ATTACHMENT A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0144-01

NPDES NO. CA 0084255

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

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

BACKGROUND

1. As part of a settlement of legal proceedings in the United States District Court, Eastern District of California, the Lincoln Center Environmental Remediation Trust was created to manage environmental remediation activities at the Lincoln Center Site in the city of Stockton, San Joaquin County, California. The Lincoln Center Environmental Remediation Trust (hereafter Discharger) submitted a Report of Waste Discharge, dated 14 February 2003, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES). Supplemental information was submitted on 6 February 2004.

2. The Discharger owns and operates a ground water extraction and treatment system to remove volatile organic compounds (VOCs), petroleum products and lead from ground water (Attachment A). The treatment system also treats residual fluids generated during the continuing investigation, remediation, and monitoring activities at the site. Treated effluent is discharged into a storm drain in San Joaquin County that flows to Fourteen Mile Slough and subsequently the San Joaquin River, waters of the United States, at a point defined as latitude ~~37~~38°~~59'58~~00'03" N, longitude 121°~~20'38~~19'54" W, as shown on Attachment B, which is attached hereto and made part of this Order by reference.

3. Pumped groundwater is treated by air stripping and granular activated carbon. The activated carbon is regenerated or disposed of off-site. The treatment system is designed for a flow of 430,000 gpd of extracted groundwater. Based on data provided in the Report of Waste Discharge and on quarterly monitoring data provided by the Discharger between the period of January 1999 and March 2004 the discharge can be described as follows:

Constituents	Units	Average	High	Low
Discharge Flow	mgd	0.25	0.42	- -
pH	pH units	- -	8.94	7.1
Temperature	°C	21.0	39.0	17.6
Specific conductance	µmhos/cm	833	1600	133
Lead	µg/L	0.52[1]	<100[2]	<0.5[3]

Constituents	Units	Average	High	Low
Tetrachloroethylene (PCE)	µg/L	0.79	2.2	0.27
Trichloroethene (TCE)	µg/L		<0.5[2]	
1,1-Dichloroethene (DCE)	µg/L		<0.5[2]	
Dichloromethane (Methylene Chloride)	µg/L		<0.5[2]	
1,2-Dichloroethane (1,2-DCA)	µg/L		<1.0[2]	<0.5[3]
Total VOCs	µg/L	0.94	2.2	0.6
Benzene	µg/L		<1.0[2]	<0.5[3]
Toluene	µg/L		<1.0[2]	<0.5[3]
Ethylbenzene	µg/L		<1.0[2]	<0.5[3]
Xylene	µg/L		<1.0[2]	<0.5[3]
Methyl tertiary-butyl ether (MTBE)	µg/L	0.84	4.1	0.1
Total Petroleum Hydrocarbons (TPH)	µg/L	17.5	23	15

[1] Detected once in 53 sampling events at a concentration of 0.52 ug/L.
[2] No detected concentrations reported, highest "less than" MDL value reported
[3] Lowest "less than" MDL value reported.

4. Based on data provided in monitoring reports provided by the Discharger between May 2003 and February 2004 the receiving water, Fourteen Mile Slough, can be described as follows:

Constituents	Units	Average	High	Low
Hardness	mg/L	174	390	58
pH	pH units	7.8	8.3	7.0
Temperature	°C	20.8	23.9	18.3

Applicable receiving water hardness, pH, and temperature data were used in the consideration and evaluation of limitations for this Order.

5. Trichloroethylene (TCE), cis-1,2-dichloroethylene (DCE), benzene, toluene, xylene, ethylbenzene, PCE, MTBE and TPH as gasoline have been identified in the groundwater as constituents of concern. The treatment plant has demonstrated an ability to treat these constituents to non-detectable levels (as defined by the PQLs specified in Order 98-062).

6. Other VOCs are reported to be present in the untreated groundwater at trace concentrations, below MCLs or NTR/CTR criteria. This Order establishes effluent limitations for total VOCs that will address these trace constituents.

7. The Regional Board adopted a *Water Quality Control Plan*, *Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.

8. The State Water Resources Control Board adopted a *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (hereafter Delta Plan) on 22 May 1995. The Delta Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters within the Delta. The Delta Plan supplements the Basin Plan requirements that cover the Delta; together they include all necessary elements of water quality control plans in accordance with Water Code Sections 13241 and 13424 and federal requirements. The requirements of this Order implement the Delta Plan.

9. The U.S. Environmental Protection Agency (USEPA) adopted the *National Toxics Rule* (NTR) on 22 December 1992, which was amended on 4 May 1995 and 9 November 1999, and the *California Toxics Rule* (CTR) on 18 May 2000, which was amended on 13 February 2001. These Rules contain water quality standards applicable to this discharge. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP) on 2 March 2000, which contains policies and procedures for implementation of the NTR and the CTR.

BENEFICIAL USES AND CHARACTERISTICS OF THE RECEIVING WATER

10. Treated groundwater is discharged to the storm sewer system that is owned and operated by San Joaquin County. The storm sewer system discharges to the Fourteen Mile Slough. Fourteen Mile Slough is tributary to the San Joaquin River. These waters are within the boundaries of the Sacramento-San Joaquin Delta (Delta). The existing beneficial uses of the Delta as identified in Table II-1 of the Basin Plan are domestic and municipal supply (MUN), agricultural supply irrigation and stock watering (AGR), industrial service supply (IND), industrial process supply (PRO), water contact recreation (REC-1), non-contact water recreation (REC-2); navigation (NAV); warm freshwater habitat (WARM), cold freshwater habitat (COLD), migration of aquatic organisms (MIGR), spawning (SPWN), and wildlife habitat (WILD).

11. The beneficial uses of the underlying ground water are municipal and domestic (MUN), industrial service (IND), industrial process (PRO) and agricultural supply (AGR).

12. The federal Clean Water Act (CWA) Section 303(d) addresses waters that have not attained the CWA national goal of "fishable, swimmable" by requiring states to identify these impaired water bodies and develop total maximum daily loads (TMDLs) for them, with oversight from USEPA. A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect bodies of water.

13. Fourteen Mile Slough is within the Eastern Portion of the Delta that is listed as an impaired water body pursuant to Section 303(d) of the CWA. The list of pollutants for which the Sacramento-San Joaquin Delta (eastern portion) is impaired appears on a list (the "California 303(d) List"), which was updated in 2002 and approved by the State Board in February 2003. Pollutants identified on the California 303(d) List as impairing are: chlorpyrifos, DDT,

diazinon, Group A Pesticides (aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, hexachlorocyclohexane (including lindane), endosulfan, and toxaphene), mercury and unknown toxicity. The Discharger analyzed its effluent and receiving waters for all these constituents except chlordane and unknown toxicity. All of the monitored constituents were not detected in either the effluent or receiving water with the exception of mercury, DDT and diazinon. Mercury was detected in the effluent and receiving water, DDT and diazinon were in detectable concentrations in the receiving water. In accordance with the SIP, this Order establishes effluent limitations for mercury and DDT and includes a monitoring and reporting program that requires monitoring for mercury, DDT and chlordane

14. Regional Board staff is currently in the process of developing TMDLs for some of the 303(d) listed constituents for the Delta waterways. When completed, the TMDLs will allocate waste loads to the various dischargers within the appropriate watersheds. This Order contains effluent limits necessary to protect the beneficial uses of the receiving waters until such time as TMDLs are completed for all constituents of concern on the 303(d) list and loads can be allocated. A Provision of this Order contains a reopener to modify and/or include effluent limits as necessary when load allocations for any 303(d) listed constituents are implemented.

EFFLUENT LIMITATIONS, RECEIVING WATER LIMITATIONS AND REASONABLE POTENTIAL ANALYSIS

15. 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.

16. 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 USC, § 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 section 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, Section 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*."

17. The Regional Board's Basin Plan, page IV-17.00, contains an implementation policy ("Policy for Application of Water Quality Objectives") that specifies that the Regional 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 Board must establish effluent limitations using one or more of three specified sources, including USEPA's published water quality criteria, a proposed state criterion (*i.e*., water quality objective), or an explicit state policy interpreting its narrative water quality criteria (*i.e*., the Regional Board's "Policy for Application of Water Quality Objectives")(40 CFR 122.44(d)(1) (vi) (A), (B) or (C)). The Basin Plan contains a narrative objective requiring that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*". 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 that adversely affect beneficial uses. The beneficial uses include municipal and domestic supply, agricultural irrigation supply, water contact and non-contact recreation and aquatic habitat and migration. 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 Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCLs) prescribed by the California Code of Regulations Title 22 (CCR Title 22). The Basin Plan further states that, to protect all beneficial uses, the Regional Board may apply limits more stringent than MCLs. When a reasonable potential exists for exceeding a narrative objective, Federal Regulations mandate numerical effluent limitations and the Basin Plan narrative criteria establish a procedure for translating the narrative objectives into numerical effluent limitations.

18. Fourteen Mile Slough is a dead end, tidally influenced slough. As part of the Eastern Portion of the Delta, Fourteen Mile Slough is listed as impaired for numerous pollutants, including unknown toxicity as noted above. 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. The storm drain outfall which conveys the treated groundwater effluent discharges to beginning of Fourteen Mile Slough via the San Joaquin County Storm Pump Station #1 (SJCPS #1). Regional Board staff observed some pooled water but no discernable receiving water flow immediately downgradient in the vicinity of this outfall location during a site visit in November 2004. Further downgradient, staff observed increasing volumes of water in Fourteen Mile Slough, likely under tidal influence. Considering the hydraulic characteristics of the receiving

water, results of effluent and ambient receiving water monitoring, and the location of the discharge outfall to Fourteen Mile Slough, the Regional Board has evaluated the need for water quality-based effluent limitations for pollutants without benefit of dilution in this Order, with the exception of arsenic and barium. The Discharger has been unable to comply with end-of-pipe effluent limits for arsenic and barium, which are based on the Basin Plan's site-specific water quality objectives for the Delta. ~~These water quality-based effluent limitations are based on the application of water quality criteria or objectives at the point of discharge. The Discharger may elect to conduct a dilution study to evaluate seasonal or flow based assimilative capacity of the receiving water for particular pollutants. If requested, the Regional Board will review such studies and if warranted, may reopen this permit to make appropriate changes.~~Therefore, the Discharger conducted a dilution study in accordance with the SIP, USEPA's Water Quality Standards Handbook, and the USEPA's *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) to evaluate if dilution of arsenic and barium is occurring in Fourteen Mile Slough.

On 17 November 2009, the Discharger submitted a dilution study titled *Revised Fourteen-Mile Slough Dilution/Mixing Zone Study, Lincoln Center, Stockton, California*. Based on the results of the dilution/mixing zone study, dilution factors of 3.0 and 8.3 for arsenic and barium, respectively, are allowed in this Order. The mixing zone extends approximately 0.9 miles (approximately 4,800 feet) downstream for arsenic and barium. A detailed discussion of the dilution/mixing zone study is presented in the Information Sheet.

19. The Regional Board has considered the factors specified in CWC Section 13263, including considering the provisions of CWC Section 13241 where appropriate. The Regional Board is not required to consider the factors in CWC Section 13241 in applying existing water quality objectives, including adopting new effluent limitations in this Order.

20. The Regional Board must implement the CWC consistent with the CWA. The CWA precludes the consideration of costs when developing effluent limitations for NPDES permits necessary to implement water quality standards (See Ackels v. EPA (9th Cir. 1993) 7 F.3d 862, 865-66). The Regional Board may consider costs in developing compliance schedules. The Regional Board finds, on balance, that these requirements are necessary to protect the beneficial uses of the Delta.

21. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for: arsenic, copper, hexavalent chromium (chromium VI), lead, mercury, barium, iron, manganese, ammonia, and specific conductance. Effluent limitations for these constituents are included in this Order.

PRIORITY POLLUTANTS

22. For Priority Pollutants a Reasonable Potential Analysis (RPA) was conducted in accordance with either the SIP or the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD). The USEPA adopted the NTR and the CTR, which contains water quality standards applicable to this discharge and the SIP contains guidance on implementation of the NTR and CTR. As noted in Section 1.1 of the SIP, "Designated beneficial uses to which (federal) aquatic life criteria or objectives would apply include, but are not necessarily limited to warm freshwater habitat (WARM), cold freshwater habitat (COLD), and estuarine habitat (EST). Designated beneficial uses to which (federal) human health criteria/objectives would apply include, but are not necessarily limited to, municipal and domestic supply (MUN) and water contact recreation (REC-1)." Section 1.3 of the SIP requires a water quality based effluent limitation when the maximum effluent concentration (MEC) or observed maximum receiving water background concentration (B) of a priority pollutant exceeds an appropriate CTR/NTR pollutant criterion or more stringent criterion as described in Section 1.1 of the SIP. When considering other pollutant criteria outside the CTR/NTR and scope of the SIP, the Regional Board has considered that the TSD recommends a water quality-based effluent limit when the projected MEC (see Finding 36) exceeds an applicable and appropriate pollutant criterion.

23. When required, Section 1.4 of the SIP provides four methods that may be used to develop effluent limitations. These four methods include: (1) assigning a loading allocation based upon a completed TMDL; (2) use of a steady state model; (3) use of a dynamic model; or, (4) establishing effluent limitations that consider intake water pollutants. Section 5.4 of the TSD also describes the use of a steady state model for development of effluent limitations. Water quality-based effluent limitations have been developed in this Order using the steady state model described in Section 1.4 of the SIP or the TSD where appropriate.

24. ***Arsenic*** - The CTR did not establish a human health criterion for arsenic. However, the Basin Plan includes a site-specific water quality objective of 10 µg/L for arsenic for the Delta. In addition, the Basin Plan includes a water quality objective that "*waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses*" (chemical constituents objective) and also contains a narrative toxicity objective. MUN is a beneficial use of the Delta. Based on information included in analytical laboratory reports submitted by the Discharger, arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the USEPA Primary Maximum Contaminant Level (MCL) of 10 µg/L for arsenic. Pursuant to the Safe Drinking Water Act, the California Department of Health Services (DHS) must revise the arsenic MCL in Title 22 CCR to be as low or lower than the USEPA MCL. Applying the Basin Plan's "Policy for Application of Water Quality Objectives", to protect future municipal and domestic water use, it is reasonable to apply the USEPA MCL for arsenic to the receiving stream. Monitoring conducted by the Discharger between October 2005 and February 2010, demonstrates a MEC of 23 µg/L. The maximum

observed ambient ~~background~~ receiving water arsenic concentration was 15 µg/L as determined by 4 samples collected by the Discharger between May 2003 and February 2004. However, it is believed that these samples were collected within the influence of the discharge and do not represent ambient background concentrations. The Facility discharges to the upstream end of Fourteen Mile Slough. Therefore, no upstream flow exists and samples collected near the outfall are not representative of the ambient background receiving water but rather are for the most part treatment system effluent until mixed with tidal waters. A more representative location for ambient background receiving water sampling is the San Joaquin River (SJR) at Juggler's Island (i.e., confluence of Fourteen Mile Slough and SJR) where the tidally influenced waters originate for Fourteen Mile Slough. The discharger did a comparison of the arsenic concentration at Juggler's Island compared to San Joaquin River arsenic concentrations collected by the City of Stockton Regional Wastewater Control Facility during 2002 and the City of Manteca's Wastewater Quality Control Facility discharge from 2006 and 2008. The background concentration of arsenic at Juggler's Island of 2.0 µg/L was within the range for Stockton (0.5 to 4.1 µg/L) which is approximately 15 miles upstream and similar to Manteca (0.1 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 of 1.97 µg/L from 62 samples collected between 1993 and 2007. Therefore, the background sample collected by the Discharger is a representative concentration of the background arsenic concentration. The ambient background concentration of arsenic detected at Juggler's Island during the dilution/mixing zone study was 2.0 µg/L, which is below the site-specific water quality objective of 10 µg/L in the Delta. This demonstrates there is assimilative capacity for arsenic in the receiving water.

