, this Order contains a performance-based mass effluent limitation of 0.0014 lbs/year for mercury for the effluent discharged to the receiving water. This limitation is based on maintaining the mercury loading at the current level until the TMDL for methylmercury and total mercury in the Sacramento-San Joaquin Delta is approved. The mass limitation was derived using the maximum observed effluent mercury concentration and the design average daily flow rate of the current treatment plant (0.43 MGD):

Effluent concentration (mg/L) * Design average daily flow rate * 8.34 (conversion factor) * 365 days = lbs/year

In addition to approval of the TMDL, if USEPA develops new water quality standards for mercury, this permit may be reopened and the effluent limitations adjusted.

(d) Plant Performance and Attainability. The MEC of 0.0011 µg/L is below the applicable concentration-based effluent limitations. The mass limitation for mercury is based on the performance of the treatment system. The Regional Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vii. pH

(a) WQO. The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *"...pH shall not be depressed below 6.5 nor raised above 8.5."*

(b) RPA Results. The discharge of treated groundwater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's numeric objectives for pH.

(c) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.

(d) **Plant Performance and Attainability.** The pH of the effluent ranged from 7.79 to 8.5. The Regional Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

viii. **Salinity**

(a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains a narrative objective, and contains numeric water quality objectives for electrical conductivity, total dissolved solids, sulfate, and chloride. There are no USEPA numeric water quality criteria for the protection of agricultural, live stock, and industrial uses. Numeric values for the protection of these uses are typically based on site specific conditions and evaluations to determine the appropriate constituent threshold necessary to interpret the narrative chemical constituent Basin Plan objective. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

Table F-8. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal ¹	Secondary MCL ³	Effluent	
			Average	Maximum
EC (µmhos/cm)	Varies ²	900, 1600, 2200	795	910
TDS (mg/L)	Varies	500, 1000, 1500	503	640
Sulfate (mg/L)	Varies	250, 500, 600	66	92.1
Chloride (mg/L)	Varies	250, 500, 600	50	56.1

¹ Agricultural water quality goals based on *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985)

² The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. An EC level of 700 umhos/cm is generally considered to present no risk of salinity impacts to crops. However, many crops are grown successfully with higher salinities.

³ The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

(1) **Chloride.** The secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The recommended agricultural water quality goal for chloride, that would apply the narrative chemical constituent objective, is 106 mg/L as a long-term average based on Water Quality

for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 106 mg/L water quality goal is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers.

(2) Electrical Conductivity. The secondary MCL for EC is 900 $\mu\text{mhos/cm}$ as a recommended level, 1600 $\mu\text{mhos/cm}$ as an upper level, and 2200 $\mu\text{mhos/cm}$ as a short-term maximum. The agricultural water quality goal, that would apply the narrative chemical constituents objective, is 700 $\mu\text{mhos/cm}$ as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 700 $\mu\text{mhos/cm}$ agricultural water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. These crops are either currently grown in the area or may be grown in the future. Most other crops can tolerate higher EC concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the EC, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

The Bay-Delta Plan establishes water quality objectives for electrical conductivity at certain compliance points within the Sacramento-San Joaquin Delta. The compliance points nearest the Facility are at the San Joaquin River at Brandt Bridge (approximately 12 miles upstream of the confluence with Fourteen Mile Slough) and the San Joaquin River at Prisoner's Point (approximately 10 miles downstream of the confluence with Fourteen Mile Slough).

Order No. R5-2005-0144-01 required the Discharger to conduct a site-specific salinity study assessing ambient receiving water flows and associated salinity levels and the impact of the discharge on local soil salinity, background water quality, and irrigation and municipal supply users downstream of the discharge. The Discharger submitted the *Site-Specific Salinity Study Report, Groundwater Extraction and Treatment System, Lincoln Center, Stockton, California* (LFR Inc.) on 23 September 2008. The report evaluated electrical conductivity concentrations in Fourteen Mile Slough downstream of the discharge and in the San Joaquin River upstream and downstream of the confluence with Fourteen Mile Slough, and made the following observations:

- Effluent electrical conductivity concentrations are consistently below the AMEL of 900 $\mu\text{mhos/cm}$ in Order No. R5-2005-0144-01;

- Long-term average electrical conductivity levels in the effluent (748 $\mu\text{mhos/cm}$) are slightly lower than levels found to be protective of crops in a 1974 University of California, Davis study (750 $\mu\text{mhos/cm}$) and other studies (1,000 $\mu\text{mhos/cm}$), while exceeding the water quality goal for agriculture (700 $\mu\text{mhos/cm}$);
- Long-term average electrical conductivity levels in Fourteen Mile Slough at Monitoring Location RSW-002 are below the water quality goal for agriculture (700 $\mu\text{mhos/cm}$);
- Electrical conductivity levels in the effluent and Fourteen Mile Slough are not increasing over time;
- Comparison of the San Joaquin River upstream and downstream of the confluence with Fourteen Mile Slough indicate that water flows and associated electrical conductivity levels from Fourteen Mile Slough do not cause an increase in electrical conductivity levels in the San Joaquin River;
- The storm sewer to which the Facility discharges may have assimilative capacity for electrical conductivity, which may be due to geochemical reactions as the discharge travels through the 2 miles of concrete pipeline; and
- In general, the San Joaquin River near its confluence with Fourteen Mile Slough is of higher quality (i.e., has lower electrical conductivity levels) than the central and southern portions of the Sacramento-San Joaquin Delta where salinity levels routinely exceed 900 $\mu\text{mhos/cm}$.

The report concluded that the discharge does not appear to have a negative impact on the electrical conductivity levels in Fourteen Mile Slough or the San Joaquin River and that the AMEL of 900 $\mu\text{mhos/cm}$ in Order No. R5-2005-0144-01 is protective of the agricultural supply and municipal and domestic supply beneficial uses.

Given the distance between the discharge to Fourteen Mile Slough and the compliance points in the San Joaquin River at Brandt Bridge or Prisoner's Point, and based on the results of the Discharger's study, the Regional Water Board finds that receiving water conditions in Fourteen Mile Slough in the vicinity of the discharge are not similar to conditions in at the Bay-Delta Plan compliance points.

- (3) Sulfate.** The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(4) Total Dissolved Solids. The secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The recommended agricultural water quality goal for TDS, that would apply the narrative chemical constituent objective, is 450 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). Water Quality for Agriculture evaluates the impacts of salinity levels on crop tolerance and yield reduction, and establishes water quality goals that are protective of the agricultural uses. The 450 mg/L water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops. Only the most salt sensitive crops require irrigation water of 450 mg/L or less to prevent loss of yield. Most other crops can tolerate higher TDS concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the TDS, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

(b) RPA Results.

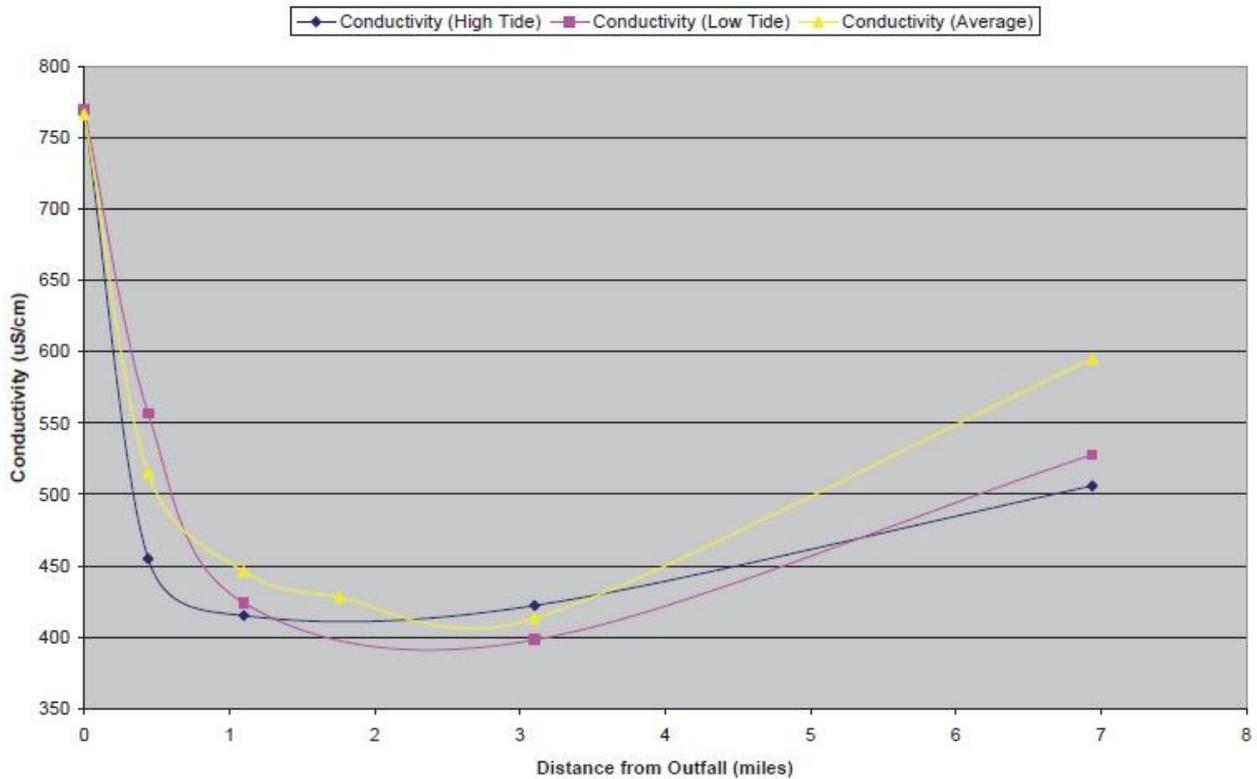
(1) Chloride. Chloride concentrations in the effluent ranged from 45 mg/L to 56.1 mg/L, with an average of 50 mg/L. These levels do not indicate reasonable potential to cause or contribute to an exceedance of the agricultural water quality goal for chloride. The downstream receiving water chloride concentration in Fourteen Mile Slough at Monitoring Location RSW-002 ranged from 40.5 mg/L to 55.6 mg/L, with an average of 47 mg/L.

(2) Electrical Conductivity. Electrical conductivity concentrations in the effluent ranged from 725 μ mhos/cm to 899 μ mhos/cm, with an average of 795 μ mhos/cm. Based on the Discharger's 2009 mixing zone study¹ it was demonstrated that the discharge is insignificant compared to the tidal flow in Fourteen Mile Slough. The estimated slough tidal inflow was approximately 16 MGD during neap tides, which represents low tidal flow conditions (i.e., the tidal amplitude is lowest during neap tides). At the current permitted average daily flow of 0.25 MGD, the discharge represents only 1.6% of the daily tidal inflow under reasonable worst-case conditions. Consequently, the impact on electrical conductivity in the slough is minimal. This can be seen in Figure F-1, below, based on the Discharger's 2009 mixing zone study. The downstream receiving water electrical conductivity concentrations in Fourteen Mile Slough were demonstrated to decrease rapidly downstream and then equilibrate to the electrical conductivity concentrations in the San Joaquin River at Juggler's Point (see Figure

¹ Revised Fourteen-Mile Slough Dilution/Mixing Zone Study, 17 November 2009, prepared by LFR Inc. an Arcadis Company. See also Section IV.C.2.d of the Fact Sheet (Attachment F).