Considering the arsenic MEC~~, the lack of assimilative capacity,~~ and the MUN beneficial use of the Delta, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard. The dilution/mixing zone study calculated a dilution factor of 3.0 for arsenic at the Interstate 5 (I-5) Overpass. Setting the dilution factor equal to the volumetric dilution credit (D) in the SIP's ECA equation, the resulting ECA for arsenic is 34 µg/L. A MDEL of 34 µg/L would be conservatively set equivalent to the ECA and the mixing zone for arsenic extends from the outfall to the I-5 Overpass location (approximately 0.9 miles). However, limits should only be as high as is justified under the state and federal antidegradation policies. This Order contains effluent limitations that have been revised to comply with the antidegradation policies and are based on performance, not just available dilution. The 99.9th percentile of the effluent arsenic data set between October 2005 and February 2010 is 19 µg/L (assuming a normal distribution). However, ~~T~~the MEC observed ~~between October 2005 and February 2010~~ during this period was 23 µg/L~~, less than the dilution based ECA~~. Therefore this Order establishes a final effluent limitation based on the MEC of 23 µg/L. ~~Therefore, this Order includes an average monthly effluent limitation (AMEL) for arsenic considering the USEPA recommendations for permitting for human health protection provided in Section 5.4.4 of the TSD. The AMEL was set equal to the Waste Load Allocation (WLA), or in this case, the MCL (10 µg/L, total recoverable). Additionally, the Basin Plan, in Table 111-1, at page III-3.00 establishes a Trace Element Water Quality Objective for arsenic that applies to waters in the Delta. This objective is expressed as a~~

~~maximum dissolved concentration of 10 µg/L. When converting from total recoverable to dissolved for comparison with the arsenic objective, these concentrations have the reasonable potential to exceed the Basin Plan objective for arsenic considering even a liberal translator. Therefore, this Order also includes a maximum daily effluent limitation (MDEL) for arsenic of 10 µg/L considering protection of the Basin Plan Objective and lack of assimilative capacity, expressed in the dissolved form. While NPDES regulations at 40 CFR 122.45(c) typically require effluent limitations for metals to be expressed as total recoverable, they do allow use of a dissolved limitation if a standard is expressed in the dissolved form. It is unknown whether the Discharger can meet this new effluent limitation for arsenic. Where the Regional Board determines that it is infeasible to achieve immediate compliance with an adopted water quality objective, the Board may establish in NPDES permits a schedule of compliance. However, schedules of compliance are only authorized for those water quality objectives adopted after September 1995. The Basin Plan chemical constituents and toxicity objectives were established prior to 1995; therefore this Order does not contain a compliance schedule for arsenic. A separate Time Schedule Order shall be proposed for compliance with the arsenic effluent limitations.~~

25. ***Copper*** - Copper can be toxic to freshwater aquatic life in concentrations that exceed acute and chronic water quality criteria contained in the CTR. Aquatic habitat is a beneficial use of the Delta. The CTR includes freshwater, acute and chronic aquatic life ambient water quality criteria for copper of 8.4 µg/L and 5.9 µg/L respectively (expressed as total recoverable), based upon the minimum observed receiving water hardness of 58 mg/L (as $CaCO_3$). Monitoring indicates the MEC for copper was 1.3 µg/L, and the maximum ambient background receiving water concentration (B) for copper was 28 µg/L. In accordance with Section 1.3, Step 6 of the SIP, whenever the observed maximum ambient background concentration of a pollutant exceeds an applicable priority pollutant criterion, a water quality-based effluent limitation is required. The observed maximum ambient background concentration of copper exceeds both the acute and chronic criteria established by the CTR. Therefore, this Order includes a MDEL and AMEL for copper, developed in accordance with Section 1.4 of the SIP. Because copper was not detected in effluent samples at concentrations exceeding the most stringent water quality criterion, the Discharger is expected to be able to comply with final limitations for copper upon adoption of this Order. Interim limits and a compliance schedule for copper are not justified and are not included in this Order.

26. ***Chromium VI*** - The CTR includes freshwater, acute and chronic aquatic life criteria for chromium VI of 16.3 µg/L and 11.4 µg/L respectively. Aquatic habitat is a beneficial use of the Delta. Monitoring indicates the chromium VI MEC was 17 µg/L and the maximum ambient background concentration was reported as 1.8 µg/L. The reported chromium VI MEC exceeds both the acute and chronic CTR aquatic life criteria. As noted previously, the characteristics of Fourteen Mile Slough may result in minimal mixing at the point of discharge and the zone of initial dilution, or no dilution whatsoever. Therefore, this Order includes a MDEL and AMEL for chromium VI considering the acute and chronic wasteload allocations without consideration

of dilution. As these effluent limitations for chromium VI are new requirements in this Order, interim limits and a compliance schedule for chromium VI are established in this Order.

27. ***Lead*** - The CTR includes freshwater, acute and chronic aquatic life ambient water quality criteria for lead of 41 µg/L and 1.6 µg/L respectively (expressed as total recoverable), based upon the minimum observed receiving water hardness of 58 mg/L (as $CaCO_3$). Monitoring indicates the MEC for lead was 0.52 µg/L, and the maximum ambient background receiving water concentration (B) for lead was 71 µg/L. In accordance with Section 1.3, Step 6 of the SIP, whenever the observed maximum ambient background concentration of a pollutant exceeds an applicable priority pollutant criterion, a water quality-based effluent limitation is required. The observed maximum ambient background concentration of lead exceeds both the acute and chronic criteria established by the CTR. Therefore, this Order includes effluent limitations for lead, developed in accordance with Section 1.4 of the SIP. Because lead was not detected in effluent samples at concentrations exceeding the most stringent water quality criterion, the Discharger is expected to be able to comply with final limitations for lead upon adoption of this Order. Interim limits and a compliance schedule for lead are not justified and are not included in this Order.

28. ***Mercury -*** Aquatic habitat and MUN are existing beneficial uses of the Delta. The current USEPA Ambient Water Quality Criteria 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 one-in-a-million cancer risk) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species. Both values are controversial and subject to change. In the *CTR*, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. The reported mercury MEC was 0.11 µg/L, and the maximum observed ambient background concentration was 0.13 µg/L, both of which exceed the CTR human health criterion (consumption of water and organisms) for mercury (0.050 µg/L). Additionally, the Delta, to which the Fourteen Mile Slough is a part, has been listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act because of mercury. The California DHS has issued health warnings regarding the consumption of fish from Delta waterways. Mercury bioaccumulates in fish tissue and additional loading resulting from the discharge has the potential to cause or contribute to the impairment resulting from mercury bioaccumulation in the Delta. Therefore, discharge of mercury to the receiving water is likely to contribute to exceedances of the narrative toxicity objective, impacts on beneficial uses, and violation of a water quality standard.

At Section 2.1.1 the SIP states: "For bioaccumulative priority pollutants for which the receiving water has been included on the CWA Section 303(d) list, the RWQCB should consider whether the mass loading of the bioaccumulative pollutant(s) should be limited to representative, current levels pending TMDL development in order to implement the applicable water quality standard". Since mercury is a bioaccumulative pollutant included on the CWA 303(d) list for

the Delta, the intent of this Order is to include an interim performance based effluent limitation for mercury.

Current mercury data are not sufficient for establishment of an interim performance based limitation. This Order requires the Discharger to collect data necessary to establish an interim performance based effluent mass limitation.

Performance-based effluent limits for mercury are typically established as follows: 1) The average monthly effluent mercury concentration is calculated by adding all detected concentrations and one-half of the reported detection levels of all non-detectable mercury concentration results; 2) From the average monthly mercury concentration and average monthly flow, a monthly mercury mass discharge is calculated; and 3) A total mass for all months is then totaled, and an average annual mass discharge is calculated.

Following the establishment of the interim limit, the mass of mercury discharged shall not exceed the interim mercury mass limit twelve months on a running average. In calculating for compliance, the Discharger shall count all non-detect measures at one-half of the detection level and apply the monthly average flow from the sampled discharge. If compliance with the effluent limit is not attained due to the non-detect contribution, the Discharger will be directed to improve and implement available analytical capabilities and compliance will be evaluated with consideration of the detection limits. For each calendar month, the Discharger shall calculate twelve-month mass loadings. For monthly measures, monthly loadings shall be calculated using the average monthly flow and the average of all mercury analyses conducted that month. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each self-monitoring report. Compliance will be determined based on the previous 12-month moving averages over the previous twelve months of monitoring.

The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the MEC and/or the maximum observed ambient background concentrations exceed an applicable criterion or objective. This Order contains a final AMEL for mercury based on the CTR human health criterion of 0.050 µg/L. This Order may be reopened, and alternative final effluent limitations may be established for mercury upon completion of the TMDL, or promulgation of new criteria.

Upon completion of the Interim Mercury Mass Limitation Study required by this Order, this Order shall be reopened and an interim performance based mercury mass effluent limitation established.

29. ***Zinc*** - The CTR includes freshwater, acute and chronic aquatic life ambient water quality criteria for zinc of 76 µg/L and 76 µg/L respectively (expressed as total recoverable), based upon the minimum observed receiving water hardness of 58 mg/L (as $CaCO_3$). Monitoring indicates the MEC for zinc was less than detectable levels, and the maximum ambient background receiving water concentration (B) for zinc was 160 µg/L. In accordance with Section 1.3, Step 6 of the SIP, an effluent limitation is not required.

30. ***Organochlorine Pesticides -*** Ambient background receiving water data provided by the Discharger indicate that organochlorine pesticides (including DDT, DDE, DDD and Delta-BHC) were present in detectable concentrations (0.06 µg/L, 0.08 µg/L, 0.8 µg/L. and 0.07 µg/L respectively). Monitoring results indicate these pesticides were not in detectable concentrations in the effluent. In accordance with Section 1.3, Step 6 of the SIP, an effluent limitation is not required.

31. ***Bis(2-Ethylhexl)Phthalate (DEHP)*** - DEHP is used in the production of polyvinyl chloride (PVC). The USEPA has classified DEHP as a Group B2, probable human carcinogen. USEPA has found phthalate to potentially cause mild gastrointestinal disturbances, nausea, and vertigo when people are exposed to it at levels above the MCL for relatively short periods of time. Phthalate has the potential to cause damage to liver and testes; reproductive effects; and cancer from a lifetime exposure (long-term exposure) at levels above the MCL. DEHP has a strong tendency to adsorb to soil and sediments. In water, microbes in a matter of weeks will degrade DEHP. DEHP does have a tendency to accumulate in aquatic organisms. Monitoring data provided indicated a maximum concentration of the background receiving water for DEHP at 2.9 µg/L. This exceeds the applicable, most restrictive CTR human health criteria of 1.8 µg/L. However, because DEHP is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected DEHP may be from plastics used for sampling or analytical equipment, the Regional Board is not establishing effluent limitations for DEHP at this time. The Regional Board is directing the discharger to conduct a study to determine if DEHP is present in the receiving water, and if it is, if it above the water quality criterion for DEHP. This Order includes a reopener to allow the Regional Board to incorporate appropriate effluent limitations for DEHP if needed pending the results of this study.

32. ***BTEX (Benzene, Toluene, Ethylbenzene, and Xylenes)*** - Order 98-062 established an effluent limitation for BTEX of 1 µg/L (daily maximum), a technology-based limit that was developed using best professional judgment. The most stringent water quality criterion for benzene is 1.2 µg/L, the CTR criterion for Human Health, Water and Organism. The most stringent water quality criteria for toluene, ethylbenzene, and xylenes based on Taste and Odor Threshold are 42 µg/L, 29 µg/L and 17 µg/L, respectively. As the existing effluent limitation is less than the most restrictive criterion of 1.2 µg/L for Benzene, this limit is adequate to protect water quality. This Order carries over the MDEL for BTEX established in the previous Order.

33. ***Volatile Organic Compounds (PCE, TCE, DCE, methylene chloride, benzene, toluene, ethylbenzene and xylene) (VOCs) -*** VOCs have been detected in influent groundwater, prior to treatment. The groundwater treatment system is designed and operated in part to remove VOC's from groundwater. Previous Order 98-062 established technology-based effluent limitations for each of these pollutants of not to exceed 0.5 µg/L (monthly median) based on the technology utilized by the treatment system to dependably remove VOCs to concentrations that are less than the practical quantitation limits (PQLs) for laboratory analytical methods for these pollutants. The PQLs utilized in Order 98-062 are the same as current analytical technology Minimum Levels (ML's) specified by the SIP (ML is defined in Appendix 1 to the SIP). The

concentration of the ML of 0.5 µg/L is less than the most stringent water quality criteria for any of these constituents. Therefore, technology-based effluent limitations are protective of water quality and still apply to the discharge. Effluent limitations not to exceed 0.5 µg/L (monthly median) for PCE, TCE, DCE, methylene chloride, benzene, toluene, ethylbenzene and xylene have been included in this Order.

34. ***1,2-Dichloroethane (1,2-DCA)*** - Previous Order 98-062 established an effluent limitation for 1,2-DCA, also a volatile organic compound, of <0.38 µg/L (30-day average), which is equal to the most stringent water quality criterion established in the CTR for the protection of human health for consumption of water and organisms. This Order carries forward the effluent limitation for 1,2-DCA to ensure the protection of water quality for this constituent.

35. ***Total Volatile Organic Compounds (Total VOCs)*** **-** Order 98-062 established an effluent limitation for Total VOCs of 1 µg/L (daily maximum), a technology-based limit developed using best professional judgment and based upon the technically achievable treatment levels for air strippers. These technology based effluent limitations still apply to the discharge; therefore the daily maximum effluent limitation for total VOCs are carried over to this Order.

OTHER POLLUTANTS

36. For non-priority pollutants, a Reasonable Potential Analysis (RPA) was conducted in accordance with the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD). For each pollutant, a projected MEC was determined by multiplying the maximum observed effluent concentration in the data set by a reasonable potential multiplying factor that accounts for statistical variation. The multiplying factor (for 99% confidence level and 99% probability basis) was dependent on the coefficient of variation (CV) and number of reported effluent sample results. This projected MEC was then compared to the appropriate water quality criterion.

Basin Plan Objectives

37. ***Barium*** - A Trace Element Water Quality Objective for barium listed in Table ~~III~~III-1, at page III-3.00 of the Basin Plan applies to waters in the Delta. This objective is expressed as a maximum dissolved concentration of 100 µg/L. Results of monitoring conducted by the discharger from 4 samples collected between May 2003 and February 2004 indicate a MEC for barium of 340 µg/L, a projected MEC for barium of 1,598 µg/L, and receiving water concentrations ranging from 52 µg/L to 390 µg/L, all measured as total recoverable. However, it is believed that these samples were collected within the influence of the discharge and do not represent ambient background concentrations (see Finding 24, above). The ambient background concentration of barium detected at Juggler's Island during the dilution/mixing zone study was 43 µg/L, which is below the Basin Plan maximum dissolved concentration of 100 µg/L. This demonstrates there is assimilative capacity for barium in the receiving water.~~When converting from total recoverable to dissolved for comparison with the barium objective, these concentrations have the reasonable potential to exceed the Basin Plan objective~~

~~for barium considering even the most liberal of translators. Therefore, this Order includes a MDEL for barium of 100 µg/L considering protection of the Basin Plan Objective and lack of assimilative capacity, expressed in the dissolved form. While NPDES regulations at 40CFR 122.45(c) typically require effluent limitations for metals to be expressed as total recoverable, they do allow use of a dissolved limitation if a standard is expressed in the dissolved form. It is unknown whether the Discharger can meet this new effluent limitation for barium. As the Basin Plan objective for barium is not a new objective, a schedule of compliance for barium is not included in this Order. A separate Time Schedule Order shall be proposed for compliance with the barium effluent limitations.~~

The dilution/mixing zone study calculated a dilution factor of 8.3 for barium at the I-5 Overpass. Setting the dilution factor equal to the volumetric dilution credit (D) in the SIP's ECA equation, the resulting ECA for barium is 570 µg/L. A MDEL of 570 µg/L would be conservatively set equivalent to the ECA and the mixing zone for barium extends from the outfall to the I-5 Overpass location (approximately 0.9 miles). However, limits should only be as high as is justified under the state and federal antidegradation policies. This Order contains effluent limitations that have been revised to comply with the antidegradation policies and are based on performance, not just available dilution. 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 the performance-based effluent limitation for barium. Typically the 99.9th percentile is used as the basis for a performance-based maximum daily effluent limitation. The performance-based limit of 415 µg/L is greater than the MEC of 390 µg/L; ~~T~~therefore, this Order establishes a final effluent limitation based on the ~~MEC~~ performance-based limit of ~~390~~415 µg/L.

38. The Groundwater Extraction Treatment System currently comprises 21 A-Zone and 10 B-Zone groundwater extraction wells. In the summer of 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 the zones for Total and Dissolved Arsenic, Barium, Iron, as well as, Total Dissolved Solids. The results for Arsenic and Barium were as follows:

	Arsenic (total) [µg/L]	**Barium (total) [µg/L]**
A Zone extraction wells	6.8	270
B Zone extraction wells	21	410

These results indicate that the B-Zone wells contribute significantly more Arsenic and Barium than do the A-Zone wells. Therefore, if the A-Zone wells were 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 for operational reasons including: a) A-Zone wells foul more often than B-Zone wells, and b) the need for pumping in the A Zone may decrease as the size of the plume decreases. Therefore, the calculation of the performance-based effluent limits for arsenic and barium may need to be reevaluated 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 expected or encountered due to naturally occurring processes such as significant changes in precipitation patterns, increases or decreases in groundwater elevations, or due to changes in the distribution of VOCs that would require adjusting the pumping rates or installing additional extraction wells, this Order may be reopened to modify the effluent limitations for such constituents if justified based on the information.

MUN Beneficial Use, Basin Plan Chemical Constituents Objective

~~38.~~39. For Chemical Constituents at page III-3.00, the Basin Plan states '*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) specified in the following provisions of Title 22 of the California Code of Regulations…*' Federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A) allow the state to establish effluent limitations using an explicit state policy interpreting its narrative objectives. Use of MCL's is appropriate to implement the chemical constituents objective of the Basin Plan. As noted previously, the MUN use applies to the Delta.

~~39.~~40. ***Iron -*** Title 22 of the California Code of Regulations (CCR Title 22), Table 64449-A, establishes a secondary MCL of 300 µg/L for iron. As MUN is an existing use of the Delta, the MCL for iron is applicable to this Order. Results of monitoring conducted by the discharger indicate a MEC for iron of 1,100 µg/L, a projected MEC for iron of 5,170 µg/L, and receiving water concentrations ranging from 320 µg/L to 1,900 µg/L. Considering the MEC and projected MEC, the lack of assimilative capacity, and the MUN beneficial use of the Delta, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard. Therefore, this Order includes an AMEL for iron considering the USEPA recommendations for permitting for human health protection provided in Section 5.4.4 of the TSD. The AMEL was set equal to the Waste Load Allocation (WLA), or in this case, the MCL (300 µg/L). Additionally, the Basin Plan, in Table 111-1, at page III-3.00 establishes a Trace Element Water Quality Objective for iron that applies to waters in the Delta. This objective is expressed as a maximum dissolved concentration of 300 µg/L. When converting from total recoverable to dissolved for comparison with the iron objective, these concentrations have the reasonable potential to exceed the Basin Plan objective for iron considering even a liberal translator. Therefore, this Order also includes a maximum daily effluent limitation (MDEL) for iron of 300 µg/L considering protection of the Basin Plan Objective and lack of assimilative capacity, expressed in the dissolved form. While NPDES regulations at 40 CFR 122.45(c) typically require effluent limitations for metals to be expressed as total recoverable,

they do allow use of a dissolved limitation if a standard is expressed in the dissolved form. It is unknown whether the Discharger can meet this new effluent limitation for iron. Where the Regional Board determines that it is infeasible to achieve immediate compliance with an adopted water quality objective, the Board may establish in NPDES permits a schedule of compliance. However, schedules of compliance are only authorized for those water quality objectives adopted after September 1995. The Basin Plan chemical constituents objective was established prior to 1995; therefore this Order does not contain a compliance schedule for iron. A separate Time Schedule Order shall be proposed for compliance with the iron effluent limitations.

~~40.~~41. ***Manganese*** - CCR Title 22, Table 64449-A, establishes a secondary MCL of 50 µg/L for manganese. As MUN is an existing use of the Delta, the MCL for manganese is applicable to this Order. Results of monitoring conducted by the discharger indicate a MEC for manganese of 88 µg/L, a projected MEC for manganese of 413 µg/L, and receiving water concentrations ranging from 7.5 µg/L to 170 µg/L. Considering the MEC and projected MEC, the lack of assimilative capacity, and the MUN beneficial use of the Delta, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard. Therefore, this Order includes an AMEL for manganese considering the USEPA recommendations for permitting for human health protection provided in Section 5.4.4 of the TSD. The AMEL was set equal to the Waste Load Allocation (WLA), or in this case, the MCL (50 µg/L). Additionally, the Basin Plan, in Table 111-1, at page III-3.00 establishes a Trace Element Water Quality Objective for manganese that applies to waters in the Delta. This objective is expressed as a maximum dissolved concentration of 50 µg/L. When converting from total recoverable to dissolved for comparison with the manganese objective, these concentrations have the reasonable potential to exceed the Basin Plan objective for manganese considering even a liberal translator. Therefore, this Order also includes a maximum daily effluent limitation (MDEL) for manganese of 50 µg/L considering protection of the Basin Plan Objective and lack of assimilative capacity, expressed in the dissolved form. While NPDES regulations at 40 CFR 122.45(c) typically require effluent limitations for metals to be expressed as total recoverable, they do allow use of a dissolved limitation if a standard is expressed in the dissolved form. It is unknown whether the Discharger can meet this new effluent limitation for manganese. Where the Regional Board determines that it is infeasible to achieve immediate compliance with an adopted water quality objective, the Board may establish in NPDES permits a schedule of compliance. However, schedules of compliance are only authorized for those water quality objectives adopted after September 1995. The Basin Plan chemical constituents objective was established prior to 1995; therefore this Order does not contain a compliance schedule for manganese. A separate Time Schedule Order shall be proposed for compliance with the manganese effluent limitations.

~~41.~~42. ***Sulfate*** - CCR Title 22, Table 64449-B, establishes a secondary MCL of 250 mg/L for sulfate. As MUN is an existing use of the Delta, the MCL for sulfate is applicable to this Order. Results of monitoring conducted by the discharger indicate a MEC for sulfate of 68 mg/L, a projected MEC for sulfate of 319 mg/L, and receiving water concentrations ranging from 8.9

mg/L to 56 mg/L. Considering the projected MEC and the MUN beneficial use of the Delta, it is unknown if the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard. Therefore, this Order includes routine monitoring requirements for sulfate.

42.43. ***Methyl Tert Butyl Ether (MTBE) -*** MUN is a beneficial use of the Delta. Order 98-062 established a MTBE effluent limit of 35 µg/L (30-day average). The Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit for MTBE is 5 µg/l. A total of 57 samples were reported for MTBE, of these seven were in detectable concentrations. The median concentration was less than 0.5 µg/L, the average concentration of the detected concentrations was 1.2 µg/L and the highest concentration was 4.1 µg/L. Utilizing the TSD approach, the projected MEC for MTBE is 4.1 µg/L. Based on the monitoring data the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for MTBE. Since MTBE has been detected in the effluent at concentrations approaching the Secondary MCL, this Order includes a requirement for continued monitoring.

AGR/MUN Beneficial Use, Basin Plan Chemical Constituents Objective

43.44. ***Specific Conductance (EC @ 25°C) and Total Dissolved Solids(TDS) -*** In addition to the Basin Plan reference in Finding 34, the Basin Plan states, on Page III-3.00 Chemical Constituents, that "[w]*aters shall not contain constituents in concentrations that adversely affect beneficial uses*." The Basin Plan's "Policy for Application of Water Quality Objectives" provides that in implementing narrative water quality objectives, the Regional Board will consider numerical criteria and guidelines developed by other agencies and organizations. This application of the Basin Plan is consistent with Federal Regulations, 40 CFR 122.44(d).

AGR is an existing beneficial use of the Delta. Several active water rights permits for irrigation use exist downstream of the discharge point, at the confluence of Fourteen Mile Slough and Disappointment Slough, and the San Joaquin River. For EC, *Ayers R.S. and D.W. Westcott, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985) (hereafter Ayers/Wescott Report),* reports levels above 700 µmhos/cm will reduce crop yield for sensitive plants. The University of California, Davis Campus, Agricultural Extension Service, published a paper, dated 7 January 1974, stating that there will not be problems to crops associated with salt if the EC remains below 750 µmhos/cm.

MUN is also an existing beneficial use of the Delta. CCR Title 22, Table 64449-B, recommends a secondary MCL of 900 µmhos/cm for EC.

EC has been monitored by the Discharger under the previous Order 98-062. The maximum effluent value reported was 1,600 µmhos/cm recorded on 31 October 2001, and the average effluent value was 851 µmhos/cm for the monitoring period January 1999 through September

2003. Results of monitoring from October 2002 through February 2004 indicate receiving water EC levels ranged from 150 µmhos/cm to 680 µmhos/cm. Considering the MUN beneficial use of Fourteen Mile Slough and the results of monitoring, this Order includes an effluent limitation for EC considering the USEPA recommendations for permitting for human health protection provided in Section 5.4.4 of the TSD. The AMEL was set equal to the WLA, or in this case, the MCL (900 µmhos/cm). As the chemical constituents objective is not a new objective, a schedule of compliance for specific conductance is not included in this Order. A separate Time Schedule Order shall be proposed for compliance with the new EC effluent limitations.

While the EC levels of the discharge have, at times, exceeded levels which will reduce crop yields for sensitive plants, EC levels in the receiving water have not. This Order requires the Discharger to conduct a site specific study which assesses the impact of the discharge on background water quality and irrigation water users and municipal supply downstream of the discharge.

Aquatic Life Beneficial Use, Basin Plan Narrative Toxicity Objective

~~44.~~45. ***Ammonia (as N)*** - Ammonia can be toxic to aquatic organisms in surface waters. Aquatic habitat is a beneficial use of the receiving stream. USEPA has developed Ambient Water Quality Criteria for ammonia. Applying 40 CFR section 122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms. The acute criterion for ammonia is dependent on pH and fish species present, and the chronic criterion is dependent on pH and temperature. In general, ammonia toxicity increases with increases in pH and temperature. At lower temperatures, the chronic criterion is also dependent on the presence or absence of early life stages of fish (ELS).

The beneficial uses of the Delta include warm freshwater aquatic habitat (WARM), cold freshwater aquatic habitat (COLD), migration of aquatic organisms (MIGR) in warm habitat, warm and cold habitat spawning, and reproduction, and/or early development (SPWN). The early life stages of fish are likely present during the permitted period of discharge.

Based on monitoring data provided by the Discharger, the highest pH value reported for the receiving water as 8.3 pH units, and the highest temperature of the receiving water was reported as 24°C. Using the maximum pH value allowed in the receiving water (8.5 pH Units) and the highest reported temperature of 24°C, the USEPA Recommended Ambient Water Quality Criterion for Fresh Water Aquatic Life, 30 day average chronic criteria, or criterion continuous concentration for ammonia is 591 µg as N (Nitrogen)/L. Additionally, the highest 4 day average concentration within the 30 day period should not exceed 2.5 times this criterion (2.5 x 591 = 1,478 µg as N/L). Considering the maximum pH value of 8.5 pH Units and the presence of salmonids, the USEPA Recommended Ambient Water Quality Criterion for Fresh Water

Aquatic Life, maximum 1-hour acute criteria, or criteria maximum concentration for ammonia is 2,140 µg as N/L.

Ammonia was detected in three of four samples of the Discharger's effluent at concentrations of 110 µg/L, 2500 µg/L and 190 µg/L. Using the TSD reasonable potential analysis procedure, the projected MEC of ammonia in the effluent is 11,750 µg/L; therefore, there is a reasonable potential that the discharge may exceed the USEPA chronic and acute criteria for ammonia and cause or contribute to an excursion above the narrative toxicity objective. This Order contains an AMEL and 4 day average effluent limitation for ammonia considering the USEPA chronic criteria, and a one hour maximum effluent limitation considering USEPA's acute ammonia criteria. As the Basin Plan toxicity objective is not a new water quality objective, a schedule of compliance for ammonia is not included in this Order. A separate Time Schedule Order shall be proposed for compliance with the new ammonia effluent limitations.

Other

~~45.~~46. ***pH—*** The Basin Plan includes numeric water quality objectives that the pH "…not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses." The Delta is designated as having both COLD and WARM beneficial uses. And effluent limitation for pH is included in this Order based on the Basin Plan objectives for pH.