F-1). San Joaquin River electrical conductivity levels were within 500-600 $\mu\text{mhos/cm}$ during the time of the 2009 mixing zone study.

Figure F-1 – Conductivity vs Distance from Outfall (2009 Mixing Zone Study)



(3) Sulfate. Sulfate concentrations in the effluent ranged from 26.5 mg/L to 92.1 mg/L, with an average of 66 mg/L. These levels do not indicate reasonable potential to cause or contribute to an exceedance of the Secondary MCL. The downstream receiving water sulfate concentration in Fourteen Mile Slough at Monitoring Location RSW-002 ranged from 25.1 mg/L to 90.5 mg/L, with an average of 61 mg/L.

(4) Total Dissolved Solids. The average TDS effluent concentration was 503 mg/L with concentrations ranging from 390 mg/L to 640 mg/L. These levels indicate reasonable potential to cause or contribute to an exceedance of the applicable agricultural water goal. The downstream receiving water TDS concentration in Fourteen Mile Slough at Monitoring Location RSW-002 ranged from 25.1 mg/L to 90.5 mg/L, with an average of 61 mg/L.

(c) WQBELs. The Discharger's study demonstrated that an AMEL for electrical conductivity (EC) of 900 $\mu\text{mhos/cm}$ at a discharge rate of 0.43 MGD is protective of the agricultural supply and municipal and domestic supply beneficial uses of Fourteen Mile Slough. Electrical conductivity is an indicator parameter for salinity, including total dissolved solids. Establishing effluent limitations for electrical conductivity is expected to effectively limit the constituents that contribute to salinity, including total dissolved solids. Therefore, effluent limitations for total dissolved solids are not established in this Order.

By letter dated 9 December 2014, the Discharger requested an increase in the AMEL for EC, because the extracted groundwater has been experiencing a naturally-occurring rise in EC that is nearing the existing AMEL. To maintain the same salinity loading to Fourteen Mile Slough, the Discharger also requested a reduction in the discharge rate from 0.43 MGD to 0.25 MGD. The historical EC and TDS data were correlated to estimate the allowed monthly salinity loading to Fourteen Mile Slough under Order R5-2011-0055-01. Based on the salinity data an average EC to TDS conversion factor of 0.65 (standard deviation of 0.1) was determined [i.e., $\text{TDS}(\text{mg/L})=0.65 \times \text{EC}(\mu\text{mhos/cm})$]

Assuming the TDS mass load as a constant value, the EC value corresponding to the currently-permitted TDS mass loading at the proposed flow rate of 0.25 MGD would be 1,536 $\mu\text{mhos/cm}$. Therefore, the EC average monthly effluent limit was increased to 1,500 $\mu\text{mhos/cm}$ by amending Order R5-2015-0076 on 5 June 2015. With the corresponding decrease in allowed discharge flow, the salinity loading to Fourteen Mile Slough will not increase. Therefore, the revised EC effluent limit complies with the Antidegradation Policy and meets the federal antibacksliding exception under 303(d)(4) of the Clean Water Act.

In order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to develop and implement a salinity evaluation and minimization plan.

(d) Plant Performance and Attainability. Monitoring data indicates that the discharge has not exceeded the AMEL of 1500 $\mu\text{mhos/cm}$. The Regional Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

4. WQBEL Calculations

- a. This Order includes WQBELs for ammonia, arsenic, barium, chromium VI, 1,2-dichloroethane (AMEL only), electrical conductivity, lead, mercury, and pH. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

- b. Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C > B, \text{ and}$$

$$ECA = C \quad \text{where } C \leq B$$

where:

- ECA = effluent concentration allowance
 D = dilution credit
 C = the priority pollutant criterion/objective
 B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

- c. Basin Plan Objectives and MCLs.** For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.
- d. Aquatic Toxicity Criteria.** WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.
- e. Human Health Criteria.** WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

$$AMEL = \text{mult}_{AMEL} \left[\min \left(M_A \overbrace{ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic} \right) \right]$$

$$MDEL = \text{mult}_{MDEL} \left[\min \left(M_A ECA_{acute}, M_C \underbrace{ECA_{chronic}}_{LTA_{chronic}} \right) \right]$$

$$MDEL_{HH} = \left(\frac{\text{mult}_{MDEL}}{\text{mult}_{AMEL}} \right) AMEL_{HH}$$

where:

$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL

$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL

M_A = statistical multiplier converting acute ECA to LTA_{acute}

M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

See section IV.D of this Fact Sheet for a summary of WQBELs contained in this Order.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan’s narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V). This Order contains effluent limitations for acute toxicity and chronic toxicity. The Order also requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

- a. Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, “*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*” (Basin Plan at page III-8.00) The Basin Plan also states that, “*...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate...*”. USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*"

The minimum observed acute toxicity result was 95 percent survival, based on annual testing. Consistent with Order No. R5-2005-0144-01, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay-----	70%
Median for any three consecutive bioassays -----	90%

- b. Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, “*All waters shall be maintained free of toxic substances in*

concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” (Basin Plan at page III-8.00.) The following table summarizes test results based on annual whole effluent chronic toxicity testing performed by the Discharger from July 2007 through June 2010.

Table F-9. Summary of Chronic Whole Effluent Toxicity Results

Date	Species	Test Endpoint	Result (TUC)
October 2007	<i>Pimephales promelas</i>	Survival	1
October 2007	<i>Pimephales promelas</i>	Growth	1
October 2007	<i>Ceriodaphnia dubia</i>	Survival	1
October 2007	<i>Ceriodaphnia dubia</i>	Reproduction	1
October 2007	<i>Selenastrum capricornutum</i>	Growth	1
October 2008	<i>Pimephales promelas</i>	Survival	1
October 2008	<i>Pimephales promelas</i>	Growth	8
October 2008	<i>Ceriodaphnia dubia</i>	Survival	1
October 2008	<i>Ceriodaphnia dubia</i>	Reproduction	4
October 2008	<i>Selenastrum capricornutum</i>	Growth	1
November 2009	<i>Pimephales promelas</i>	Survival	1
November 2009	<i>Pimephales promelas</i>	Growth	1
November 2009	<i>Ceriodaphnia dubia</i>	Survival	1
November 2009	<i>Ceriodaphnia dubia</i>	Reproduction	1
November 2009	<i>Selenastrum capricornutum</i>	Growth	1

For the October 2008 *Pimephales promelas* growth test, which demonstrated toxicity of 8 TUC, the 24 October 2008 laboratory report from Block Environmental Services (BES) identified an interrupted dose-response with a non-significant effect bracketed by significant effects. The report stated that the laboratory control water passed the growth test acceptability criteria, no procedural errors could be identified, within treatment variability was acceptable, and test sensitivity was below the maximum recommended criteria and within the laboratory’s typical performance range. Therefore, the report concluded that results obtained from this response pattern are reliable and should be reported.

For the October 2008 *Ceriodaphnia dubia* reproduction test, which demonstrated toxicity of 4 TUC, the 24 October 2004 laboratory report from BES identified an interrupted concentration-response with a statistically significant effect at the 50 percent effluent concentration only. The report stated that the laboratory control water passed the reproductive test acceptability criteria, no procedural errors could be identified, within treatment variability was acceptable, and test sensitivity was below the maximum recommended criteria and within the laboratory’s typical performance range. Therefore, the report concluded that the statistically significant result should be considered anomalous as it is not consistent with the concentration-response pattern produced by the higher test concentrations.

For the October 2008 chronic WET tests, the Discharger reported in the 30 January 2009 NPDES Report for the Annual Period January 1 through December 31, 2008 Groundwater Extraction and Treatment System Lincoln Center, Stockton, California (WDR Order No. R5-2005-0144; NPDES Permit No.

CA0084255) (prepared by LFR Inc.) that the treatment system was extracting and treating groundwater in full-scale operation at the time of sampling, but did not note any potential causes for the observed toxicity results.

Based on chronic WET testing performed by the Discharger from July 2007 through June 2010, which demonstrated toxic effects to *Pimephales promelas* growth in October 2008, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

No dilution has been granted in this Order for the chronic condition. Chronic toxicity testing results exceeding 1 chronic toxicity unit (TUc) demonstrates that the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, this Order includes a narrative chronic toxicity effluent limitation.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region¹ that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.*" The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the

¹ In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 and 1496(a).

Monitoring and Reporting Program (Attachment E section V). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates a pattern of toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if a pattern of effluent toxicity has been demonstrated.

D. Final Effluent Limitations

Table F-10. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				Basis ¹
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	--	0.43	--	--	DC
Conventional Pollutants						
pH	standard units	--	--	6.5	8.5	BP
Priority Pollutants						
Arsenic, Total Recoverable	µg/L	--	23	--	--	PB
Chromium VI, Total Recoverable	µg/L	7.8	16	--	--	CTR
1,2-Dichloroethane	µg/L	0.38	--	--	--	CTR
Lead, Total Recoverable	µg/L	11	22	--	--	CTR
Mercury, Total Recoverable	µg/L	0.050	0.10	--	--	CTR
	lbs/day	0.00018	0.00036	--	--	
	lbs/year	0.0014 ²	--	--	--	PB
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	0.72	2.1	--	--	NAWQC
	lbs/day	2.6	7.5	--	--	
Barium, Total Recoverable	µg/L	--	415	--	--	PB
Electrical Conductivity @ 25°C	µmhos/cm	1500	--	--	--	MCL
Total Petroleum Hydrocarbons (Gasoline Range)	µg/L	--	50	--	--	ML
Volatile Organic Compounds ³	µg/L	--	0.5	--	--	ML

Parameter	Units	Effluent Limitations				Basis ¹
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

¹ DC – Based on the design capacity of the Facility.
 BP – Based on water quality objectives contained in the Basin Plan.
 PB – Based on the performance of the treatment system.
 ML - Based on the technical capability of the groundwater treatment system to dependably remove the groundwater contaminants to concentrations that are non-detectable by current analytical technology.
 CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
 NAWQC – Based on USEPA’s National Ambient Water Quality Criteria for the protection of freshwater aquatic life.

² The total annual mass discharge of total mercury shall not exceed 0.0014 lbs.

³ Includes all VOCs identified as constituents of concern in influent groundwater, including: benzene, 1,1-dichloroethylene, 1,2-dichloroethane, ethylbenzene, methyl tertiary butyl ether, tetrachloroethylene, toluene, trichloroethylene, cis-1,2-dichloroethylene, and xylenes. Note, average monthly water quality-based effluent limitations also apply to 1,2-dichloroethane.

1. Mass-based Effluent Limitations

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 MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations have been established in this Order for ammonia because it is an oxygen-demanding substance. Mass-based effluent limitations have been established for mercury because it is a bioaccumulative pollutant and because the Sacramento – San Joaquin Delta is listed as impaired due to mercury. Mass-based effluent limitations were calculated based upon the permitted average daily effluent flow allowed in section IV.A.1.e of the Limitations and Discharge Requirements.

Except for the pollutants listed above, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works unless impracticable.

Water quality objectives in the Basin Plan for pH are applied directly as instantaneous effluent limitations. Effluent limitations for arsenic and barium are

performance-based, and are applied as MDELs. Final effluent limitations for VOCs and total petroleum hydrocarbons (gasoline range) are technology-based effluent limitations which have been established as MDELs based on the MLs in the SIP and/or current, commonly achieved reporting levels. These effluent limitations are more stringent than the applicable water quality-based AMELs and MDELs. Therefore, there are no AMELs for these constituents in this Order. For the remaining constituents, AMELs and MDELs have been established.

3. Satisfaction of Anti-Backsliding Requirements

The effluent limitations in this Order are at least as stringent as the effluent limitations in the existing Order, with the exception of effluent limitations for ammonia, copper, iron, lead, and manganese. The effluent limitations for these pollutants are less stringent than those in Order No. R5-2005-0144-01. Based on updated monitoring data that was not available at the time Order No. R5-2005-0144-01 was issued, copper, iron, and manganese do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. The AMEL for ammonia is revised from 0.59 mg/L to 0.72 mg/L based on updated pH and temperature monitoring used to calculate the applicable water quality criteria and updated ammonia data used to calculate a new CV using SIP procedures. The effluent limitations for lead and copper are relaxed based on updated hardness data used to calculate the applicable water quality criteria. Relaxation and removal of the WQBELs in the previous permit is in accordance with CWA sections 303(d)(4) and 402(o), which allow for the removal of WQBELs for attainment waters where antidegradation requirements are satisfied. Removal of the WQBELs is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

Order No. R5-2005-1044-01 established technology-based effluent limitations, as MDELs, for the sum of VOCs and the sum of benzene, ethylbenzene, toluene, and xylene (BETX), in addition to 30-day median effluent limitations for individual constituents based on BPJ. Effluent limitations for the individual VOCs and BETX have been revised to an MDEL for VOCs based on the current, commonly achieved reporting levels (i.e., non-detect levels). Therefore, this Order discontinues effluent limitations for the individual VOCs and the sum of BETX. The MDEL for VOCs, which applies to each individual VOC that was identified as a constituent of concern in influent groundwater of 0.5 µg/L is more stringent than the MDEL for VOCs of 1.0 µg/L, which applied to the sum of concentrations of VOCs in a single sample. Therefore, the removal of effluent limitations for the sum of VOCs and the sum of BETX does not constitute backsliding.

Order No. R5-2005-0144-01 established an effluent limitation for methylene chloride based on the analytical capability at that time (as represented by the analytical method reporting level), which is equivalent to the lowest ML in the SIP. As discussed further in section IV.C.3.b.vi of this Fact Sheet, methylene chloride was detected, but not quantified, in the effluent in seven of 47 samples; however, based on a 24 August 2010 letter from Curtis & Tompkins, Ltd., the Discharger's contract

laboratory, these unquantifiable detections are the result of laboratory contamination. Methylene chloride has not been detected in the influent groundwater since 1999; therefore, the Regional Water Board finds that methylene chloride is not a constituent of concern. 40 CFR 122.44(l)(1) allows relaxation of effluent limitations based on BPJ where no applicable ELGs apply if the circumstances upon which the previous permit was based have materially and substantially changed since the time the permit was issued and would constitute a cause for permit modification or revocation and reissuance under 40 CFR 122.62. The availability of monitoring data indicating that methylene chloride is not present in the influent groundwater represents a material and substantial change since the existing permit was issued that would constitute a cause for permit modification. Furthermore, methylene chloride is not expected to be present in the effluent since the groundwater treatment technology used at the Facility is capable of removing methylene chloride to concentrations that are non-detectable by current analytical technology. Therefore, this Order discontinues effluent limitations for methylene chloride.

Order No. R5-2005-0144-01 established final mass-based effluent limitations for ammonia, arsenic, barium, chromium VI, and lead. 40 CFR 122.45(f)(1)(ii) states that mass limitations are not required when applicable standards and limitations are expressed in terms of other units of measurement. The numerical effluent limitations for ammonia, arsenic, barium, chromium VI, and lead established in this Order are based on water quality standards and objectives, which are expressed in terms of concentration. Pursuant to 40 CFR 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is in accordance with federal regulations. Compliance with the concentration-based limits will ensure that significantly less mass of the pollutants is discharged to the receiving water. Discontinuing mass-based effluent limitations for these parameters is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Any impact on existing water quality will be insignificant. Therefore, relaxation of effluent limitations is allowed under CWA section 303(d)(4).

This Order was amended by Order R5-2015-0076 on 5 June 2015, increasing the average monthly effluent limits for electrical conductivity from 900 $\mu\text{mhos/cm}$ to 1,500 $\mu\text{mhos/cm}$. As discussed in section IV.C.3.c.viii it has been demonstrated the discharge has minimal impact on the salinity of the receiving water at a discharge rate of 0.43 MGD and average monthly effluent limit of 900 $\mu\text{mhos/cm}$. To minimize the impact of the increased salinity concentration on the receiving water, the amendment reduced the discharge rate from 0.43 MGD to 0.25 MGD. Due to the reduction in allowed discharge rate, the increased salinity concentration does not result in an increase in the mass loading of salinity to Fourteen Mile Slough and therefore results in no increased degradation. As discussed below, the discharge complies with the Antidegradation Policy, and therefore, the increase in electrical conductivity limits is allowed in accordance with the federal antibacksliding exception under 303(d)(4) of the Clean Water Act.

4. Satisfaction of Antidegradation Policy

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. This Order was amended by Order R5-2015-0076 on 5 June 2015, increasing the average monthly effluent limits for electrical conductivity from 900 $\mu\text{mhos/cm}$ to 1,500 $\mu\text{mhos/cm}$, and also reducing the allowed discharge rate from 0.43 MGD to 0.25 MGD. This results in no increase in the mass of salinity discharged to Fourteen Mile Slough. The minimal impact that may be caused by an increase in EC concentration is minimized by the reduction in flow. The salinity in the discharge is caused by naturally occurring salinity in the extracted groundwater. This Order requires the Discharger to minimize salinity, and requires implementation of best practicable treatment or control. The benefits of the groundwater cleanup of VOCs outweigh the minimal impacts on salinity in the receiving water and the minimal allowed degradation is to the maximum benefit to the people of the State. Therefore, the revised EC effluent limit complies with the Antidegradation Policy. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on total petroleum hydrocarbons (gasoline range) and VOCs. The WQBELs consist of restrictions on ammonia, arsenic, barium, chromium VI, 1,2-dichloroethane, electrical conductivity, lead, mercury and pH. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

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 water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 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 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 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 no more stringent than required to implement the requirements of the CWA.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Reclamation Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the maximum contaminant levels (MCLs) in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial use.

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.
 - a. **Dissolved Oxygen.** Order No. R5-2005-0144-01 established a receiving water limitation for dissolved oxygen requiring that the discharge not cause concentrations of dissolved oxygen to fall below 7.0 mg/L. However, the Basin Plan contains a water quality objective that specifies that, within the legal boundaries of the Sacramento-San Joaquin Delta, the dissolved oxygen concentration shall not be reduced below 5.0 mg/L. The minimum observed dissolved oxygen concentration in Fourteen Mile Slough downstream of the discharge was 7.0 mg/L, which indicates that the discharge is not causing the receiving water dissolved oxygen concentration to fall below applicable water

quality objectives. Therefore, this Order revises the receiving water limitation to be consistent with the applicable water quality objective in the Basin Plan.

- b. pH.** Order No. R5-2005-0144-01 established a receiving water limitation for pH specifying that discharges from the Facility shall not cause the ambient pH to change by more than 0.5 units based on the water quality objective for pH in the Basin Plan. The Regional Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to delete the portion of the pH water quality objective that limits the change in pH to 0.5 units and the allowance of averaging periods for pH. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order does not require a receiving water limitation for pH change.

In Finding No. 14 of Resolution No. R5-2007-0136 the Regional Water Board found that the change in the pH receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the state, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

Ammonia is the only constituent in the discharge regulated by this Order directly related to pH. The fixed ammonia effluent limitations in this Order were developed to protect aquatic life under worse case pH conditions. Therefore the relaxation of the pH receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Regional Water Board finds that the relaxation of the pH receiving water limitation is (i) to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for pH, which is based on the amendment to the Basin Plan's pH water quality objective, reflects current scientifically supported pH requirements for the protection of aquatic life and other beneficial uses. The revised receiving water limitation for pH is more consistent with the current USEPA recommended criteria and is fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in pH when pH is maintained within the range of 6.5 to 8.5 are neither beneficial nor adverse and, therefore, are not considered to be degradation in water quality. Attempting to restrict pH changes to 0.5 pH units would incur substantial costs without demonstrable benefits to beneficial uses. Thus, any changes in pH that would occur under the revised pH limitation would not only be protective of beneficial

uses, but also would be consistent with maximum benefit to people of the State. Therefore the proposed amendment will not violate antidegradation policies.

- c. Temperature.** This Order includes a receiving water limitation for temperature requiring that the natural temperature of the receiving water not be increased by more than 5°F, consistent with the water quality objective for temperature in the Basin Plan. The Regional Water Board generally determines compliance with this requirement based on the difference in temperature at the upstream and downstream receiving water monitoring locations. The Facility discharges to a storm drain that terminates at the head of Fourteen Mile Slough. Therefore, there is no physical upstream receiving water monitoring location and it is infeasible to collect upstream receiving water samples to determine compliance with this receiving water limitation. However, because the discharge from the Facility is composed of treated groundwater, the discharge is not expected to cause negative impacts on the beneficial uses in Fourteen Mile Slough. This Order requires downstream receiving water monitoring at RSW-002 for temperature to characterize the impacts of the discharge in Fourteen Mile Slough.
- d. Turbidity.** Order No. R5-2005-0144-01 established a receiving water limitation for turbidity specifying that discharges from the Facility shall not cause the turbidity to increase more than 1 NTU where natural turbidity is between 0 and 5 NTU based on the water quality objective for turbidity in the Basin Plan. The Regional Water Board adopted Resolution No. R5-2007-0136 on 25 October 2007, amending the Basin Plan to limit turbidity to 2 NTU when the natural turbidity is less than 1 NTU. The Basin Plan amendment has been approved by the State Water Board, the Office of Administrative Law, and USEPA. Consistent with the revised water quality objective in the Basin Plan, this Order limits turbidity to 2 NTU when the natural turbidity is less than 1 NTU.