~~46.~~47. ***Total Petroleum Hydrocarbons (TPH) -*** Previous Order No. 98-062 included 100 µg/L (daily maximum) and < 50µg/L (30-day median) effluent limitations for TPH**,** consistent with General Order 92-150, which regulates discharges of petroleum contaminated groundwater to surface waters. On 16 June 2000, General Order 92-150 was rescinded, and renewed General Order No. 5-00-119 was adopted. Renewed General Order No. 5-00-119 retained the effluent limitations for TPH of the previous Order based upon a combination of technology and water quality criteria. The monthly median limitation of < 50 µg/L was established based upon commonly available treatment and analytical technology. The daily maximum effluent limitation of 100 µg/L was established based upon taste and odor water quality criteria. These criteria still apply to the discharge; therefore, the daily maximum and monthly median effluent limitations for TPH have been retained and included in this Order.

~~47.~~48. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 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. The Basin Plan, the SIP, and 40 CFR 122.47 provide that schedules leading to compliance with requirements of the CWA shall require compliance as soon as possible or practicable. This Order and the separate Time Schedule Order provide the maximum allowable time for the Discharger to comply with new final effluent limitations. By granting the maximum allowable time to evaluate disposal and/or treatment alternatives necessary to meet the new final effluent limitations, the Regional Board

has considered that the need for cost effective clean-up of polluted groundwater is also to the benefit of the people State.

49. Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Some effluent limitations in this revised Order (Order No. R5-2005-0144-01) are less stringent that those in the originally adopted Order (Order No. R5-2005-0144). As discussed in the Information Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

~~48.~~50. USEPA adopted the NTR and the CTR, which contains water quality standards applicable to this discharge and the SIP contains guidance on implementation of the NTR and CTR. Interim limitations are established when compliance with NTR- and CTR-based effluent limitations cannot be achieved by the existing discharge. The SIP, Section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must: 1) be based on current treatment plant performance or existing permit limitations, whichever is more stringent; 2) include interim compliance dates separated by no more than one year, and; 3) be included in the permit provisions.

Concerning the development of interim effluent limitations, USEPA's effluent database suggests that effluent concentrations are best characterized as a lognormal distribution. USEPA has developed a statistical approach that combines the knowledge of effluent variability, as estimated by a coefficient of variation (CV), with the uncertainty due to a limited number of data, to project an estimated maximum concentration for the effluent. This estimated maximum pollutant effluent concentration can be calculated as the upper bound of the expected lognormal distribution of effluent concentrations at a high confidence level. This statistical approach is outlined in USEPA's *Technical Support Document for Water Quality Based Toxics Control* ((EPA/505/2-90-001) TSD).

In developing interim limitations, the Regional Board has considered the recommendations of the *TSD*. Where applicable, interim maximum daily effluent limitations have been established in this Order based upon the estimated maximum effluent pollutant concentration developed considering representative historical effluent data and the *TSD* statistical approach described in Chapter 3 (Box 3-2, Table 3.1). Where data sets are small and/or where a CV cannot be calculated, a CV of 0.6 may be used as a default measure of the relative variability in these calculations. When calculating a CV from a particular effluent pollutant data set where concentrations were reported as less than detectable, one half of the detection limit was used in the calculation.

The SIP, Section 1.2, states, "When implementing the provisions of the Policy, the Regional Board shall use all available, valid, relevant, representative data and information, as determined

by the Regional Board. The Regional Board shall have discretion to consider if any data are inappropriate or insufficient for use in implementing this Policy." The Board will review all data relevant to establishing an interim effluent limitation and determine on a constituent-by-constituent basis the validity of each data set in representing "the current treatment plant performance."

The interim limitations in this Order are based on the current treatment plant performance and the Order includes a time schedule for compliance with final effluent limitations. However, discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. For example, USEPA states in the Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for copper, that it will take an unstressed system approximately three years to recover from a pollutant in which exposure to copper exceeds the recommended criterion. The interim limitations establish an enforceable maximum effluent concentration until compliance with the final effluent limitations can be achieved.

~~49.~~51. CWA Section 303(a-c), required states to adopt numeric criteria where they are necessary to protect designated uses. The Regional Board adopted numeric criteria in the Basin Plan. The Basin Plan is a regulatory reference for meeting the state and federal requirements for water quality control (40 CFR 131.20). State Board Resolution No. 68-16, the Antidegradation Policy, does not allow changes in water quality less than that prescribed in Water Quality Control Plans (Basin Plans). The Basin Plan states that; "The numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses." This Order contains Receiving Water Limitations based on the Basin Plan numerical and narrative water quality objectives for Bacteria, Biostimulatory Substances, Chemical Constituents, Color, Dissolved Oxygen, Floating Material, Oil and Grease, pH, Pesticides, Radioactivity, Sediment, Settleable Material, Suspended Material, Tastes and Odors, Temperature, Toxicity, and Turbidity.

GENERAL

~~50.~~52. This Order contains restrictions on individual pollutants that are no more stringent than required by the federal Clean Water Act. Individual pollutant restrictions consist of technology-based restrictions and water quality-based effluent limitations. The technology-based effluent limitations consist of restrictions on volatile organic compounds (PCE, TCE, DCE, methylene chloride, benzene, toluene, ethylbenzene and xylene), total volatile organic compounds, and total petroleum hydrocarbons. Restrictions on volatile organic compounds, total volatile organic compounds, and total petroleum hydrocarbons are technology-based limits as specified in federal regulations, and are discussed in Findings 32, 33, 35, and 46. The permit's technology-based pollutant restrictions are no more stringent than required by the Clean Water Act. Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable

federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the California Toxics Rule, the California Toxics Rule is the applicable standard pursuant to 40 C.F.R. 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the CTR-SIP, which was approved by USEPA on May 1, 2001. Beneficial uses and water quality objectives contained in the Basin Plan which were used in the development of water quality-based effluent limitations were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 C.F.R. 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 Clean Water Act and the applicable water quality standards for purposes of the Clean Water Act.

~~51.~~53. On 23 February 2005, the Discharger submitted economic information regarding the cost of one potential option for complying with this Order, which would include discharge to the sanitary sewer. The Discharger indicated the costs of a connection fee and use fee (based on volume) would be on the order of $42,000 per month or $500,000 per year for the current discharge of 240 gallons per minute. If the Discharger implements a future dual-phase extraction system in the source area of the Site, resulting in an increase of discharge to 800 gallons per minute, the fees charged by the City rise to $112,000 per month and a corresponding $1,344,000 per year. The Regional Board has considered the specific costs identified in the discharger's submittal. With the exception of the sanitary sewer disposal option, no other costs associated with any other alternative were provided by the Discharger. As discussed in Finding 50, the individual pollutant restrictions are no more stringent than necessary to implement technology-based requirements and applicable water quality standards under the Clean Water Act. Relaxation of the effluent limitations is not permissible. Where appropriate, this Order and the accompanying Time Schedule Order provide additional time to achieve the pollutant-specific restrictions.

~~52.~~54. Monitoring is required by this Order for the purposes of assessing compliance with permit limitations and water quality objectives and gathering information to evaluate the need for additional limitations.

~~53.~~55. Section 13267 of the California Water Code states, in part, "*(a) A regional board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region"* and *"(b) (1) In conducting an investigation…, the regional board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.*" The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The groundwater monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements.

~~54.~~56. The SIP, Section 2.1, provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit*." Section 2.1 further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted:*… "(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control and/or pollution minimization efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable."* This Order requires the Discharger to provide this information. The new water quality-based effluent limitations for **chromium VI** and **mercury** become effective on **1 December 2005** if a compliance schedule justification is not completed and submitted by the Discharger to the Regional Board. Otherwise, final water quality-based effluent limitations for **chromium VI** and **mercury** become effective **1 March 2010**.

~~55.~~57. The Regional Board has considered the information in the attached Fact Sheet in developing the Findings of this Order. The Fact Sheet, Monitoring and Reporting Program No. R5-2005-0144, Attachments A, B, C, and D (Tables 1, 2, and 3) and the Standard Provisions (*Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES) February 2004*) are a part of this Order.

~~56.~~58. The discharge is presently governed by Waste Discharge Requirements Order No. ~~98-062~~R5-2005-0144, adopted by the Regional Board on ~~17 April 1998~~21 October 2005.

~~57.~~59. The USEPA and the Regional Board have classified this discharge as a minor discharge.

~~58.~~60. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.

~~59.~~61. The Regional Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

~~60.~~62. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

~~61.~~63. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing provided USEPA has no objections.

~~62.~~64. The 2005 amendments to the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP) were approved as follows:

a. The State Water Board Adopted the amendments on February 24, 2005

b. The Office of Administrative Law (OAL) Approved on May 31, 2005

c. United States Environmental Protection Agency (USEPA) Approved July 13, 2005

The language of the SIP has been amended to allow the reasonable potential Step 6 trigger to apply only to situations where ambient background concentrations are greater than the water quality criterion or objective and the pollutant is detected in the effluent. Language would also be added to require monitoring in situations where ambient background concentrations are greater than the water quality criterion or objective, and the pollutant is not detected in the effluent.

IT IS HEREBY ORDERED that Order No. 98-062 is rescinded and Lincoln Center Environmental Remediation Trust, their its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of treated groundwater at a location or in a manner different from that described in the Findings is prohibited.

2. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13. [See attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)"].

3. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

B. Effluent Limitations:

1. Effluent shall not exceed the following limits:

Constituents	Units	Monthly Median	Monthly Average (AMEL)	Daily Maximum (MDEL)	One Hour Average
Tetrachloroethene (PCE)	µg/L	<0.5[1]	--	--	--
Trichloroethene (TCE)	µg/L	<0.5[1]	--	--	--
1,1-Dichloroethene (DCE)	µg/L	<0.5[1]	--	--	--
Dichloromethane (Methylene Chloride)	µg/L	<0.5[1]	--	--	--
1,2-Dichloroethane (1,2-DCA)	µg/L	<0.38	--	--	--
Total VOCs	µg/L	--	--	1.0[2]	--
Benzene	µg/L	<0.5[1]	--	--	--
Toluene	µg/L	<0.5[1]	--	--	--
Ethylbenzene	µg/L	<0.5[1]	--	--	--
Xylene	µg/L	<0.5[1]	--	--	--
BETX	µg/L	--	--	1.0[3]	--
TPH	µg/L	<50[1]	--	100	--
Arsenic (total recoverable)	µg/L	--	~~10~~	23~~--~~	--
	lbs/day[5]	--	~~0.036~~	0.08~~--~~	--
~~Arsenic (dissolved)~~	~~µg/L~~	~~--~~	~~--~~	~~10~~	~~--~~
	~~lbs/day[5]~~	~~--~~	~~--~~	~~0.036~~	~~--~~
Chromium VI[4] (total recoverable)	µg/L	--	8	16	--
	lbs/day[5]	--	0.029	0.057	--
Copper (total recoverable)	µg/L	--	4.2	8.4	--
	lbs/day[5]	--	0.015	0.03	--
Lead (total recoverable)	µg/L	--	1.3	2.6	--
	lbs/day[5]	--	0.005	0.009	--
Mercury[4] (total recoverable)	µg/L	--	0.05	--	--
	lbs/day[5]	--	0.0002	--	--
Specific Conductance (EC at 25°C)	µmhos/cm	--	900	--	--
Barium (~~dissolved~~total recoverable)	µg/L	--	--	~~100~~390415	--
	lbs/day[5]	--	--	~~0.36~~1.41.5	--
Iron (total recoverable)	µg/L	--	300	--	--
	lbs/day[5]	--	1.2	--	--
Iron (dissolved)	µg/L	--	--	300	--
	lbs/day[5]	--	--	1.2	--
Manganese (total recoverable)	µg/L	--	50	--	--
	lbs/day[5]	--	0.18	--	--
Manganese (dissolved)	µg/L	--	--	50	--
	lbs/day[5]	--	--	0.18	--
Ammonia as N	mg/L	--	0.59	--	2.1
	lbs/day[5]	--	2.1	--	--
	lbs/day[5]	--	--	--	7.5

Footnotes

[1] Based on Minimum Levels contained Appendix 4, Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, 2000. Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML represents the lowest quantifiable concentration in a sample based on the proper application of all method-based analytical procedures and the absence of any matrix interferences.

[2] The sum of the concentrations of volatile organic compounds in any single sample shall not exceed 1.0 µg/L.

[3] The sum of the concentrations of benzene, toluene, ethylbenzene and xylene in any single sample detected shall not exceed 1.0 µg/L.

[4] See Provision 2 of this Order for the effective compliance date for final chromium VI and mercury limitations.

[5] Mass-based limits based on design flow from the facility of 0.43 mgd

2. Until final effluent limitations for chromium VI become effective, the effluent shall not exceed the following interim effluent limits for chromium VI:

Constituents	Units	Daily Maximum (MDEL)
Chromium VI[1,3] (total recoverable)	µg/L	80
	lbs/day[2]	0.29

Footnotes

[1] See Provision 2 of this Order for the effective compliance date for final chromium VI limitations.

[2] Based on a design flow of 0.43 mgd

[3] Limit established as described in Finding ~~48~~4950.

3. The discharge shall not have a pH less than 6.5 nor greater than 8.5.

4. The average daily discharge flow shall not exceed 430,000 gallons (0.43 mgd).

5. 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%

C. Solids Disposal

Collected screenings, sludges, and other solids removed from the treated groundwater, or generated as the result of groundwater treatment, shall be disposed of in a manner approved by the Executive Officer.

D. Receiving Water Limitations:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

Upon adoption of any applicable water quality standard for receiving waters by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder, this permit may be reopened and receiving water limitations added.

The discharge shall not cause the following in the receiving water:

1. *Bacteria:* The fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml.

2. *Dissolved Oxygen:* Discharge shall not cause the concentrations of dissolved oxygen to fall below 7.0 mg/L

3. *Oil and Grease:* Oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the water surface or on objects in the water, or otherwise adversely affect beneficial uses.

4. *Color:* Discoloration that causes nuisance or adversely affects beneficial uses

5. *pH:* The ambient pH to be depressed below 6.5, nor raised above 8.5, nor changes in normal ambient pH levels to be exceeded by more than 0.5 units.

6. *Temperature:* The natural receiving water temperature to increase more than 5°F.

7. *Setteable Matter:* Substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

8. *Radioactivity:* 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.

   Concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

9. *Toxicity:* Toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

10. *Biostimulatory Substances:* Biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

11. *Floating Material:* Floating material in amounts that cause nuisance or adversely affect beneficial uses.

12. *Sediment*: Suspended sediment load and suspended sediment discharge rate altered in such a manner to cause nuisance or adversely affect beneficial uses.

13. *Suspended Sediment*: Suspended sediment concentrations that cause nuisance or adversely affect beneficial uses.