In Finding No. 14 of Resolution No. R5-2007-0136 the Regional Water Board found that the change in the turbidity receiving water objective is consistent with the State Water Board Resolution No. 68-16, in that the changes to water quality objectives (i) consider maximum benefit to the people of the state, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The relaxation of the turbidity receiving water limitation will protect aquatic life and other beneficial uses and will not unreasonably affect present and anticipated beneficial uses nor result in water quality less than described in applicable policies. The relaxation of the receiving water limitation is not expected to cause other impacts on water quality. The Regional Water Board finds that the relaxation of the turbidity receiving water limitation is (i) to the maximum benefit to the people of the State, (ii) will not unreasonably affect present and anticipated beneficial use of waters, and (iii) will not result in water quality less than that prescribed in policies, and is consistent with the federal Antidegradation Policy (40 CFR 131.12).

The revised receiving water limitation for turbidity, which is based on the amendment to the Basin Plan's turbidity water quality objective, reflects current scientifically supported turbidity requirements for the protection of aquatic life and other beneficial uses and, therefore, will be fully protective of aquatic life and the other beneficial uses listed in the Basin Plan. Changes in turbidity allowed by the revised receiving water limitation, when ambient turbidity is below 1 NTU, would not adversely affect beneficial uses and would maintain water quality at a level higher than necessary to protect beneficial uses. Restricting low-level turbidity changes further may require costly upgrades, which would not provide any additional protection of beneficial uses. Thus, any changes in turbidity that would occur under the amended turbidity receiving water limitation would not only be protective of beneficial uses, but also would be consistent with maximum benefit to people of the State. Therefore, the relaxed receiving water limitations for turbidity will not violate antidegradation policies.

The Regional Water Board generally determines compliance with this requirement based on the observed turbidity at the upstream and downstream receiving water monitoring locations. The Facility discharges to a storm drain that terminates at the head of Fourteen Mile Slough. Therefore, there is no physical upstream receiving water monitoring location and it is infeasible to collect upstream receiving water samples to determine compliance with this receiving water limitation. However, because the discharge from the Facility is composed of treated groundwater, the discharge is not expected to cause negative impacts on the beneficial uses in Fourteen Mile Slough. This Order requires downstream receiving water monitoring at RSW-002 for turbidity to characterize the impacts of the discharge in Fourteen Mile Slough.

B. Groundwater – Not Applicable

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 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 (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 Monitoring and Reporting Program for the Facility.

A. Influent Monitoring

1. Influent monitoring is required to collect data on the characteristics of the wastewater and to assess the performance of the groundwater treatment system. The monitoring frequencies for flow (continuous), lead (quarterly), and electrical conductivity (quarterly) have been retained from Order No. R5-2005-0144-01.
2. Order No. R5-2005-0144-01 required quarterly monitoring for VOCs and BETX. This Order retains quarterly monitoring for VOCs, which are listed in Attachment I.

Because the BTEX parameters are VOCs and are included in Attachment I, specific requirements for BTEX have been discontinued.

B. Effluent Monitoring

1. 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 assess the impacts of the discharge on the receiving stream and groundwater.
2. Effluent monitoring frequencies and sample types for flow (continuous), pH (monthly), arsenic (monthly), lead (monthly), ammonia (monthly), electrical conductivity (monthly), total dissolved solids (quarterly), chloride (quarterly), sulfate (quarterly), and total petroleum hydrocarbons (gasoline range; monthly) have been retained from Order No. R5-2005-0144-01 to characterize the effluent and determine compliance with applicable effluent limitations.
3. Order No. R5-2005-0144-01 required monthly monitoring for total VOCs and BTEX, as well as individual requirements for benzene, 1,2-dichloroethane, 1,1-dichloroethylene, ethylbenzene, tetrachloroethylene, toluene, trichloroethylene, methyl tertiary butyl ether, and xylene. This Order requires monthly monitoring for VOCs, which are listed in Attachment I and include these individual constituents of concern, as well as other VOCs measurable by EPA Method 8260B. Therefore, this Order discontinues the individual requirements for benzene, 1,2-dichloroethane, 1,1-dichloroethylene, ethylbenzene, tetrachloroethylene, toluene, trichloroethylene, methyl tertiary butyl ether, and xylene.
4. Order No. R5-2005-0144-01 required monthly monitoring for chromium VI. Due to the costs of monitoring for chromium VI, the Discharger has requested that the effluent monitoring frequency be decreased. Based on monthly monitoring data collected between July 2007 and June 2010, the discharge was exceeded the effluent limitations for chromium VI in one sample on 16 April 2009, out of 37 samples. The next highest effluent concentration of chromium VI was 4.6 µg/L, and the average of the 37 samples is 3.48 µg/L, compared to the AMEL and MDEL of 7.8 µg/L and 16 µg/L, respectively. However, due to the potential for exceedances of the effluent limitations for chromium VI that may go undetected if the monitoring frequency is reduced, as evidenced by the MEC of 16 µg/L, this Order retains monthly monitoring for chromium VI.
5. As discussed in section IV.C.3.b.v of this Fact Sheet, methylene chloride was detected, but not quantified, in the effluent in seven of 47 samples collected between July 2007 and June 2010. The unquantifiable results are suspect based on potential laboratory contamination. Therefore, methylene chloride does not have reasonable potential to cause or contribute to an exceedance of water quality criteria and WQBELs are not included in this Order. This Order will require quarterly monitoring for methylene chloride to verify that methylene chloride is not present in the effluent.

The Discharger shall take measures to ensure that laboratory contamination is not a source of the pollutant during sampling and analysis.

6. Monitoring data collected over the existing permit term for copper, zinc, delta-BHC, 4,4-DDT, 4,4-DDE, 4,4-DDD, chlordane, manganese, and iron did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order No. R5-2005-0144-01.
7. Order No. R5-2005-0144-01 established monthly monitoring requirements for mercury using clean sample collection techniques. Based on monitoring conducted during the term of Order No. R5-2005-0144-01, effluent mercury did not exceed the CTR criterion for protection of human health or existing effluent limitations. The Discharger requested that monthly monitoring requirements for mercury be reduced due to the costs associated with using the clean sample collection techniques. Although not yet approved, the TMDL for methylmercury and mercury in the Sacramento-San Joaquin Delta does not specify a minimum monitoring frequency. Consistent with other permits adopted for facilities to be subject to the TMDL, and in light of the monitoring costs, the monitoring frequency has been reduced from monthly to quarterly. In order to gather information to support the TMDL, this Order also establishes quarterly monitoring for methylmercury.
8. Order No. R5-2005-0144-01 established quarterly monitoring for total recoverable and dissolved barium. Monitoring data collected during the term of Order No. R5-2005-0144-01 indicated that barium has a reasonable potential to cause or contribute to an exceedance of water quality objectives. Although the water quality objective for barium in Table III-1 of the Basin Plan is expressed in the dissolved form, the final effluent limitation for barium is expressed as total recoverable. Therefore, effluent monitoring for dissolved barium has not been retained in this Order. The monitoring frequency for total recoverable barium has been increased to monthly in order to determine compliance with the applicable effluent limitations, consistent with the monitoring frequency required for other constituents that demonstrate reasonable potential to cause or contribute to an exceedance of water quality objectives.
9. This Order establishes monthly temperature monitoring of the effluent to ensure compliance with the receiving water limitations for temperature and to have sufficient data to calculate the appropriate water quality criteria for ammonia to conduct the RPA, as specified in section 1.3 of the SIP.
10. Order No. R5-2005-0144-01 established quarterly monitoring for hardness. The monitoring frequency for hardness has been increased from quarterly to monthly to ensure the water quality criteria for CTR hardness-based metals are correctly adjusted when conducting the RPA, as specified in section 1.3 of the SIP.
11. The DWSC, to which Fourteen Mile Slough is tributary, is listed as impaired due to low dissolved oxygen. This Order establishes monthly effluent monitoring for dissolved oxygen to characterize the discharge.

12. Priority pollutant data for the effluent has been provided by the Discharger over the term of Order No. R5-2005-0144-01, and was used to conduct a meaningful RPA. In accordance with Section 1.3 of the SIP, this Order requires periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. This Order establishes quarterly monitoring during the third or fourth year of the permit term for priority pollutants in order to collect data to conduct an RPA for the next permit renewal. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Based on annual acute toxicity testing from July 2007 through June 2010, the minimum observed percent survival of aquatic organisms was 95 percent, which is in compliance with the applicable effluent limitations for acute toxicity. Therefore, consistent with Order No. R5-2005-0144-01, annual 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** As described in section IV.C.5 of this Fact Sheet, chronic WET testing performed by the Discharger from July 2007 through June 2010 demonstrated toxic effects to *Pimephales promelas* growth in October 2008. Therefore, this Order increases the monitoring frequency for chronic toxicity from annually to semi-annually in order to demonstrate compliance with the Basin Plan's narrative toxicity objective and the narrative effluent limitation established by this Order.

D. Receiving Water Monitoring

1. Surface Water

- a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

Order No. R5-2005-0144-01 established monitoring requirements at Monitoring Location R-001, that was thought to be located 100 feet upstream from the outfall of the storm drain to Fourteen Mile Slough. However, the Facility actually discharges to a storm drain that terminates at the head of Fourteen Mile Slough, and is upstream of R-001. Therefore, there is no physical upstream receiving water monitoring location and it is infeasible to collect upstream receiving water samples. Therefore, this Order discontinues monitoring requirements at Monitoring Location R-001. Rather than renumbering the monitoring locations, this Order includes receiving water monitoring at Monitoring Locations RSW-002, RSW-003, and RSW-004.

b. Monitoring Location RSW-002

- i. Monitoring Location RSW-002 is located in Fourteen Mile Slough approximately 200 feet downstream of the outfall of the storm drain to Fourteen Mile Slough.
- ii. Receiving water monitoring frequencies and sample types for barium, dissolved oxygen, electrical conductivity, hardness, and turbidity have been retained from Order No. R5-2005-0144-01.
- iii. This Order requires effluent monitoring for ammonia monthly. This Order revises the receiving water monitoring frequency for pH and temperature, which are necessary to adjust water quality criteria for ammonia, from quarterly to monthly to be consistent with effluent monitoring requirements for ammonia.
- iv. Order No. R5-2005-0144-01 established monitoring requirements for chloride, total dissolved solids, iron, manganese, sulfate, and chlordane. Receiving water monitoring for these constituent is not necessary to determine compliance with the requirements of this Order. Therefore, monitoring requirements for these constituents have not been retained in this Order.

c. Monitoring Location RSW-003

- i. Order No. R5-2005-0144-01 established Monitoring Location RSW-003, located approximately 5,500 feet downstream of the outfall of the storm drain to Fourteen Mile Slough at the Feather River Drive Bridge, in order to verify the results of the Discharger's mixing zone/dilution study for arsenic and barium. Monitoring Location RSW-003 is located approximately 600 feet downstream of the I-5 overpass at the Feather River Drive Bridge due to access and safety concerns at the I-5 overpass.
- ii. Receiving water monitoring frequencies and sample types for flow, tide stage, pH, arsenic, barium, electrical conductivity, and temperature have been retained from Order No. R5-2005-0144-01.

d. Monitoring Location RSW-004

- i. Order No. R5-2005-0144-01 established Monitoring Location RSW-004, located approximately 6.4 miles downstream of the outfall of the storm drain to Fourteen Mile Slough at Juggler's Island (i.e., the confluence of the San Joaquin River and Fourteen Mile Slough), in order to verify the results of the Discharger's mixing zone/dilution study for arsenic and barium. Because Fourteen Mile Slough is tidally influenced, Monitoring Location RSW-004 is expected to provide a more representative location for ambient background receiving water sampling to verify the appropriateness of the mixing zones/dilution credits for arsenic and barium.