14. *Taste and Order:* Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

15. *Chemical constituents*: Chemical constituents contained in Table III-1, at page III-3.00 of the Basin Plan to exceed the following concentrations:

Constituent	Unit	Limitation
Dissolved Cyanide	mg/L	0.01
Dissolved Silver	mg/L	0.01

16. *Turbidity:* Changes in turbidity that cause nuisance or adversely affect beneficial uses. Turbidity attributable to controllable water quality factors to exceed the following:

    a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.
    b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.
    c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.
    d. More than 10 percent where natural turbidity is greater than 100 NTUs.

17. *Pesticides*[a]*:*
    a. Pesticides in individual or combined concentrations that adversely affect beneficial uses.

[a] The term pesticide shall include: (1) any substance, or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment whatsoever, or (2) any spray adjuvant, or (3) any breakdown products of these materials that threaten beneficial uses. Note that discharges of "inert" ingredients included in pesticide formulations must comply with all applicable water quality objectives.

b. Pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses.

c. Total identifiable persistent chlorinated hydrocarbon pesticides in concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer.

d. Concentrations exceeding those allowable by applicable antidegradation policies (see State Water Resources Control Board Resolution No. 68-16 and 40 C.F.R. Section 131.12.)

e. Concentrations exceeding the lowest levels technically and economically achievable.

f. Concentrations exceeding the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.

g. Concentrations of thiobencarb in excess of 1.0 µg/l

18. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

19. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted there under.

E. Provisions:

1. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."

2. **Chromium VI and Mercury Compliance Schedule**: This Order contains new final effluent limitations based on water quality criteria contained in the CTR for chromium VI and mercury. By **1 December 2005**, the Discharger shall complete and submit a compliance schedule justification for chromium VI and mercury. The compliance schedule justification shall include all items specified in Paragraph 3, items (a) through (d), of Section 2.1 of the SIP. The new water quality based effluent limitations for chromium VI and mercury become effective on **1 December 2005** if a compliance schedule justification meeting the requirements of Section 2.1 of the SIP is not completed and submitted by the Discharger. Otherwise, the new final water quality based effluent limitations for chromium VI and mercury required by this Order shall become effective on **1 March 2010**. As this compliance schedule is greater than one

year, the Discharger shall submit semi-annual progress reports on **15 January** and **15 July** of each year until the Discharger achieves compliance with the final water quality based effluent limitations for chromium VI and mercury.

3. **Interim Mercury Mass Limitation Report**: The Discharger shall submit within eighteen (18) months of adoption of this Order an *Interim Mercury Mass Limitation Report* which summarizes flow and effluent mercury data collected pursuant to MRP No. R5-2005-0144. As necessary, this Order may be reopened and an interim mass limit included for mercury.

4. **Mercury TMDL Reopener**: This Order shall be reopened, as necessary, and alternative final effluent limitations established for mercury based upon a waste load allocation derived from the Delta waterways TMDL, a site-specific water quality objective, or based upon new criteria.

5. There are indications that background receiving waters may contain constituents in concentrations that exceed water quality objectives for **bis (2-ethylhexyl) phthalate**. The Discharger shall comply with the following time schedule in conducting a study for each of these constituents in surface waters.

Task	Compliance Date
Submit a Workplan and Time schedule to perform monitoring study of sample collection, handling, and analytical procedures for the Bis (2-ethylhexyl) phthalate to identify opportunities for contamination and to identify corrective action steps to be implemented to prevent such contamination in the future.	**6 months** after adoption of this Order
Implement corrective action steps and collect and analyze four receiving water samples for bis (2-ethylhexyl) phthalate. Receiving water samples shall grab samples, collected quarterly. One sampling event shall occur in the dry season, and one shall occur in the wet season.	**18 months** after adoption of this Order
Submit a summary report, including analytical data, to the Regional Board that describes results of the four monitoring events performed under Task 2, above.	**24 months** after adoption of this Order

The Discharger shall submit to the Regional 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 Board by letter when it returns to compliance with the time schedule.

If after review of the study results it is determined that the background receiving water exceeds water quality objective this Order will be reopened and effluent limitations added for the subject constituents.

6. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Board evaluation, conduct the TRE. This Order will be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Resources Control Board, this Order may be reopened and a limitation based on that objective included.

7. **Salt Study**: This Order requires the Discharger to conduct a site specific study which assesses ambient receiving water flows and associated EC levels, TDS, and chloride concentrations and the impact of the discharge on local soil salinity, background water quality, and irrigation water users and municipal supply users downstream of the discharge. This study shall be conducted in accordance with the following time schedule:

Task	Compliance Date
Submit Workplan and Time Schedule	1 June 2006
Begin Study	1 June 2006
Complete Study	1 July 2008
Submit Study Report	1 December 2008

The Discharger shall submit to the Regional 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 Board by letter when it returns to compliance with the time schedule.

Upon completion of the study, this Order may be reopened to consider whether the effluent limitation for EC should be adjusted up or down considering the findings of this study.

8. The Board may modify or reopen this Order prior to its expiration date if present or future investigations demonstrate that the discharge governed by this Order has a

reasonable potential to cause or contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters based on the following circumstances

a. New or revised water quality objectives (WQOs) come into effect for the receiving water. In such cases, effluent limitations in this permit will be modified as necessary to reflect updated WQOs. Adoption of effluent limitations contained in this Order is not intended to restrict in any way future modifications based on legally adopted WQOs or as otherwise permitted under federal regulations governing NPDES permit modifications.

b. If translator or other water quality studies provide a basis for determining that a permit condition(s) should be modified the Discharger may request permit modification on this basis. The Discharger shall include in any such request an antidegradation and anti-backsliding analysis.

c. Modify and/or include effluent limits as necessary when TMDLs for the eastern portion of the Delta are approved and load allocations applicable to this discharge for 303(d) listed constituents are implemented.

9. The Discharger shall comply with Monitoring and Reporting Program No. R5-2005-0144, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

   When requested by USEPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.

10. This Order expires on **1 October 2010** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

11. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of or clearance from the State Water Resources Control Board (Division of Water Quality and Water Rights)

12. 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 this office.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 21 October 2005.

Original Signed by
THOMAS R. PINKOS, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0144-01

NPDES NO. CA 0084255

MONITORING AND REPORTING PROGRAM
FOR
LINCOLN CENTER ENVIRONMENTAL REMEDIATION TRUST
GROUNDWATER TREATMENT SYSTEM
SAN JOAQUIN COUNTY

This Monitoring and Reporting Program is issued pursuant to California Water Code Sections 13383 and 13267, and pursuant to the Federal Code of Regulations, Title 40, Section 122.48. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program. Specific sample station locations shall be established under direction of the Regional Board's staff, and a description of the stations shall be attached to this Order.

Section 13267 of the California Water Code states, in part, "*(a) A regional board, in establishing…waste discharge requirements…may investigate the quality of any waters of the state within its region"* and *"(b)(1) In conducting an investigation…, the regional board may require that any person who… discharges… waste… that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires."* This Monitoring and Reporting Program is necessary to assure compliance with Order No. R5-2005-0144. The Discharger operates the facility that discharges waste subject to Order No. R5-2005-0144.

INFLUENT MONITORING

Samples shall be collected at **Influent Point I-001** located after the last connection before the wastes enter the treatment. Samples are to be representative of the influent for the period sampled. Influent monitoring shall include at least the following:

Constituent[1,4]	Units[5]	Type of Sample	Sampling Frequency
Flow	mgd	Field Measurement	Continuous
Total VOCs[2]	µg/L	Grab	Quarterly
BTEX[3]	µg/L	Grab	Quarterly
Lead (total)	µg/L	Grab	Quarterly
Specific Conductance (EC at 25° C)	µmhos/cm	Field Measurement or Grab	Quarterly

Footnotes Influent Monitoring

1 Analytical methods must be compliant with *Standard Provisions*. A California Certified environmental analytical laboratory must perform all analysis.

2 VOCs= Volatile Organic Compounds and are EPA Priority Pollutants. Report Total VOC as the sum of all volatile organic constituents detected. Report all values of individual volatile organic constituents in accordance

with Reporting Protocols provided in the Reporting Schedule and Requirements.

[3] BTEX=Benzene, Toluene, Ethylbenzene and Xylene and are EPA Priority Pollutants. Report BETX as the sum of detected concentrations of benzene, toluene, ethyl benzene and xylene. Report all values of benzene, toluene, ethyl benzene and xylene in accordance with Reporting Protocols provided in the Reporting Schedule and Requirements.

[4] Report all constituents utilizing the naming convention listed.

[5] Constituents are to be reported in these units.

EFFLUENT MONITORING

Effluent samples shall be collected at **D-001** at the point the discharge from the groundwater treatment system is discharged to the storm drain system. Effluent samples shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded.

Effluent monitoring shall include at least the following:

Constituent[1,7]	Units[5]	Type of Sample	Sampling Frequency
Flow[6]	mgd	Field Measurement	Continuous
PH	pH units	Field Measurement	Monthly
Specific Conductance (EC at 25° C)	µmhos/cm	Field Measurement	Monthly
Tetrachloroethene (PCE)	µg/L	Grab	Monthly
Trichloroethene (TCE)	µg/L	Grab	Monthly
1,1-Dichloroethene (DCE)	µg/L	Grab	Monthly
Dichloromethane (Methylene Chloride)	µg/L	Grab	Monthly
1,2-Dichloroethane (1,2-DCA)	µg/L	Grab	Monthly
Total VOCs[2]	µg/L	Grab	Monthly
Benzene	µg/L	Grab	Monthly
Toluene	µg/L	Grab	Monthly
Ethylbenzene	µg/L	Grab	Monthly
Xylene	µg/L	Grab	Monthly
BTEX[3]	µg/L	Grab	Monthly
TPH[4]	µg/L	Grab	Monthly
Methyl-tert-butyl ether (MTBE)	µg/L	Grab	Monthly
Arsenic (total recoverable)	µg/L	Grab	Monthly
Copper (total recoverable)	µg/L	Grab	Monthly
Chromium VI (total recoverable)	µg/L	Grab	Monthly
Lead (total recoverable)	µg/L	Grab	Monthly
Mercury (total recoverable) [10]	µg/L	Grab	Monthly
Zinc (total recoverable)	µg/L	Grab	Monthly
Ammonia (as N)	µg/L	Grab	Monthly
Delta-BHC	µg/L	Grab	Quarterly
4,4-DDT	µg/L	Grab	Quarterly
4,4-DDE	µg/L	Grab	Quarterly
4,4- DDD	µg/L	Grab	Quarterly

Constituent[1,7]	Units[5]	Type of Sample	Sampling Frequency
Chlordane	µg/L	Grab	[9]
Barium (total recoverable)	µg/L	Grab	Quarterly
Barium (dissolved)	µg/L	Grab	Quarterly
Iron (total recoverable)	µg/L	Grab	Quarterly
Iron (dissolved)	µg/L	Grab	Quarterly
Manganese (total recoverable)	µg/L	Grab	Quarterly
Manganese (dissolved)	µg/L	Grab	Quarterly
Total Dissolved Solids (TDS)	mg/L	Grab	Quarterly
Chloride	mg/L	Grab	Quarterly
Sulfate	mg/L	Grab	Quarterly
Hardness (as $CaCO_3$)	mg/L	Grab	Quarterly
Acute Toxicity[8]	% survival	Flow-Proportional 24-hr. composite	Annually
Chronic Toxicity	See below	Flow-Proportional 24-hr. composite	Annually
EPA Priority Pollutants		See Priority Pollutant Monitoring Below	Once Per Permit Term

Footnotes Effluent Monitoring

1 Analytical methods must be compliant with *Standard Provisions*. A California Certified environmental analytical laboratory must perform all analysis.

2 VOCs = Volatile Organic Compounds. If any monthly sample contains detectable concentrations of volatile organics compounds the Discharger shall immediately resample and reanalyze the effluent for the detected constituent(s) and shall continue sampling the effluent on a weekly basis until the constituent(s) concentrations are ND.

3 BTEX =Benzene, Toluene, Ethylbenzene and Xylene. Report daily maximum of BETX as the sum of detected concentrations of benzene, toluene, ethyl benzene and xylene.

4 TPH = Total Petroleum Hydrocarbons

5 Constituents are to be reported in these units.

6 Report total flow recorded for the calendar month and average daily flow.

7 Report all constituents utilizing the naming convention listed.

8 All acute toxicity bioassays shall be performed according to EPA-821-R-02-012 *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition,* October 2002 (or latest edition) using *Pimephales promelas* with no pH adjustment, with exceptions granted to the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP). Temperature and pH shall be recorded at the time of bioassay sample collection.

9 Analyze effluent for Chlordane annually in accordance with methodologies specified in the 10 September 2001 (and as amended in December 2001) 13267 letter from the Regional Board.

10 Use clean sample collection techniques and EPA Test Method 1669 or 1631, or later amendment for Mercury.

GROUNDWATER TREATMENT PLANT STARTUP MONITORING

If the groundwater treatment system has a scheduled or unscheduled shutdown that lasts longer than 72 hours or which could result in noncompliance on startup regardless of the downtime, the discharger shall conduct the influent and effluent monitoring requirements upon startup of the treatment system using the following monitoring schedule:

- Immediately upon startup
- Daily for the first three days of operation
- Monthly thereafter in accordance with the influent and effluent monitoring schedules.

RECEIVING WATER MONITORING

Receiving water samples shall be collected at the following sampling stations in Fourteen Mile Slough when water is present or flowing from sources other than the groundwater treatment system:

Station	Description
R-001	100 feet Upstream from Outfall to Fourteen Mile Slough
R-002	200 feet Downstream from Outfall to Fourteen Mile Slough
R-003	Feather River Drive Bridge, approximately 5,500 feet downstream from the Outfall (37º 59' 48" N, 121º 21' 00" W)
R-004	Juggler's Island, approximately 6.4 miles downstream from the Outfall (37º 59' 36" N, 121º 24' 48" W)

~~All receiving~~For R-001 the sample location description should be noted on the data submittal. R-001, R-002 water samples shall be collected as grab samples:

Constituent[2,3]	Units[1]	Sampling Frequency
Specific Conductance (EC at 25° C)	µmhos/cm	Monthly
PH	pH Units	Quarterly
Temperature	°F	Quarterly
Dissolved Oxygen	mg/L	Quarterly
Chloride	mg/L	Quarterly
Total Dissolved Solids (TDS)	mg/L	Quarterly
Turbidity	NTU	Quarterly
Hardness (as $CaCO_3$)	mg/L	Quarterly
Barium (dissolved)	µg/L	Quarterly
Iron (total recoverable and dissolved)	µg/L	Quarterly
Manganese (total recoverable and dissolved)	µg/L	Quarterly
Ammonia (as N)	µg/L	Quarterly
Nitrate and Nitrite (as N)	µg/L	Quarterly
Sulfate	mg/L	Quarterly
Chlordane	µg/L	[4]
Priority Pollutants	See Priority Pollutant Monitoring Below	Once per permit term

Footnotes Receiving Water Monitoring

1 Constituents are to be reported in these units.

2 Report all constituents utilizing the naming convention listed.

3 Analytical methods must be compliant with *Standard Provisions*. A California Certified environmental analytical laboratory must perform all analysis.

4 Analyze R-001 for Chlordane quarterly at same time the Discharger samples its effluent for chlordane in accordance with methodologies specified in the 10 September 2001 (and as amended in December

2001) 13267 letter from the Regional Board.

R-003 water samples shall be collected as grab samples and during sampling events tide stage and flow conditions shall be included with corresponding data submittals:

Constituent[2,3]	Units[1]	Sampling Frequency
Specific Conductance (EC at 25° C)	µmhos/cm	Quarterly
pH	pH Units	Quarterly
Temperature	°F	Quarterly
Arsenic (dissolved)	µg/L	Quarterly
Barium (dissolved)	µg/L	Quarterly

Footnotes Receiving Water Monitoring

1 Constituents are to be reported in these units.
2 Report all constituents utilizing the naming convention listed.
3 Analytical methods must be compliant with *Standard Provisions*. A California Certified environmental analytical laboratory must perform all analysis.

R-004 water samples shall be collected as grab samples:

Constituent[2,3]	Units[1]	Sampling Frequency
Specific Conductance (EC at 25° C)	µmhos/cm	1/Year
pH	pH Units	1/Year
Temperature	°F	1/Year
Arsenic (dissolved)	µg/L	1/Year
Barium (dissolved)	µg/L	1/Year

Footnotes Receiving Water Monitoring

1 Constituents are to be reported in these units.
2 Report all constituents utilizing the naming convention listed.
3 Analytical methods must be compliant with *Standard Provisions*. A California Certified environmental analytical laboratory must perform all analysis.

Visual Receiving Water Monitoring and Reporting Requirements

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions. Attention shall be given to the presence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life
e. Visible films, sheens coatings
f. Fungi, slimes, or objectionable growths
g. Potential nuisance conditions

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

PRIORITY POLLUTANT MONITORING

The State Water Resources Control Board (SWRCB) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP). The SIP states that the Regional Boards will require periodic monitoring for pollutants for which criteria or objectives apply and for which no effluent limitations have been established. Accordingly, the Regional Board is requiring, as part of this Monitoring and Reporting Program, that the Discharger conduct **effluent monitoring (at D-001) and receiving water monitoring (at R-001)** of priority pollutants **one time no more than 365 days and no less than 180 days prior to expiration of this Order**. The list of priority pollutants and required minimum levels (MLs) (or criterion quantitation limits) is included as **Attachment C**. The Discharger must analyze **pH and hardness** at the same time as priority pollutants.

All analyses shall be performed at a laboratory certified by the California Department of Health Services. The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each constituent. The MDL should be as close as practicable to the USEPA MDL determined by the procedure found 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 required in Section 2.4.4, *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, 2000:

1. 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).

2. Sample results less than the reported ML, 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.

3. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

THREE SPECIES CHRONIC TOXICITY TESTING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the receiving water. The testing shall be conducted as specified in EPA-821-R-02-013, *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* Fourth Edition, October 2002. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of collection samples shall be

recorded. Dilution and control waters should be obtained from an area unaffected by the discharge in the receiving water. Since there are periods of limited or no flow in Fourteen Mile Slough upstream or at the point of discharge, standard laboratory dilution water may be used. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days.

Chronic toxicity monitoring shall include the following:

Species:	Pimephales promelas, Ceriodaphnia dubia and Selenastrum capriconicutum
Frequency:	Annually
Dilution:	

	Dilutions (%)					Controls	
	100	50	25	12.5	6.25	Fourteen-Mile Slough Water	Lab Water
% Effluent	100	50	25	12.5	6.25	0	0
% Dilution Water[1]	0	50	75	87.5	93.75	100	0
% Lab Water[2]	0	0	0	0	0	0	100

[1] Dilution water shall be receiving water from Fourteen Mile Slough taken upstream from the discharge point, or standard laboratory dilution water. The dilution series may be altered upon approval of Regional Board staff.

[2] Lab water shall meet EPA protocol requirements.

REPORTING SCHEDULE AND REQUIREMENTS

Monitoring reports shall be submitted to the Regional Board by the **first day** of the second month following sample collection. Semi-annual and annual monitoring results shall be submitted by the **first day of the second month following each calendar semi-annual period, and year,** respectively.

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians, and should be determined and recorded.

If the Discharger monitors any pollutant at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the discharge monitoring report form. Such increased frequency shall be indicated on the discharge monitoring report form.

By **30 January** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

a. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations

b. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).

c. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the groundwater treatment plant as currently constructed and

operated, and the dates when these documents were last revised and last reviewed for accuracy.

The Discharger may also be requested to submit an annual report to the Regional 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.

All reports submitted in response to this Order shall comply with the signatory requirements of Standard Provision D.6.

The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

The Discharger shall implement the above monitoring program as of the date of this Order.

Original Signed by
Ordered by: THOMAS R. PINKOS, Executive Officer

21 October 2005
(Date)

Tt/JME

INFORMATION SHEET

ORDER NO. R5-2005-0144-01
NPDES NO. CA0084255
LINCOLN CENTER ENVIRONMENTAL REMEDIATION TRUST
GROUNDWATER TREATMENT SYSTEM
SAN JOAQUIN COUNTY

BACKGROUND INFORMATION

As part of a settlement of legal proceedings in the United States District Court, Eastern District of California, the Lincoln Center Environmental Remediation Trust (Discharger) was created to manage environmental remediation activities at the Lincoln Center Site in the city of Stockton, San Joaquin County, California. The Discharger owns and operates a ground water extraction and treatment system to remove volatile organic compounds (VOCs), petroleum products, and lead from ground water. The treatment system is designed for a flow 430,000 gpd (0.43 mgd) of extracted groundwater, and operates at an average flow of 0.25 mgd. The Discharger submitted a Report of Waste Discharge, dated 14 February 2003, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES). Supplemental information was submitted on 6 February 2004.

Influent to the treatment unit consists of extracted/purged groundwater, drilling fluids, equipment decontamination fluids, as well as investigation derived residual fluids generated during the ongoing investigation, remediation, and monitoring activities. The influent will be treated by air stripping and granular activated carbon and discharged to a storm drain in the City of Stockton. Activated carbon of the treatment unit will be either regenerated or disposed of off-site.

Based on historical monitoring data, pollutants of concern in the influent groundwater to the treatment system that were addressed under the previous Order 99-062 include tetrachloroethylene (PCE), trichlorethylene (TCE), cis-1,2-dichloroethylene (DCE), methylene chloride, 1,2-dichloroethane (1,2-DCA), benzene, toluene, xylene, ethylbenzene, lead and methyl tertiary-butyl ether (MTBE). The treatment unit is designed and operated to remove these constituents to non-detectable concentrations.

RECEIVING WATER AND BENEFICIAL USES

Effluent from the treatment unit is discharged to the storm sewer system that is owned and operated by San Joaquin County. The storm sewer system discharges to the Fourteen Mile Slough. Fourteen Mile Slough is part of the Sacramento-San Joaquin Delta (Delta). The beneficial uses of the Delta as identified in Table II-1 of the Basin Plan are domestic and municipal supply (MUN), agricultural supply irrigation and stock watering (AGR), industrial service supply (IND), industrial process supply (PRO), water contact recreation (REC-1), non-contact water recreation (REC-2); navigation (NAV); warm freshwater habitat (WARM), cold freshwater habitat (COLD), migration of aquatic organisms (MIGR), spawning (SPWN), and wildlife habitat (WILD).

RECEIVING WATER QUALITY, 303D LISTED CONSTITUENTS

CWA Section 303(d) addresses waters that have not attained the CWA national goal of "fishable, swimmable" by requiring states to identify these impaired water bodies and develop total maximum daily loads (TMDLs) for them, with oversight from USEPA. A TMDL is a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect bodies of water.

Fourteen Mile Slough is within the Eastern Portion of the Delta that is listed as an impaired water body pursuant to Section 303(d) of the CWA. The list of pollutants for which the Sacramento-San Joaquin Delta (eastern portion) are impaired appears on a list (the "California 303(d) List"), which was updated in 2002 and approved by the State Board in February 2003. Pollutants identified on the California 303(d) List as impairing are: chlorpyrifos, DDT, diazinon, Group A Pesticides, mercury and unknown toxicity. Requirements of this Order address these constituents.

REASONABLE POTENTIAL ANALYSIS (RPA)

The Discharger received a letter on 10 September 2001 from the Central Valley Regional Water Quality Control Board (Regional Board) Executive Officer (EO) under the authority of CWC 13267 directing it to conduct a water quality monitoring study to determine if its discharge contains pollutants that are or may be discharged at levels that will cause or have a reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. The Discharger submitted a schedule to conduct this study between 2003 and 2004, submitting its final report on 15 May 2004.

The discharger conducted four sampling events on 29 May 2003, 7 October 2003, 3 December 2003 and 18 February 2004. Samples were collected of the effluent from the treatment system and the receiving water and analyzed for all CTR and non-CTR constituents as directed by the 13267 letter. A Reasonable Potential Analysis (RPA) in accordance with the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the SIP) for CTR constituents, and the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) for non-CTR constituents was conducted on the data to determine whether the discharge will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for the following CTR constituents: arsenic, copper, hexavalent chromium (chromium VI), lead, mercury, bis(2-Ethylhexyl) phthalate (DEHP), and for the following non-CTR constituents: barium, iron, manganese, chloride, ammonia, specific conductance, and total dissolved solids (TDS). Table 1 of Attachment D provides a summary of the water quality criteria used to determine the reasonable potential for these constituents. Table 2 of Attachment D provides a summary of the results of the RPA for CTR constituents and Table 3 of Attachment D provides a summary of how the projected maximum effluent concentration (MEC) was calculated for non-CTR constituents for use in the RPA.

EFFLUENT LIMITATIONS

Final Effluent Limitation Calculations:

Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. When the Regional Board determines there is reasonable potential for a constituent but data are insufficient to calculate an effluent limit the Regional Board will establish interim requirements, including monitoring, for the constituent and shall reopen an order as needed to establish final effluent limits pending the analysis of the data collected through the interim requirements.

As discussed in the Findings of this Order, final effluent limitations and interim effluent limits, when applicable, are being implemented through this Order for constituents determined to have either reasonable potential to cause or contribute to an exceedance of an applicable water quality criteria or those detected in concentrations in the receiving water that exceed applicable water quality criteria. The discussions contained in the applicable findings provide the justification and bases for the Regional Board's action. The following are intended to supplement the information in the findings.

Priority Pollutants:

For Priority Pollutants a Reasonable Potential Analysis (RPA) was conducted in accordance with either the SIP or the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD). The USEPA adopted the NTR and the CTR, which contain water quality standards applicable to this discharge and the SIP contains guidance on implementation of the NTR and CTR. As noted in Section 1.1 of the SIP, "Designated beneficial uses to which (federal) aquatic life criteria or objectives would apply include, but are not necessarily limited to warm freshwater habitat (WARM), cold freshwater habitat (COLD), and estuarine habitat (EST). Designated beneficial uses to which (federal) human health criteria/objectives would apply include, but are not necessarily limited to, municipal and domestic supply (MUN) and water contact recreation (REC-1)." Section 1.3 of the SIP requires a water quality based effluent limitation when the maximum effluent concentration (MEC) or observed maximum receiving water background concentration (B) of a priority pollutant exceeds an appropriate CTR/NTR pollutant criterion or more stringent criterion as described in Section 1.1 of the SIP. When considering other pollutant criteria outside the CTR/NTR and scope of the SIP, the Regional Board has considered that the TSD recommends a water quality-based effluent limit when the projected MEC exceeds an applicable and appropriate pollutant criterion.

Final water quality-based effluent limitations have been established for arsenic, copper, chromium VI, lead, and mercury. These limitations were calculated in accordance with procedures established Section 1.4.B steps 1 through 7 of the SIP.

Non-CTR Pollutants

For non-priority pollutants, the RPA was conducted in accordance with the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD). For each pollutant, a projected MEC was determined by multiplying the maximum observed effluent concentration in the data set by a reasonable potential multiplying factor that accounts for statistical variation. The multiplying factor (for 99% confidence level and 99% probability basis) was dependent on the coefficient of variation (CV) and number of reported effluent sample results. This projected MEC was then compared to the appropriate water quality criterion. Based upon this RPA, final water quality-based effluent limitations have been established for ~~barium,~~ iron, manganese, ammonia, and specific conductance. These limitations were established in accordance with procedures established in Chapter 5 of the TSD. Based on the dilution study conducted by the Discharger, final water quality-based effluent limitations have been established for barium. This limitation was calculated in accordance with procedures established Section 1.4 of the SIP.

30-day Median vs. Monthly Median

Order 98-062 established technology-based 30-Day Median and Daily Maximum effluent limitations. During the term of Order 98-062 Regional Board staff and the Discharger interpreted the 30-Day Median as a monthly median to determine compliance with effluent limitations. Effluent limitations contained in Order 98-062 were established based on the groundwater treatment system's capability to remove pollutants from groundwater to non-detectable concentrations. In accordance with Section 2.4.5 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), when a data set contains one or more non-detect value compliance determinations shall be based on the monthly median. The SIP approach is consistent with the approach taken by staff to evaluate compliance with Order 98-062. To ensure consistency with the SIP and Order 98-062, this Order establishes Monthly Median limitations for VOCs regulated by the previous Order 98-062, and Monthly Average and Daily Maximum effluent limitations for all other constituents.

Mass-based Limitations

All mass-based effluent limitations are calculated using the following equation:

$$X \frac{\mu g}{l} \times 10^{-3} \frac{g}{\mu g} \times Flow \frac{mgals}{day} \times 8.34 = Y \frac{lbs}{day}$$

or

$$X\frac{mg}{l}\times Flow(mgd)\times 8.34 = Y\frac{lbs}{day}$$

where

X = Concentration-based Effluent Limitation
Y = Mass-based Effluent Limitation
Flow = million gallons per day

Technology-Based Effluent Limitations

Previous Order 98-062 established technology-based effluent limitations for PCE, TCE, DCE, methylene chloride, 1,2-DCA (hereafter referred to as volatile organic compounds (VOCs)), total VOCs, benzene, toluene, ethylbenzene, xylene, BETX, and total petroleum hydrocarbons (TPH).

VOCs, total VOCs, benzene, toluene, ethylbenzene, xylene, BETX and TPH – Previous Order 98-062 Order implemented technology-based limits for these constituents that are protective of water quality; therefore, this Order carries over these effluent limitations. Justifications for this action are provided in the Findings of this Order.