- ii. Receiving water monitoring frequencies and sample types for pH, arsenic, barium, electrical conductivity, and temperature have been retained from Order No. R5-2005-0144-01.
- iii. The Discharger's dilution/mixing zone study for arsenic and barium indicated that the San Joaquin River at Juggler's Island (i.e., the confluence of Fourteen Mile Slough and the San Joaquin River), where the tidally influenced waters originate for Fourteen Mile Slough, is a more representative location for ambient background receiving water sampling. Therefore, consistent with the effluent monitoring requirements, quarterly monitoring during the third or fourth year of the permit term for priority pollutants at RSW-004 is required to collect the necessary data to determine reasonable potential as required in section 1.2 of the SIP. The hardness (as CaCO_3) of the receiving water shall also be monitored concurrently with the priority pollutants, as well as pH, to ensure the water quality criteria/objectives are correctly adjusted for the receiving water when determining reasonable potential as specified in section 1.3 of the SIP. See Attachment I for more detailed requirements related to performing priority pollutant monitoring.

e. Delta Regional Monitoring Program

The Central Valley Water Board requires individual dischargers and discharger groups to conduct monitoring of Delta waters and Delta tributary waters in the vicinity of their discharge, known as ambient (or receiving) water quality monitoring. This monitoring provides information on the impacts of waste discharges on Delta waters, and on the extant condition of the Delta waters. However, the equivalent funds spent on current monitoring efforts could be used more efficiently and productively, and provide a better understanding of geographic and temporal distributions of contaminants and physical conditions in the Delta, and of other Delta water quality issues, if those funds were used for a coordinated ambient monitoring effort, rather than continue to be used in individual, uncoordinated ambient water quality monitoring programs. The Delta Regional Monitoring Program (RMP) will provide data to better inform management and policy decisions regarding the Delta.

This Order will allow Dischargers to elect to participate in the Delta RMP in lieu of conducting all or part of the individual receiving water monitoring required in the Monitoring and Reporting Program. If the Discharger elects to cease individual receiving water monitoring and participate in the Delta Regional Monitoring Program, the Discharger shall submit a letter signed by an authorized representative to the Executive Officer informing the Board that the Discharger will participate in the Delta Regional Monitoring Program and the date on which individual receiving water monitoring under Attachment E, Sections VIII.A.1, VIII.A.2, VIII.B.1 and VIII.C.1, will cease or be modified. Approval by the Executive Officer is required, and contingent on Delta RMP Steering Committee action on the forthcoming RMP monitoring plan.

Delta RMP data is not intended to be used directly to represent either upstream or downstream water quality for purposes of determining compliance with this Permit. Delta RMP monitoring stations are established generally as “integrator sites” to evaluate the combined impacts on water quality of multiple discharges into the Delta; Delta RMP monitoring stations would not normally be able to identify the source of any specific constituent, but would be used to identify water quality issues needing further evaluation. Delta RMP monitoring data may be used to help establish background receiving water quality for Reasonable Potential analyses in an NPDES Permit after evaluation of the applicability of the data for that purpose. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances from the discharge point. Delta RMP data, as with all environmental monitoring data, can provide an assessment of water quality at a specific place and time that can be used in conjunction with other information, such as other receiving water monitoring data, spatial and temporal distribution and trends of receiving water data, effluent data from the Discharger’s discharge and other point and non-point source discharges, receiving water flow volume, speed and direction, and other information to determine the likely source or sources of a constituent that resulted in exceedance of a receiving water quality objective.

If the Discharger begins to participate in the Delta Regional Monitoring Program in lieu of individual receiving water monitoring, the Discharger shall continue to participate in the Delta Regional Monitoring Program until such time as the Discharger informs the Board that participation in the Delta RMP will cease and individual monitoring is reinstated. Receiving water monitoring under Attachment E, Sections VIII.A.1, VIII.A.2, VIII.B.1 and VIII.C.1, is not required under this Order so long as the Discharger adequately supports the Delta Regional Monitoring Program. Participation in the Delta RMP by a Discharger shall consist of providing funds and/or in-kind services to the Delta RMP at least equivalent to discontinued individual monitoring and study efforts. If a discharger or discharger group fails to maintain adequate participation in the Delta RMP, as determined through criteria to be developed by the Delta RMP Steering Committee, the Steering Committee will recommend to the Central Valley Water Board that an individual monitoring program be reinstated for that discharger or discharger group.

If the Discharger is participating in the Delta Regional Monitoring Program as described in Attachment E, Section VIII, the Receiving Water portion of the required Characterization Study need not be conducted by the Discharger. Instead, data from the Delta Regional Monitoring Program will be utilized to characterize the receiving water in the permit renewal. The Discharger may, however, conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with this Characterization Study. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in permitting decisions than receiving water monitoring data collected at greater distances

from the discharge point. Historic receiving water monitoring data taken by the discharger and from other sources may also be evaluated to determine whether or not that data is representative of current receiving water conditions. If found to be representative of current conditions, then that historic data may be used in characterizing receiving water quality for the purposes of Reasonable Potential analysis.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements – Not Applicable

VII. RATIONALE FOR PROVISIONS

A. Standard 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 discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 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. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

B. Special Provisions

1. Reopener Provisions

- a. Mercury.** This provision allows the Regional Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if the TMDL for the Sacramento-San Joaquin Delta is approved. In addition, this Order may be reopened if the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.
- b. Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a TRE. This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water

quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

- c. Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable priority and non-priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for arsenic, chromium VI, and lead. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.
- d. Performance-based Effluent Limitations for Arsenic and Barium.** The groundwater treatment system currently comprises 21 A-Zone and 10 B-Zone groundwater extraction wells. In summer 2008, samples were taken at the treatment system influent for the A-Zone and B-Zone aquifers separately by selectively running the extraction wells. The sampling plan implemented ran each zone exclusively for an extended period of time to flush the conveyance line and achieve an overall equilibrium of the metals in each zone prior to sampling. The sampling was performed to determine relative contributions of arsenic and barium. The sampling found an arsenic concentration of 6.8 µg/L in the A-Zone wells and 21 µg/L in the B-Zone wells. The sampling found a barium concentration of 270 µg/L in the A-Zone wells and 410 µg/L in the B-Zone wells. These results indicate that the B-Zone wells contribute significantly more arsenic and barium than the A-Zone wells. Therefore, if the A-Zone wells are not pumped, effluent levels of arsenic and barium would be much higher than they have been historically. There is potential for a greater fraction of the discharge to be derived from B-Zone wells in the future because the A-Zone wells foul more often than the B-Zone wells and the need for pumping in the A-Zone wells may decrease as the size of the plume decreases. Therefore, the calculation of the performance-based effluent limitations for arsenic and barium may need to be re-evaluated in the future, depending on the groundwater pumping schemes or relevant changes in either precipitation patterns or groundwater elevations. If the Discharger submits a report describing changes in the concentration of arsenic or barium in groundwater influent to the treatment system that are expected or encountered due to naturally occurring processes (e.g., significant changes in precipitation patterns, increases or decreases in groundwater elevations, or changes in the distribution of VOCs requiring adjustment of pumping rates or installation of additional extraction wells), this Order may be reopened to modify the performance-based effluent limitations for arsenic and/or barium.

2. Special Studies and Additional Monitoring Requirements

- a. Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at page III-8.00.) Based on

whole effluent chronic toxicity testing performed by the Discharger from July 2007 through June 2010, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

This provision requires the Discharger to develop a TRE Workplan in accordance with USEPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity has been demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether toxicity is repeatedly or periodically present before requiring the implementation of a TRE.

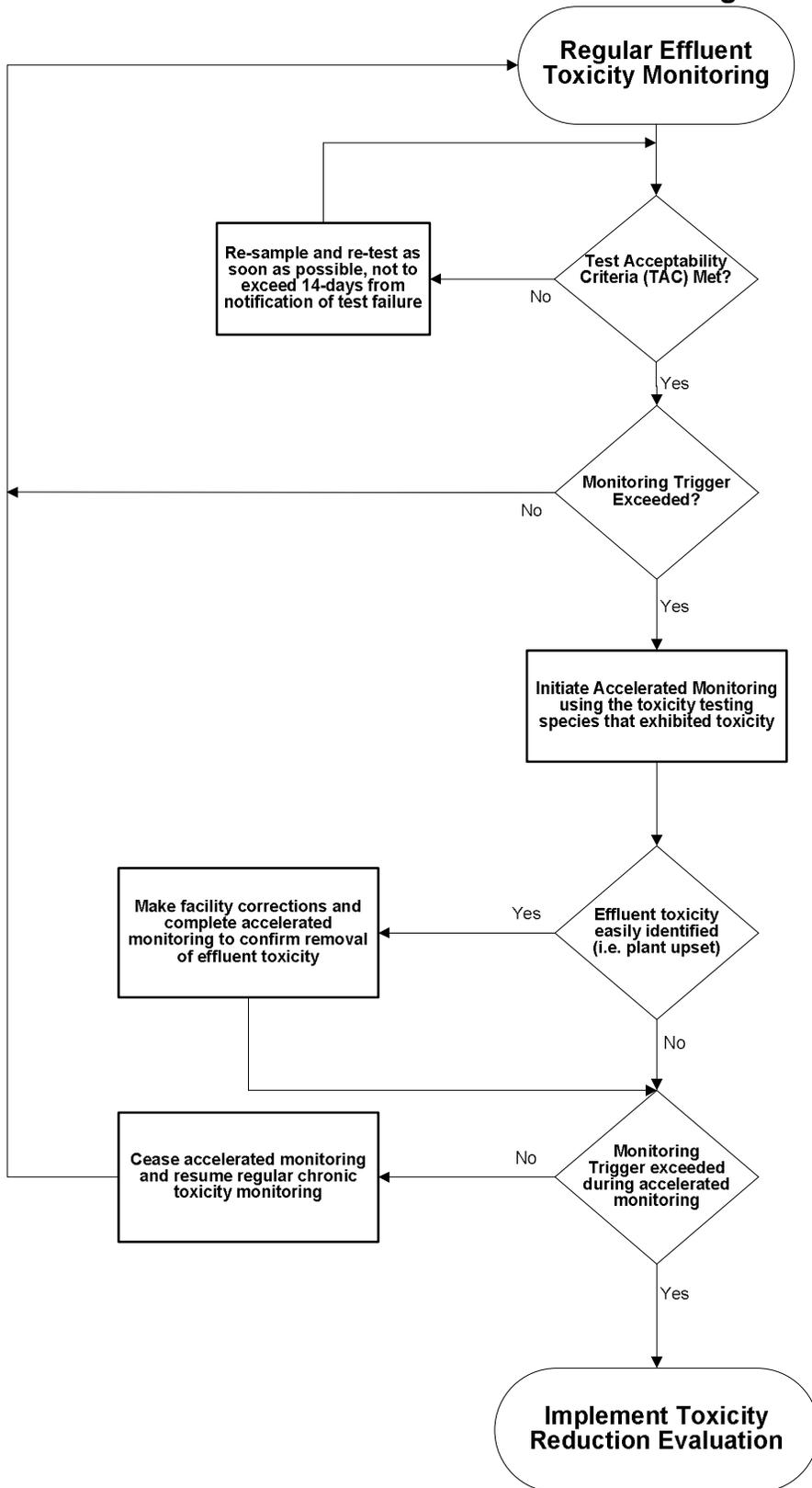
The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-2), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.
- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.
- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.
- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.
- Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

**Figure F-2
 WET Accelerated Monitoring Flow Chart**



3. Best Management Practices and Pollution Prevention

- a. Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to Fourteen Mile Slough.