MTBE – The previous Order 98-062 established a technology-based limit of 35 µg/l (monthly average) for MTBE. Based on monitoring data submitted by the Discharger, MTBE was analyzed in 57 water quality samples, the median concentration was less than 0.5 µg/L, the average concentration of the detected concentrations was 1.2 µg/L and the highest concentration was 4.1 µg/L. Of the 57 samples, 50 were reported as non-detect (ND). As discussed in the Findings of this Order, the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit for MTBE is 5 µg/L. Discharges from the groundwater treatment system consistently achieve concentrations of MTBE at less than 5 µg/L. Based on the monitoring data the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for MTBE. Since MTBE has been detected in the effluent at concentrations approaching the Secondary MCL, this Order includes a requirement for continued monitoring.

Water Quality-Based Effluent Limitations

Dilution

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 provided by the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California* (State Implementation Policy or SIP) and the Basin Plan. If no procedure applies in the SIP or the Basin Plan,

then the Regional Water Board may use the USEPA *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, 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 as follows:

"*A mixing zone shall be as small as practicable. The following conditions must be met in allowing a mixing zone:*

A: A mixing zone shall not:

(1) compromise the integrity of the entire water body;
(2) cause acutely toxic conditions to aquatic life passing through the mixing zone;
(3) restrict the passage of aquatic life;
(4) adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;
(5) produce undesirable or nuisance aquatic life;
(6) result in floating debris, oil, or scum;

(7) produce objectionable color, odor, taste, or turbidity;
(8) cause objectionable bottom deposits;
(9) cause nuisance;
(10) dominate the receiving water body or overlap a mixing zone from different outfalls; or
(11) be allowed at or near any drinking water intake. A mixing zone is not a source of drinking water. To the extent of any conflict between this determination and the Sources of Drinking Water Policy (Resolution No. 88-63), this SIP supersedes the provisions of that policy."

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.

Fourteen Mile Slough is a dead end, tidally influenced slough. As part of the Eastern Portion of the Delta, Fourteen Mile Slough is listed as impaired for numerous pollutants, including unknown toxicity as noted above. 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. The storm drain outfall which conveys the treated groundwater effluent discharges to Fourteen Mile Slough via the San Joaquin County Storm Pump Station #1 (SJCPS #1). Regional Board staff observed some pooled water but no discernable receiving water flow immediately downgradient in the vicinity of this outfall location during a site visit in November 2004. Further downgradient, staff observed increasing volumes of water in Fourteen Mile Slough, likely under tidal influence. 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 Board has evaluated the need for water quality-based effluent limitations for pollutants without benefit of dilution in this Order, with the exception of arsenic and barium. The Discharger has been unable to comply with end-of-pipe effluent limits for arsenic and barium, which are based on the Basin Plan's site-specific water quality objectives for the Delta. ~~These water quality-based effluent limitations are based on the application of water quality criteria or objectives at the point~~

~~of discharge.~~ The Discharger ~~may~~ has elected to conduct a dilution study to evaluate ~~seasonal or~~tidal flow-based assimilative capacity of the receiving water for ~~particular pollutants~~arsenic and barium.

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 the dilution/mixing zone study in Fourteen Mile Slough (Slough). The study was performed in accordance with the SIP, USEPA's Water Quality Standards Handbook, and the USEPA's *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD). The study consisted of a field survey of the receiving water (to indentify the intakes or outfalls in the proposed mixing zone), and an empirical study of arsenic and barium concentrations along the Slough (to characterize the extent of dilution). Tidally influenced receiving waters, such as Fourteen Mile Slough, exhibit complex mixing behavior and unsteady hydraulics. The 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 the 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 the 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.

Field activities were conducted on 11 May and 25, 28, and 29 September 2009. A visual field survey was conducted on 25 September 2009 to refine sample locations, resolve access issues, and observe any outfalls discharging to the slough or intakes obtaining water from the slough. A total of eight storm-drain discharge locations, including the outfall at the top of the slough, were identified. The outfalls are operated by the City of Stockton and/or San Joaquin County. Aside from the outfall the treatment system discharges to only the pump station at Alexandria Place just downstream from the Footbridge location was actively discharging during the 28 and 29 September study. Four intakes were identified during the survey. Three are used for irrigation just upstream of the Marina location but did not appear to be active. The other intake is located between the treatment system outfall and the I-5 overpass, just above the Interstate 5 (I-5) overpass which is a former intake well that was used to pump groundwater beneath the slough into Meadow Lake to the south. The well and pump station have not been used in many years according to the Meadow Lakes Homeowners Association and a neighboring resident.

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 the slough form the Outfall to the Village Marina
- Composite sampling at the Outfall, Footbridge, Riverbank Park, 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 station
- Velocity estimates at the I-5 station
- Continuous conductivity measurements at the I-5 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* (LFR, 2009). During the field survey of the slough it was observed that the Alexandria Place pump station was discharging intermittently during the Study. Discharge would last approximately five 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 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 may if at all slightly reduce the calculated dilution by increasing the concentrations of arsenic and barium present in the slough.

Water levels recorded at the Footbridge, I-5 overpass, Riverbank Park, and the Marina indicated all stations are tidally influenced and tidally ranged within three feet. The Outfall was not tidally influenced during the Study period. Conductivity measurements transecting the Footbridge and I-5 stations were collected to evaluate whether conditions varied appreciably over the width of the 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 proceeding table presents the summary of analytical results for composite sampling as well as treatment system samples. Composite values for the I-5 station were created by averaging the grab sample results. The effective dilution factor was calculated from the analytical data using the following equation:

$$DF = (Ce-Ca)/(Cp-Ca)$$

Where:

DF is the dilution factor
Ce is the concentration of the effluent
Ca is the background concentration measured at Jugglers Island

Cp is the concentration at a given location

Analytical Results and Effective Dilution Factors

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

[(a)] Effluent concentration Ce
[(b)] Composite values for the I-5 station were created by averaging the grab sample results.
[(c)] Background concentration Ca

Study Area and Sampling Locations

Once the dilution factors were determined, ECA values were calculated following Step 1 of the process for developing water quality based effluent limits in accordance with the steady state model described by Section 1.4 of the SIP and Chapter 5 of the TSD. Step 1 and the ECA equation are as follows:

> **Step 1:** *For each pollutant requiring an effluent limit (in accordance with Section 1.3), identify the applicable water quality criteria or objective. For each criteria determine the effluent concentration allowance (ECA) using the following steady state equation:*

ECA = C + D(C-B) when C > B, and
ECA = C When C < B,

Where C = The priority pollutant criterion/objective, adjusted if necessary for hardness, pH and translators. In this Order a hardness value of 58 mg/L (as $CaCO_3$) was used for development of hardness-dependant criteria (minimum observed receiving water hardness)
D = The dilution credit, and
B = The ambient background concentration

The "C" priority pollutant criterion/objective value in the ECA equation is greater than the "B" background values for both arsenic and barium; therefore, the effective dilution factor (DF) for the dilution credit (D) was substituted in the equation for ECA that includes dilution, producing the proceeding results:

Effluent Concentration Allowance (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.

Based on the results of the dilution/mixing zone study, the Discharger can consistently meet the water quality objectives for arsenic and barium at the I-5 Overpass. Therefore, this Order allows a mixing zone for arsenic and barium approximately 0.9 miles downstream of the discharge 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 the 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 zones.

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 Technical Support Document for Water Quality-based Toxics Control (TSD). The SIP incorporates the same guidelines.

The study was conducted during tidal and meteorological conditions that were intended to represent the critical design condition; however, the data set is limited. Therefore, this revised Order requires the Discharger to collect additional data to verify its findings in the dilution/mixing zone study (see Receiving Water Monitoring Requirements in the Monitoring and Reporting Program). This Order may be reopened and the mixing zones/dilution modified, as necessary, based on the results of the receiving water monitoring.
~~If requested, the Regional Board will review such studies and if warranted, may reopen this permit to make appropriate changes.~~

Priority Pollutants

Copper, lead: Water quality-based effluent limitations for these pollutants have been established for in accordance with Section 1.4 of the SIP. The bases for these limits are provided in detail in the Findings of this Order. All of these pollutants were determined to have a reasonable potential based on background receiving water concentrations exceeding the most restrictive water quality criterion/objective for the receiving waters. Concentrations of these pollutants were less than applicable criterion, however, in accordance with Section 1.3 of the SIP, whenever the background concentration of a pollutant exceeds the most restrictive water quality criterion a water quality-based effluent limit must be established.

Arsenic, chromium VI and mercury: Monitoring data found detectable concentrations of mercury and Chromium VI in the discharge at concentrations determined to have reasonable potential to cause or contribute to an in-stream excursion above a water quality standard. Final effluent limitations were established for mercury and chromium VI in accordance with Section 1.4 of the SIP. The bases for these limits are provided in detail in the Findings of this Order. As discussed below interim effluent

limitations and compliance schedules for mercury and chromium VI have been included in this Order. Effluent limitations for arsenic are based on existing Basin Plan objectives that were established prior to 1995. A separate Time Schedule Order shall be proposed for compliance with the arsenic effluent limitations.

Lead: Previous Order 98-062 established a technology-based effluent limit for lead of 5 µg/L (monthly average) and 50 µg/L (daily maximum). Monitoring data provided by the Discharger found concentrations of lead in the background receiving water concentrations exceeding the most restrictive water quality criterion/objective for the receiving waters. In accordance with Section 1.3 of the SIP, whenever the background concentration of a pollutant exceeds the most restrictive water quality criterion a water quality-based effluent limit must be established. The water quality-based effluent limit for lead was more stringent than the technology-based effluent limitations established in the previous order. Therefore, this Order implements the more stringent water quality-based effluent limitations. Final effluent limitations for lead were established in accordance with Section 1.4 of the SIP. The bases for these limits are provided in detail in Findings of this Order.

Other Pollutants

~~Barium, i~~Iron, manganese, ammonia, and specific conductance: Water quality-based effluent limitations for these pollutants have been established for in accordance with Chapter 5 of the TSD. The bases for these limits are provided in detail in the Findings of this Order. Concentrations of these pollutants in the discharge were determined to have reasonable potential to cause or contribute to an excursion above a water quality standard. Since these limitations have been established based on existing water quality objectives, a schedule of compliance is not included in this Order. A separate Time Schedule Order shall be proposed for compliance with these pollutant effluent limitations.

Water Quality-Based Effluent Limitation Calculation Examples

Using copper as an example, the following demonstrates how water quality based effluent limits were established for this Order. The process for developing these limits is in accordance with the steady state model described by Section 1.4 of the SIP and Chapter 5 of the TSD.

> **Step 1:** *For each pollutant requiring an effluent limit (in accordance with Section 1.3), identify the applicable water quality criteria or objective. For each criteria determine the effluent concentration allowance (ECA) using the following steady state equation:*

$ECA = C + D(C-B)$ when $C > B$, and
$ECA = C$ When $C \leq B$,

Where C = The priority pollutant criterion/objective, adjusted if necessary for hardness, pH and translators. In this Order a hardness value of 58 mg/L (as $CaCO_3$) was used for development of hardness-dependant criteria (minimum observed receiving water hardness)
D = The dilution credit, and

B = The ambient background concentration

The maximum ambient background concentration exceeded the pollutant criterion; therefore:

ECA = C

For copper the applicable water quality criteria are (reference Table 1):

ECA_{acute}= 8.4 µg/L
$ECA_{chronic}$= 5.9 µg/L
$ECA_{human\ health}$= 1000 µg/L

Step 2: For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier). The multiplier is a statistically based factor that adjusts the ECA to account for effluent variability. The value of the multiplier varies depending on the coefficient of variation (CV) of the data set and whether it is an acute or chronic criterion/objective. Table 1 of the SIP and Table 5-1 of the TSD provide pre-calculated values for the multipliers based on the value of the CV. Equations to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 3 of the SIP and in Table 5-1 of the TSD and will not be repeated here.

$LTA_{acute} = ECA_{acute} \times Multiplier_{acute}$

$LTA_{chronic} = ECA_{chronic} \times Multiplier_{chronic}$

The CV for the data set must be determined before the multipliers can be selected and will vary depending on the number of samples and the standard deviation of a data set. If the data set is less than 10 samples, or at least 80% of the samples in the data set are reported as non-detect, the CV shall be set equal to 0.6.

For copper, the following data was used to develop the acute and chronic LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 8.4 µg/L x 0.321 = 2.7 µg/L

$LTA_{chronic}$ = 5.9 µg/L x 0.527 = 3.1 µg/L

Step 3: Select the most limiting (lowest) of the LTA.

LTA = most limiting of LTA_{acute} or $LTA_{chronic}$

For copper, the most limiting LTA was the LTA_{acute}

LTA = 2.7 µg/L

Step 4: Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier). Water quality-based effluent limits are expressed as Average Monthly Effluent Limitations (AMEL) and Maximum Daily Effluent Limitation (MDEL). The multiplier is a statistically based factor that adjusts the LTA for the averaging periods and exceedance frequencies of the criteria/objectives and the effluent limitations. The value of the multiplier varies depending on the probability basis, the coefficient of variation (CV) of the data set, the number of samples (for AMEL) and whether it is monthly or daily limit. Table 2 of the SIP and Table 5-2 of the TSD provide pre-calculated values for the multipliers based on the value of the CV and the number of samples. Equations to develop the multipliers in place of using values in the tables are provided in Section 1.4, Step 5 of the SIP and in Table 5-2 of the TSD and will not be repeated here.

$AMEL_{aquatic\ life} = LTA \times AMEL_{multiplier}$

$MDEL_{aquatic\ life} = LTA \times MDEL_{multiplier}$

AMEL multipliers are based on a 95th percentile occurrence probability, and the MDEL multipliers are based on the 99th percentile occurrence probability. If the number of samples is less than four (4), the default number of samples to be used is four (4).

For copper, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life} = 2.7 \times 1.55 = 4.2$ µg/L

$MDEL_{aquatic\ life} = 2.7 \times 3.11 = 8.4$ µg/L

For chromium VI considering the acute water quality criterion (reference Table 1):

ECA_{acute}= 16 µg/L

For the acute ECA based on aquatic life criterion/objective, develop the acute LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 16 µg/L x 0.321 = 5.1 µg/L

Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier):

$AMEL_{aquatic\ life} = LTA \times AMEL_{multiplier}$

$MDEL_{aquatic\ life} = LTA \times MDEL_{multiplier}$

AMEL multipliers are based on a 95th percentile occurrence probability, and the MDEL multipliers are based on the 99th percentile occurrence probability. If the number of samples is less than four (4), the default number of samples to be used is four (4).

For chromium VI, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life}$ = 5.1 x 1.55 = 8.0 µg/L

$MDEL_{aquatic\ life}$ = 5.1 x 3.11 = 15.9 µg/L

For lead the applicable water quality criteria are (reference Table 1):

ECA_{acute}= 1.6 µg/L
$ECA_{chronic}$= 41 µg/L

For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier).