4. Construction, Operation, and Maintenance Specifications – Not Applicable

5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

6. Other Special Provisions – Not Applicable

7. Compliance Schedules – Not Applicable

VIII. PUBLIC PARTICIPATION

The Regional Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility. 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.

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 **24 June 2011**.

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: 3/4/5 August 2011
Time: 8:30 a.m.
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

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 www.waterboards.ca.gov/centralvalley 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 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, 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 (916) 464-3291.

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 Josh Palmer at (916) 464-4674.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Ammonia, Nitrogen, Total (as N)	mg/L	1.1	NA	0.57	2.14 ¹	0.57 ²	--	--	--	--	Yes
Arsenic, Total Recoverable	µg/L	14	2.5 ³	10	340	150	--	--	10 ⁴	10	Yes
Barium, Total Recoverable	µg/L	310	48 ³	100	--	--	--	--	100 ⁴	1,000	Yes
Benzene	µg/L	<0.058	NA	1.0	--	--	1.2	71	--	1.0	No ⁵
Chromium, Total	µg/L	3.2	NA	50	--	--	--	--	--	50	No
Chromium (VI), Total Recoverable	µg/L	16	NA	11	16	11	--	--	--	50	Yes
Chloride	mg/L	56	NA	106 ⁶	--	--	--	--	--	250	No
Chloroform	µg/L	0.43	NA	80 ⁷	--	--	--	--	--	80 ⁷	No
cis-1,2-Dichloroethylene	µg/L	0.8	NA	6.0	--	--	--	--	--	6.0	No ⁵
Copper, Total Recoverable	µg/L	6.9	NA	10	41	25	1,300	--	10 ⁴	1,000	No
1,2-Dichloroethane	µg/L	<0.041	NA	0.38	--	--	0.38	99	--	0.5	No ⁵
1,1-Dichloroethylene	µg/L	<0.074	NA	0.057	--	--	0.057	3.2	--	6	No ⁵
Electrical Conductivity @ 25°C	µmhos/cm	910	NA	700 ⁶	--	--	--	--	--	900	Yes
Ethylbenzene	µg/L	<0.04	NA	300	--	--	3,100	29,000	--	300	No ⁵
Iron, Total Recoverable	µg/L	260	NA	300	--	--	--	--	300 ⁴	300	No
Iron, Dissolved	µg/L	190	NA	300	--	--	--	--	300 ⁴	--	No
Lead, Total Recoverable	µg/L	1.5	NA	13	345	13	--	--	--	15	Yes ⁵
Manganese, Total Recoverable	µg/L	1.8	NA	50	--	--	--	--	50 ⁴	50	No
Manganese, Dissolved	µg/L	5.8	NA	50	--	--	--	--	50 ⁴	--	No
Mercury, Total Recoverable	µg/L	0.0011	NA	0.05	--	--	0.050	0.051	--	2.0	Yes ⁸
Methyl Chloride	µg/L	0.78	NA	--	--	--	--	--	--	--	No
Methylene Chloride	µg/L	0.4	NA	4.7	--	--	4.7	1,600	--	5.0	No
Methyl Tertiary Butyl Ether	µg/L	<0.54	NA	5	--	--	--	--	--	5.0	No ⁵

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Phosphorus	µg/L	4,500	NA	--	--	--	--	--	--	--	No
Selenium, Total Recoverable	µg/L	1.4	NA	5.0	20	5.0	--	--	--	20	No
Sulfate	mg/L	92	NA	250	--	--	--	--	--	250	No
Tetrachloroethylene	µg/L	0.53	NA	0.8	--	--	0.8	8.85	--	5.0	No ⁵
Toluene	µg/L	<0.017	NA	150	--	--	6,800	200,000	--	150	No ⁵
Total Dissolved Solids	mg/L	640	NA	450 ⁶	--	--	--	--	--	500	Yes ⁹
Total Petroleum Hydrocarbons (Gasoline Range)	µg/L	<10	NA	100 ¹⁰	--	--	--	--	--	--	No ⁵
Trichloroethylene	µg/L	<0.041	NA	2.7	--	--	2.7	81	--	5.0	No ⁵
Xylene	µg/L	<0.04	NA	1,750	--	--	--	--	--	1,750	No ⁵
Zinc, Total Recoverable	µg/L	31	NA	102	313	313	--	--	102 ⁴	5,000	No

General Note: All inorganic concentrations are given as a total recoverable.
 MEC = Maximum Effluent Concentration
 B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
 C = Criterion used for Reasonable Potential Analysis
 CMC = Criterion Maximum Concentration (CTR or NTR)
 CCC = Criterion Continuous Concentration (CTR or NTR)
 Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
 Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
 Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
 MCL = Drinking Water Standards Maximum Contaminant Level
 NA = Not Available
 ND = Non-detect

Footnotes:
 (1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour Average.
 (2) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 30-day Average.
 (3) Background sampling for arsenic and barium collected at Juggler's Island.
 (4) Water quality objectives for metals in Table III-1 of the Basin Plan are expressed in dissolved form. For priority pollutant metals with translators specified in the CTR, the translators specified in the CTR have been used to determine applicable total recoverable objectives. For the remaining metals, a translator of 1 is assumed in the absence of a specific translator.
 (5) Pollutant identified as a constituent of concern in influent groundwater. See section IV.C.3 of the Fact Sheet (Attachment F).
 (6) Water Quality for Agriculture.
 (7) The Sacramento-San Joaquin Delta is listed on the 2006 303(d) list as impaired for mercury. Therefore, this Order establishes a final, annual average mass loading limitation for mercury and retains effluent limitations based on the CTR criterion for protection of human health from Order No. R5-2005-0144-01.
 (8) Represents the Primary MCL for total trihalomethanes, which includes chloroform.
 (9) Electrical conductivity is an indicator parameter for salinity, including total dissolved solids. Establishing effluent limitations for electrical conductivity is expected to effectively limit the constituents that contribute to salinity, including total dissolved solids. Therefore, effluent limitations for total dissolved solids are not established in this Order.
 (10) Taste and odor threshold.

ATTACHMENT H – CALCULATION OF WQBELS

Parameter	Units	Most Stringent Criteria			HH Calculations ¹			Aquatic Life Calculations ¹											Final Effluent Limitations	
		HH	CMC	CCC	ECA _{HH} = AMEL _{HH}	AMEL/MMDEL Multiplier _{HH}	MDEL _{HH}	ECA _{acute}	ECA Multiplier _{acute}	LTA _{acute}	ECA _{chronic}	ECA Multiplier _{chronic}	LTA _{chronic}	Lowest LTA	AMEL Multiplier ₉₅	AMEL _{AL}	MDEL Multiplier ₉₉	MDEL _{AL}	Lowest AMEL	Lowest MDEL
Ammonia Nitrogen, Total (as N)	mg/L	--	2.14	0.57	--	--	--	2.14	0.14	0.30	0.57	0.55	0.31	0.30	2.40	0.72	6.93	2.1	0.72	2.1
Arsenic, Total Recoverable	µg/L	10	340	150	33 ²	1.25	41	340	0.71	241	150	0.84	126	126	1.13	142	1.41	177	33 ³	41 ³
Barium, Total Recoverable	µg/L	100	--	--	532 ⁴	1.08	573	--	--	--	--	--	--	--	--	--	--	--	532 ³	573 ³
Chromium VI, Total Recoverable	µg/L	50	16	11	50	2.09	105	16	0.30	4.8	11	0.50	5.7	4.8	1.61	7.8	3.37	16	7.8	16
1,2-Dichloroethane	µg/L	0.38	--	--	0.38	2.01	0.76	--	--	--	--	--	--	--	--	--	--	--	0.38	0.76 ⁵
Lead, Total Recoverable	µg/L	15	345	13	15	2.01	30	345	0.32	111	13	0.53	7.1	7.1	1.55	11	3.11	22	11	22
Mercury, Total Recoverable	µg/L	0.050	--	--	0.050	2.01	0.10	--	--	--	--	--	--	--	--	--	--	--	0.050	0.10

¹ As described in section IV.C.2.d of the Fact Sheet (Attachment F), calculation of effluent limitations for the protection of human health and aquatic life are determined without the allowance of dilution credits, except for arsenic and barium.

² ECA determined using a dilution credit of 3.0 and a maximum background concentration of 2.5 µg/L.

³ Final performance-based effluent limitations established, as discussed in section IV.C.3.c of the Fact Sheet (Attachment F).

⁴ ECA determined using a dilution credit of 8.3 and a maximum background concentration of 48 µg/L.

⁵ The final effluent limitation is based on the more stringent technology-based effluent limitation discussed in section IV.B.2 of the Fact Sheet (Attachment F).

ATTACHMENT I – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

- I. Background.** Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from <http://www.waterboards.ca.gov/iswp/index.html>). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners. In addition to specific requirements of the SIP, the Regional Water Board is requiring the following monitoring:
- A. Drinking water constituents.** Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.
- B. Effluent and receiving water temperature.** This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.
- C. Effluent and receiving water hardness and pH.** These are necessary because several of the CTR constituents are hardness and pH dependent.

II. Monitoring Requirements.

If the Discharger is participating in the Delta Regional Monitoring Program as described in Attachment E, Section VIII, the Receiving Water portion of this Characterization Study is not required. However, the Report of Waste Discharge for the next permit renewal shall include, at minimum, one representative ambient background characterization monitoring event for priority pollutant constituents during the term of the permit. Data from the Delta Regional Monitoring Program plus any receiving water characterization conducted by the Discharger will be utilized to characterize the receiving water in the permit renewal. The Discharger may request that the RMP perform sampling and laboratory analysis to address all or a portion of the monitoring under this Characterization Monitoring with the understanding that the Discharger will provide funding to the RMP sufficient to reimburse all of the costs of this additional effort. Alternatively, the Discharger may conduct any site-specific receiving water monitoring deemed appropriate by the Discharger and submit that monitoring data with this Characterization Monitoring. In general, monitoring data from samples collected in the immediate vicinity of the discharge will be given greater weight in

permitting decisions than receiving water monitoring data collected at greater distances from the discharge point.

A. Quarterly Monitoring. Quarterly priority pollutant samples shall be collected from the effluent and receiving water (Monitoring Locations EFF-001 and RSW-004) and analyzed for the constituents listed in Table I-1. Quarterly monitoring shall be conducted for 1 year (four consecutive samples, evenly distributed throughout the year) and the results of such monitoring be submitted to the Regional Water Board, during the third or fourth year of the permit term. Each individual monitoring event shall provide representative sample results for the effluent and receiving water.

B. Concurrent Sampling. Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

C. Sample type. All effluent samples shall be taken as 24-hour flow proportioned composite samples. All receiving water samples shall be taken as grab samples.

Table I-1. Priority Pollutants

CTR #	Constituent	CAS Number	Controlling Water Quality Criterion for Surface Waters		Criterion Quantitation Limit ug/L or noted	Suggested Test Methods
			Basis	Criterion Concentration ug/L or noted ¹		
VOLATILE ORGANICS						
28	1,1-Dichloroethane	75343	Primary MCL	5	0.5	EPA 8260B
30	1,1-Dichloroethene	75354	National Toxics Rule	0.057	0.5	EPA 8260B
41	1,1,1-Trichloroethane	71556	Primary MCL	200	0.5	EPA 8260B
42	1,1,2-Trichloroethane	79005	National Toxics Rule	0.6	0.5	EPA 8260B
37	1,1,2,2-Tetrachloroethane	79345	National Toxics Rule	0.17	0.5	EPA 8260B
75	1,2-Dichlorobenzene	95501	Taste & Odor	10	0.5	EPA 8260B
29	1,2-Dichloroethane	107062	National Toxics Rule	0.38	0.5	EPA 8260B
	cis-1,2-Dichloroethene	156592	Primary MCL	6	0.5	EPA 8260B
31	1,2-Dichloropropane	78875	Calif. Toxics Rule	0.52	0.5	EPA 8260B
101	1,2,4-Trichlorobenzene	120821	Public Health Goal	5	0.5	EPA 8260B
76	1,3-Dichlorobenzene	541731	Taste & Odor	10	0.5	EPA 8260B
32	1,3-Dichloropropene	542756	Primary MCL	0.5	0.5	EPA 8260B
77	1,4-Dichlorobenzene	106467	Primary MCL	5	0.5	EPA 8260B
17	Acrolein	107028	Aquatic Toxicity	21	2	EPA 8260B
18	Acrylonitrile	107131	National Toxics Rule	0.059	2	EPA 8260B
19	Benzene	71432	Primary MCL	1	0.5	EPA 8260B
20	Bromoform	75252	Calif. Toxics Rule	4.3	0.5	EPA 8260B
34	Bromomethane	74839	Calif. Toxics Rule	48	1	EPA 8260B
21	Carbon tetrachloride	56235	National Toxics Rule	0.25	0.5	EPA 8260B
22	Chlorobenzene (mono chlorobenzene)	108907	Taste & Odor	50	0.5	EPA 8260B

CTR #	Constituent	CAS Number	Controlling Water Quality Criterion for Surface Waters		Criterion Quantitation Limit ug/L or noted	Suggested Test Methods
			Basis	Criterion Concentration ug/L or noted ¹		
24	Chloroethane	75003	Taste & Odor	16	0.5	EPA 8260B
25	2- Chloroethyl vinyl ether	110758	Aquatic Toxicity	122 (3)	1	EPA 8260B
26	Chloroform	67663	OEHHA Cancer Risk	1.1	0.5	EPA 8260B
35	Chloromethane	74873	USEPA Health Advisory	3	0.5	EPA 8260B
23	Dibromochloromethane	124481	Calif. Toxics Rule	0.41	0.5	EPA 8260B
27	Dichlorobromomethane	75274	Calif. Toxics Rule	0.56	0.5	EPA 8260B
36	Dichloromethane	75092	Calif. Toxics Rule	4.7	0.5	EPA 8260B
33	Ethylbenzene	100414	Taste & Odor	29	0.5	EPA 8260B
88	Hexachlorobenzene	118741	Calif. Toxics Rule	0.00075	1	EPA 8260B
89	Hexachlorobutadiene	87683	National Toxics Rule	0.44	1	EPA 8260B
91	Hexachloroethane	67721	National Toxics Rule	1.9	1	EPA 8260B
94	Naphthalene	91203	USEPA IRIS	14	10	EPA 8260B
38	Tetrachloroethene	127184	National Toxics Rule	0.8	0.5	EPA 8260B
39	Toluene	108883	Taste & Odor	42	0.5	EPA 8260B
40	trans-1,2-Dichloroethylene	156605	Primary MCL	10	0.5	EPA 8260B
43	Trichloroethene	79016	National Toxics Rule	2.7	0.5	EPA 8260B
44	Vinyl chloride	75014	Primary MCL	0.5	0.5	EPA 8260B
	Methyl-tert-butyl ether (MTBE)	1634044	Secondary MCL	5	0.5	EPA 8260B
	Trichlorofluoromethane	75694	Primary MCL	150	5	EPA 8260B
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	Primary MCL	1200	10	EPA 8260B
	Styrene	100425	Taste & Odor	11	0.5	EPA 8260B
	Xylenes	1330207	Taste & Odor	17	0.5	EPA 8260B
SEMI-VOLATILE ORGANICS						
60	1,2-Benzanthracene	56553	Calif. Toxics Rule	0.0044	5	EPA 8270C
85	1,2-Diphenylhydrazine	122667	National Toxics Rule	0.04	1	EPA 8270C
45	2-Chlorophenol	95578	Taste and Odor	0.1	2	EPA 8270C
46	2,4-Dichlorophenol	120832	Taste and Odor	0.3	1	EPA 8270C
47	2,4-Dimethylphenol	105679	Calif. Toxics Rule	540	2	EPA 8270C
49	2,4-Dinitrophenol	51285	National Toxics Rule	70	5	EPA 8270C
82	2,4-Dinitrotoluene	121142	National Toxics Rule	0.11	5	EPA 8270C
55	2,4,6-Trichlorophenol	88062	Taste and Odor	2	10	EPA 8270C
83	2,6-Dinitrotoluene	606202	USEPA IRIS	0.05	5	EPA 8270C
50	2-Nitrophenol	25154557	Aquatic Toxicity	150 (5)	10	EPA 8270C
71	2-Chloronaphthalene	91587	Aquatic Toxicity	1600 (6)	10	EPA 8270C
78	3,3'-Dichlorobenzidine	91941	National Toxics Rule	0.04	5	EPA 8270C
62	3,4-Benzofluoranthene	205992	Calif. Toxics Rule	0.0044	10	EPA 8270C

CTR #	Constituent	CAS Number	Controlling Water Quality Criterion for Surface Waters		Criterion Quantitation Limit ug/L or noted	Suggested Test Methods
			Basis	Criterion Concentration ug/L or noted ¹		
52	4-Chloro-3-methylphenol	59507	Aquatic Toxicity	30	5	EPA 8270C
48	4,6-Dinitro-2-methylphenol	534521	National Toxics Rule	13.4	10	EPA 8270C
51	4-Nitrophenol	100027	USEPA Health Advisory	60	5	EPA 8270C
69	4-Bromophenyl phenyl ether	101553	Aquatic Toxicity	122	10	EPA 8270C
72	4-Chlorophenyl phenyl ether	7005723	Aquatic Toxicity	122 (3)	5	EPA 8270C
56	Acenaphthene	83329	Taste and Odor	20	1	EPA 8270C
57	Acenaphthylene	208968	No Criteria Available		10	EPA 8270C
58	Anthracene	120127	Calif. Toxics Rule	9,600	10	EPA 8270C
59	Benzidine	92875	National Toxics Rule	0.00012	5	EPA 8270C
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
63	Benzo(g,h,i)perylene	191242	No Criteria Available		5	EPA 8270C
64	Benzo(k)fluoranthene	207089	Calif. Toxics Rule	0.0044	2	EPA 8270C
65	Bis(2-chloroethoxy) methane	111911	No Criteria Available		5	EPA 8270C
66	Bis(2-chloroethyl) ether	111444	National Toxics Rule	0.031	1	EPA 8270C
67	Bis(2-chloroisopropyl) ether	39638329	Aquatic Toxicity	122 (3)	10	EPA 8270C
68	Bis(2-ethylhexyl) phthalate	117817	National Toxics Rule	1.8	3	EPA 8270C
70	Butyl benzyl phthalate	85687	Aquatic Toxicity	3 (7)	10	EPA 8270C
73	Chrysene	218019	Calif. Toxics Rule	0.0044	5	EPA 8270C
81	Di-n-butylphthalate	84742	Aquatic Toxicity	3 (7)	10	EPA 8270C
84	Di-n-octylphthalate	117840	Aquatic Toxicity	3 (7)	10	EPA 8270C
74	Dibenzo(a,h)-anthracene	53703	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
79	Diethyl phthalate	84662	Aquatic Toxicity	3 (7)	2	EPA 8270C
80	Dimethyl phthalate	131113	Aquatic Toxicity	3 (7)	2	EPA 8270C
86	Fluoranthene	206440	Calif. Toxics Rule	300	10	EPA 8270C
87	Fluorene	86737	Calif. Toxics Rule	1300	10	EPA 8270C
90	Hexachlorocyclopentadiene	77474	Taste and Odor	1	1	EPA 8270C
92	Indeno(1,2,3-c,d)pyrene	193395	Calif. Toxics Rule	0.0044	0.05	EPA 8270C
93	Isophorone	78591	National Toxics Rule	8.4	1	EPA 8270C
98	N-Nitrosodiphenylamine	86306	National Toxics Rule	5	1	EPA 8270C
96	N-Nitrosodimethylamine	62759	National Toxics Rule	0.00069	5	EPA 8270C
97	N-Nitrosodi-n-propylamine	621647	Calif. Toxics Rule	0.005	5	EPA 8270C
95	Nitrobenzene	98953	National Toxics Rule	17	10	EPA 8270C
53	Pentachlorophenol	87865	Calif. Toxics Rule	0.28	0.2	EPA 8270C
99	Phenanthrene	85018	No Criteria Available		5	EPA 8270C
54	Phenol	108952	Taste and Odor	5	1	EPA 8270C
100	Pyrene	129000	Calif. Toxics Rule	960	10	EPA 8270C

CTR #	Constituent	CAS Number	Controlling Water Quality Criterion for Surface Waters		Criterion Quantitation Limit ug/L or noted	Suggested Test Methods
			Basis	Criterion Concentration ug/L or noted ¹		
INORGANICS						
	Aluminum	7429905	Ambient Water Quality	87	50	EPA 6020/200.8
1	Antimony	7440360	Primary MCL	6	5	EPA 6020/200.8
2	Arsenic	7440382	Ambient Water Quality	0.018	0.01	EPA 1632
15	Asbestos	1332214	National Toxics Rule/ Primary MCL	7 MFL	0.2 MFL >10um	EPA/600/R-93/116(PCM)
	Barium	7440393	Basin Plan Objective	100	100	EPA 6020/200.8
3	Beryllium	7440417	Primary MCL	4	1	EPA 6020/200.8
4	Cadmium	7440439	Public Health Goal	0.07	0.25	EPA 1638/200.8
5a	Chromium (total)	7440473	Primary MCL	50	2	EPA 6020/200.8
5b	Chromium (VI)	18540299	Public Health Goal	0.2	0.5	EPA 7199/1636
6	Copper	7440508	National Toxics Rule	4.1 (2)	0.5	EPA 6020/200.8
14	Cyanide	57125	National Toxics Rule	5.2	5	EPA 9012A
	Fluoride	7782414	Public Health Goal	1000	0.1	EPA 300
	Iron	7439896	Secondary MCL	300	100	EPA 6020/200.8
7	Lead	7439921	Calif. Toxics Rule	0.92 (2)	0.5	EPA 1638
8	Mercury	7439976	TMDL Development		0.0002 (11)	EPA 1669/1631
	Manganese	7439965	Secondary MCL/ Basin Plan Objective	50	20	EPA 6020/200.8
9	Nickel	7440020	Calif. Toxics Rule	24 (2)	5	EPA 6020/200.8
10	Selenium	7782492	Calif. Toxics Rule	5 (8)	5	EPA 6020/200.8
11	Silver	7440224	Calif. Toxics Rule	0.71 (2)	1	EPA 6020/200.8
12	Thallium	7440280	National Toxics Rule	1.7	1	EPA 6020/200.8
	Tributyltin	688733	Ambient Water Quality	0.063	0.002	EV-024/025
13	Zinc	7440666	Calif. Toxics Rule/ Basin Plan Objective	54/ 16 (2)	10	EPA 6020/200.8
PESTICIDES - PCBs						
110	4,4'-DDD	72548	Calif. Toxics Rule	0.00083	0.02	EPA 8081A
109	4,4'-DDE	72559	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
108	4,4'-DDT	50293	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
112	alpha-Endosulfan	959988	National Toxics Rule	0.056 (9)	0.02	EPA 8081A
103	alpha-Hexachlorocyclohexane (BHC)	319846	Calif. Toxics Rule	0.0039	0.01	EPA 8081A
	Alachlor	15972608	Primary MCL	2	1	EPA 8081A
102	Aldrin	309002	Calif. Toxics Rule	0.00013	0.005	EPA 8081A
113	beta-Endosulfan	33213659	Calif. Toxics Rule	0.056 (9)	0.01	EPA 8081A
104	beta-Hexachlorocyclohexane	319857	Calif. Toxics Rule	0.014	0.005	EPA 8081A
107	Chlordane	57749	Calif. Toxics Rule	0.00057	0.1	EPA 8081A
106	delta-Hexachlorocyclohexane	319868	No Criteria Available		0.005	EPA 8081A

CTR #	Constituent	CAS Number	Controlling Water Quality Criterion for Surface Waters		Criterion Quantitation Limit ug/L or noted	Suggested Test Methods
			Basis	Criterion Concentration ug/L or noted ¹		
111	Dieldrin	60571	Calif. Toxics Rule	0.00014	0.01	EPA 8081A
114	Endosulfan sulfate	1031078	Ambient Water Quality	0.056	0.05	EPA 8081A
115	Endrin	72208	Calif. Toxics Rule	0.036	0.01	EPA 8081A
116	Endrin Aldehyde	7421934	Calif. Toxics Rule	0.76	0.01	EPA 8081A
117	Heptachlor	76448	Calif. Toxics Rule	0.00021	0.01	EPA 8081A
118	Heptachlor Epoxide	1024573	Calif. Toxics Rule	0.0001	0.01	EPA 8081A
105	Lindane (gamma-Hexachlorocyclohexane)	58899	Calif. Toxics Rule	0.019	0.019	EPA 8081A
119	PCB-1016	12674112	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
120	PCB-1221	11104282	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
121	PCB-1232	11141165	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
122	PCB-1242	53469219	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
123	PCB-1248	12672296	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
124	PCB-1254	11097691	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
125	PCB-1260	11096825	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
126	Toxaphene	8001352	Calif. Toxics Rule	0.0002	0.5	EPA 8081A
	Atrazine	1912249	Public Health Goal	0.15	1	EPA 8141A
	Bentazon	25057890	Primary MCL	18	2	EPA 643/ 515.2
	Carbofuran	1563662	CDFG Hazard Assess.	0.5	5	EPA 8318
	2,4-D	94757	Primary MCL	70	10	EPA 8151A
	Dalapon	75990	Ambient Water Quality	110	10	EPA 8151A
	1,2-Dibromo-3-chloropropane (DBCP)	96128	Public Health Goal	0.0017	0.01	EPA 8260B
	Di(2-ethylhexyl)adipate	103231	USEPA IRIS	30	5	EPA 8270C
	Dinoseb	88857	Primary MCL	7	2	EPA 8151A
	Diquat	85007	Ambient Water Quality	0.5	4	EPA 8340/ 549.1/HPLC
	Endothal	145733	Primary MCL	100	45	EPA 548.1
	Ethylene Dibromide	106934	OEHHA Cancer Risk	0.0097	0.02	EPA 8260B/504
	Glyphosate	1071836	Primary MCL	700	25	HPLC/EPA 547
	Methoxychlor	72435	Public Health Goal	30	10	EPA 8081A
	Molinate (Ordram)	2212671	CDFG Hazard Assess.	13	2	EPA 634
	Oxamyl	23135220	Public Health Goal	50	20	EPA 8318/632
	Picloram	1918021	Primary MCL	500	1	EPA 8151A
	Simazine (Princep)	122349	USEPA IRIS	3.4	1	EPA 8141A
	Thiobencarb	28249776	Basin Plan Objective/ Secondary MCL	1	1	HPLC/EPA 639
16	2,3,7,8-TCDD (Dioxin)	1746016	Calif. Toxics Rule	1.30E-08	5.00E-06	EPA 8290 (HRGC) MS
	2,4,5-TP (Silvex)	93765	Ambient Water Quality	10	1	EPA 8151A

CTR #	Constituent	CAS Number	Controlling Water Quality Criterion for Surface Waters		Criterion Quantitation Limit ug/L or noted	Suggested Test Methods
			Basis	Criterion Concentration ug/L or noted ¹		
	Diazinon	333415	CDFG Hazard Assess.	0.05	0.25	EPA 8141A/GCMS
	Chlorpyrifos	2921882	CDFG Hazard Assess.	0.014	1	EPA 8141A/GCMS
OTHER CONSTITUENTS						
	Ammonia (as N)	7664417	Ambient Water Quality	1500 (4)		EPA 350.1
	Chloride	16887006	Agricultural Use	106,000		EPA 300.0
	Flow			1 CFS		
	Hardness (as CaCO ₃)			5000		EPA 130.2
	Foaming Agents (MBAS)		Secondary MCL	500		SM5540C
	Nitrate (as N)	14797558	Primary MCL	10,000	2,000	EPA 300.0
	Nitrite (as N)	14797650	Primary MCL	1000	400	EPA 300.0
	pH		Basin Plan Objective	6.5-8.5	0.1	EPA 150.1
	Phosphorus, Total (as P)	7723140	USEPA IRIS	0.14		EPA 365.3
	Specific conductance (EC)		Agricultural Use	700 umhos/cm		EPA 120.1
	Sulfate		Secondary MCL	250,000	500	EPA 300.0
	Sulfide (as S)		Taste and Odor	0.029		EPA 376.2
	Sulfite (as SO ₃)		No Criteria Available			SM4500-SO3
	Temperature		Basin Plan Objective	°F		
	Total Dissolved Solids (TDS)		Agricultural Use	450,000		EPA 160.1

FOOTNOTES:

- (1) - The Criterion Concentrations serve only as a point of reference for the selection of the appropriate analytical method. They do not indicate a regulatory decision that the cited concentration is either necessary or sufficient for full protection of beneficial uses. Available technology may require that effluent limits be set lower than these values.
- (2) - Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. Values displayed correspond to a total hardness of 40 mg/L.
- (3) - For haloethers
- (4) - Freshwater aquatic life criteria for ammonia are expressed as a function of pH and temperature of the water body. Values displayed correspond to pH 8.0 and temperature of 22°C.
- (5) - For nitrophenols.
- (6) - For chlorinated naphthalenes.
- (7) - For phthalate esters.
- (8) - Basin Plan objective = 2 ug/L for Salt Slough and specific constructed channels in the Grassland watershed.
- (9) - Criteria for sum of alpha- and beta- forms.
- (10) - Criteria for sum of all PCBs.
- (11) - Mercury monitoring shall utilize "ultra-clean" sampling and analytical methods. These methods include:
 - Method 1669: Sampling Ambient Water for Trace Metals at USEPA Water Quality Criteria Levels, USEPA; and
 - Method 1631: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence, USEPA

III. Additional Study Requirements

- A. Laboratory Requirements.** The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code 13176 and must include quality assurance/quality control data with their reports (ELAP certified). In the event a certified laboratory is not available to the Discharger, analyses performed by a noncertified laboratory will be accepted provided the laboratory institutes a Quality Assurance-Quality Control Program. A manual containing the steps followed in this program must be kept in the laboratory and must be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board.
- B. Criterion Quantitation Limit (CQL).** The criterion quantitation limits will be equal to or lower than the minimum levels (MLs) in Appendix 4 of the SIP or the detection limits for purposes of reporting (DLRs) below the controlling water quality criterion concentrations summarized in Table I-1 of this Order. In cases where the controlling water quality criteria concentrations are below the detection limits of all approved analytical methods, the best available procedure will be utilized that meets the lowest of the MLs and DLR. Table I-1 contains suggested analytical procedures. The Discharger is not required to use these specific procedures as long as the procedure selected achieves the desired minimum detection level.
- C. Method Detection Limit (MDL).** The method detection limit for the laboratory shall be determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).
- D. Reporting Limit (RL).** The reporting limit for the laboratory. This is the lowest quantifiable concentration that the laboratory can determine. Ideally, the RL should be equal to or lower than the CQL to meet the purposes of this monitoring.
- E. Reporting Protocols.** The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:
1. Sample results greater than or equal to the reported RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
 2. Sample results less than the reported 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.
 3. 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 shortened to "Est. Conc."). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quality may be percent accuracy (+ or – a percentage of the reported value), numerical ranges (low and high), or any other means considered appropriate by the laboratory.

4. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

F. Data Format. The monitoring report shall contain the following information for each pollutant:

1. The name of the constituent.
2. Sampling location.
3. The date the sample was collected.
4. The time the sample was collected.
5. The date the sample was analyzed. For organic analyses, the extraction data will also be indicated to assure that hold times are not exceeded for prepared samples.
6. The analytical method utilized.
7. The measured or estimated concentration.
8. The required Criterion Quantitation Limit (CQL).
9. The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136, Appendix B (revised as of May 14, 1999).
10. The laboratory's lowest reporting limit (RL).
11. Any additional comments.