$LTA_{acute} = ECA_{acute} \times Multiplier_{acute}$

$LTA_{chronic} = ECA_{chronic} \times Multiplier_{chronic}$

For lead, the following data was used to develop the acute and chronic LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 41 µg/L x 0.321 = 13.2 µg/L

$LTA_{chronic}$ = 1.6 µg/L x 0.527 = 0.84 µg/L

For lead, the most limiting LTA was the $LTA_{chronic}$

LTA = 0.84 µg/L

Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier):

For lead, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life}$ = 0.84 x 1.55 = 1.3 µg/L

$MDEL_{aquatic\ life}$ = 0.84 x 3.11 = 2.6 µg/L

For zinc the applicable water quality criteria are (reference Table 1):

ECA_{acute}= 76 µg/L
$ECA_{chronic}$= 76 µg/L

For each ECA based on aquatic life criterion/objective, determine the long-term average discharge condition (LTA) by multiplying the ECA by a factor (multiplier).

$LTA_{acute} = ECA_{acute}$ x $Multiplier_{acute}$

$LTA_{chronic} = ECA_{chronic}$ x $Multiplier_{chronic}$

For zinc, the following data was used to develop the acute and chronic LTA using Table 1 of the SIP:

No. of Samples	CV	$Multiplier_{acute}$	$Multiplier_{chronic}$
< 10	0.6	0.321	0.527

LTA_{acute} = 76 µg/L x 0.321 = 24.4 µg/L

$LTA_{chronic}$ = 76 µg/L x 0.527 = 40.1 µg/L

For zinc, the most limiting LTA was the $LTA_{chronic}$

LTA = 24.4 µg/L

Calculate the water quality based effluent limits by multiplying the LTA by a factor (multiplier):

For zinc, the following data was used to develop the AMEL and MDEL for aquatic life using Table 2 of the SIP:

No. of Samples	CV	$Multiplier_{MDEL}$	$Multiplier_{AMEL}$
4	0.6	3.11	1.55

$AMEL_{aquatic\ life}$ = 24.4 x 1.55 = 38 µg/L

$MDEL_{aquatic\ life}$ = 24.4 x 3.11 = 76 µg/L

Interim Effluent Limitations

As discussed above under Water Quality-Based Effluent Limitations, copper, zinc, lead, DDT, DDE, DDD, and delta-BHC are new limitations in this Order based on the condition of the receiving water. These pollutants were not detected in effluent samples in concentrations that could cause or contribute to an excursion above an in-stream water quality standard. Therefore, the Discharger is expected to be able to comply with final limitations upon adoption of this Order. Interim limits and a compliance schedule for these pollutants are not justified and are not included in this Order.

New effluent limitations for chromium VI and mercury based on CTR criteria have been included in this Order. These constituents were detected in the discharge in concentrations that have reasonable potential to cause or contribute to an excursion of a water quality standard. For chromium VI the interim limit was established using the methodology discussed in Finding 48 of this Order as summarized below:

Constituent	N	Maximum Detected Concentration	Interim Limit Multiplier	Interim Daily Maximum Limit	Interim Mass-based Limitation[1]
Chromium VI	4	17 µg/L	4.7	80 µg/L	0.29 pounds/day

[1] Based on design flow rate of 0.43 mgd

At Section 2.1.1 the SIP states: "For bioaccumulative priority pollutants for which the receiving water has been included on the CWA Section 303(d) list, the RWQCB should consider whether the mass loading of the bioaccumulative pollutant(s) should be limited to representative, current levels pending TMDL development in order to implement the applicable water quality standard". Since mercury is a bioaccumulative pollutant included on the CWA 303(d) list for the Delta, the intent of this Order is to include an interim performance based effluent limitation for mercury.

Current mercury data are not sufficient for establishment of an interim performance based limitation. This Order requires the Discharger to collect data necessary to establish an interim performance based effluent mass limitation.

Performance-based effluent limits for mercury are typically established as follows: 1) The average monthly effluent mercury concentration is calculated by adding all detected concentrations and one-half of the reported detection levels of all non-detectable mercury concentration results; 2) From the average monthly mercury concentration and average monthly flow, a monthly mercury mass discharge is calculated; and 3) A total mass for all months is then totaled, and an average annual mass discharge is calculated.

Following the establishment of the interim limit, the mass of mercury discharged shall not exceed the interim mercury mass limit twelve months on a running average. In calculating for compliance, the Discharger shall count all non-detect measures at one-half of the detection level and apply the monthly average flow from the sampled discharge. If compliance with the effluent limit is not attained due to the non-detect contribution, the Discharger will be directed to improve and implement available analytical capabilities and compliance will be evaluated with consideration of the detection limits. For each calendar month, the Discharger shall calculate twelve-month mass loadings. For monthly measures, monthly loadings shall be calculated using the average monthly flow and the average of all mercury analyses conducted that month. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each self-monitoring report. Compliance will be determined based on the previous 12-month moving averages over the previous twelve months of monitoring.

The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the MEC and/or the maximum observed ambient background concentrations exceed an applicable criterion or objective. This Order contains a final MDEL and AMEL for mercury based on the CTR human health criterion of 0.050 µg/L. This Order may be reopened, and alternative final effluent limitations may be established for mercury upon completion of the TMDL, or promulgation of new criteria.

Upon completion of the Interim Mercury Mass Limitation Study required by this Order, this Order shall be reopened and an interim performance based mercury mass effluent limitation established.

Satisfaction of Anti-Backsliding Requirements

The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(*l*).

Some effluent limitations in this revised Order are less stringent that those in the originally adopted Order. As discussed below this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

In the original permit, Order No. R5-2005-0144, the water quality-based effluent limitations (WQBELs) for arsenic and barium, were established without the benefit of dilution. In the revised Order, Order No. R5-2005-0144-01, the effluent limitations for these constituents have been recalculated using allowable dilution credits as explained in the Dilution section of the Information Sheet. This has resulted in less stringent effluent limitations in Order No. R5-2005-0144-01. Anti-backsliding requirements are satisfied, however, pursuant to CWA section 402(o)(2)(B), where the documentation of an actual dilution factor for the receiving water determined since adoption of the original permit, qualifies as new information which was not available at the issuance of the original permit.

The changes in effluent limits for arsenic and barium in the revised permit are based on new information generated since adoption of the original permit, and are consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16, as described in the proceeding Satisfaction of Antidegradation Policy section, below.

Satisfaction of Anitdegradation Policy

A wastewater treatment facility which produces a waste or increased concentration of waste and which discharges or proposes to discharge to existing high quality waters is required to meet requirements which will result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance will not occur, and to ensure the highest water quality consistent with the maximum benefit to the people of the State will be maintained. Effluent limits for arsenic and barium are included in this Order for the protection of human health. Effluent limits for these constituents result in receiving water concentrations that do not exceed the applicable water quality objectives.

The Discharger submitted and dilution/mixing zone study, dated November 2009. The Regional Water Board agrees with the findings of the and dilution/mixing zone study, which demonstrates that the estimated degradation caused by the discharge is negligible at the end of the mixing zone (i.e. approximately 4,800 feet). The mixing zone and mass of pollutants from the discharge will not have significant impacts on aquatic life, municipal and domestic supply, and recreation uses, which are the beneficial uses most likely affected by the pollutants discharged. The discharge to Fourteen Mile Slough will not cause a violation of water quality objectives. Arsenic and barium are naturally present in the groundwater and not completely removed by the existing treatment system processes. The discharge will result in some minimal degradation of waters of the state and navigable waters of the United States, but in this case, such degradation is consistent with the maximum benefit to the people of the state. Limited degradation that does not cause exceedance of water quality objectives is warranted to allow for the health benefit stemming from remediation of the polluted groundwater under the Lincoln Center remediation site. The Discharger provides a high level of treatment including air stripping and granular activated carbon.

RECEIVING WATER LIMITATIONS

The groundwater treatment system discharges to a storm drain system owned by San Joaquin County that discharges to the Fourteen-Mile Slough a waterbody within the San Francisco Bay/Sacramento-

San Joaquin Delta Estuary. The Regional Board adopted a *Water Quality Control Plan*, *Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan establishes water quality objectives that apply to all surface waters in the Delta. This Order includes Receiving Water Limitations for: bacteria, biostimulatory substances, color, floating material, oil and grease, pH, pesticides, radioactivity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, chloride, electrical conductivity, and dissolved oxygen based on the applicable narrative and numeric water quality objectives contained in Basin Plan for the Delta.

SPECIAL STUDIES

This Order requires the discharger to conduct special monitoring studies for Bis (2-Ethylhexl)Phthalate (DEHP). In monitoring data provided by the Discharger DEHP was not in detectable concentrations in the discharge and was detected in only one of four samples of the background receiving water of 2.9 µg/L. This exceeds the applicable, most restrictive CTR human health criteria for DEHP of 1.8 µg/L. Because DEHP is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and sources of the detected DEHP may be from plastics used for sampling or analytical equipment, the Regional Board is not establishing effluent limitations for DEHP at this time. The Regional Board is directing the discharger to conduct a study to determine if DEHP is present in the receiving water, and if it is, if it above the water quality criterion for DEHP. This Order includes a reopener to allow the Regional Board to incorporate appropriate effluent limitations for DEHP if needed pending the results of this study.

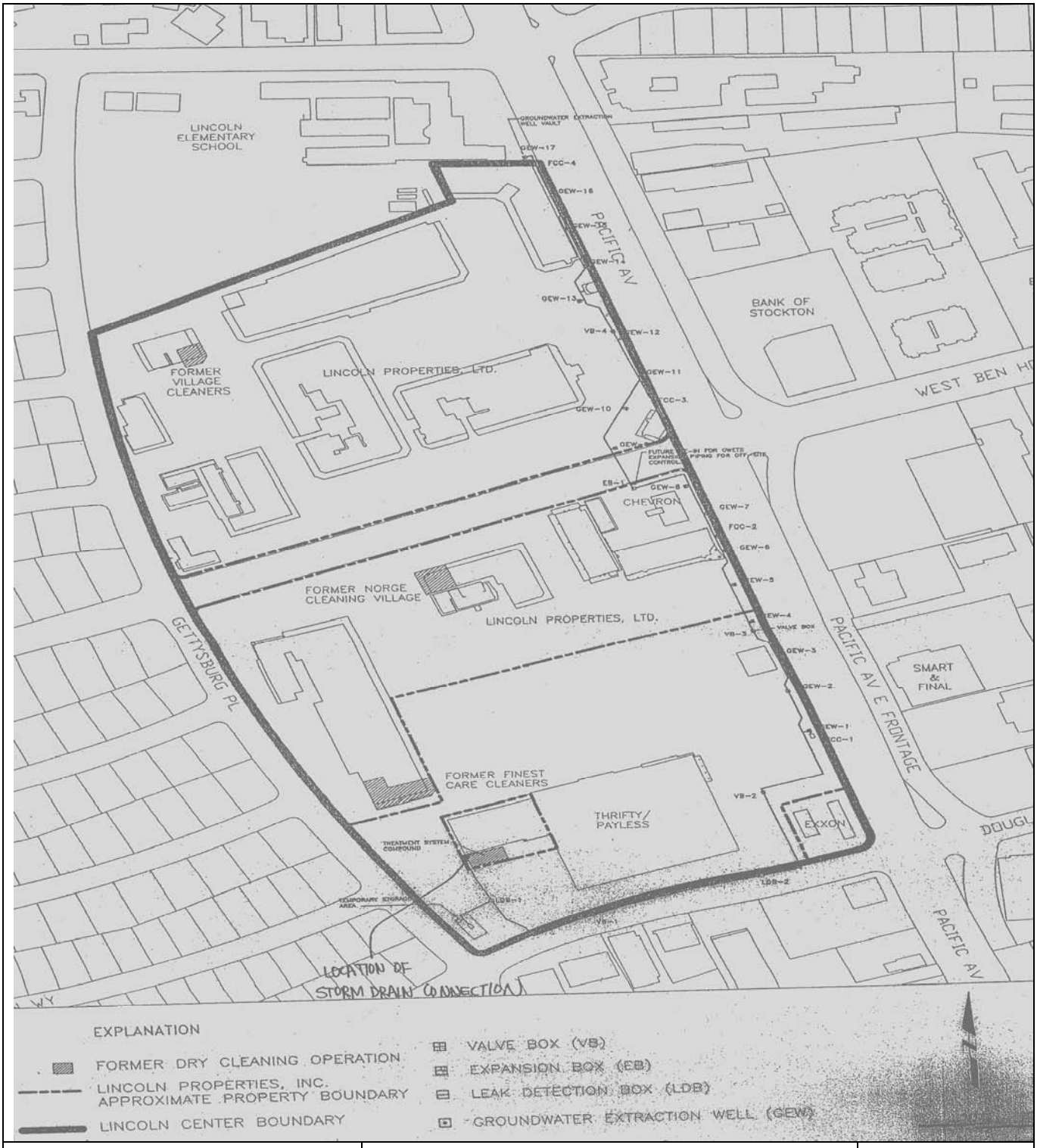
BASIS FOR MONITORING REQUIREMENTS

Section 308 of the CWA and 40 CFR 122.44 (i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather data for future effluent limitations or to monitor effluent impacts on receiving water quality. The Discharger is responsible for conducting monitoring and for reporting the results to the USEPA using Discharge Monitoring Reports. The self-monitoring program requires monitoring of the influent, effluent and receiving water.

This Order continues the influent, effluent and three species chronic toxicity monitoring from the previous Order 98-062. Monitoring requirements for the treatment performance evaluation monitoring were not continued as they were intended only for the initial startup of the treatment system. Instead this Order establishes more frequent monitoring of the influent and effluent if the treatment system has a scheduled or unscheduled shutdown that lasts longer than 72 hours or which could result in noncompliance on startup regardless of the downtime.

Quarterly receiving water monitoring at Receiving Water Monitoring Station R-003 (Fourteen Mile Slough near I-5 overpass), and annual monitoring at R-004 (San Joaquin River at Juggler's Island) is required to further validate the results of the mixing zone/dilution study. Receiving Water Monitoring Station R-003 has been located approximately 600 feet downstream of the I-5 overpass at the Feather River Bridge, due to access and safety concerns at the I-5 overpass.

ATTACHMENT B



Drawing Reference: Discharger	Lincoln Center Environmental Remediation Trust Groundwater Extraction and Treatment System Layout	N W E S NOT TO SCALE.

ATTACHMENT C

Suggested Analytical Methods

CTR #	Constituent	CAS Number	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
VOLATILE ORGANICS				
28	1,1-Dichloroethane	75343	0.5	EPA 8260B
30	1,1-Dichloroethene	75354	0.5	EPA 8260B
41	1,1,1-Trichloroethane	71556	0.5	EPA 8260B
42	1,1,2-Trichloroethane	79005	0.5	EPA 8260B
37	1,1,2,2-Tetrachloroethane	79345	0.5	EPA 8260B
75	1,2-Dichlorobenzene	95501	0.5	EPA 8260B
29	1,2-Dichloroethane	107062	0.5	EPA 8260B
	cis-1,2-Dichloroethene	156592	0.5	EPA 8260B
31	1,2-Dichloropropane	78875	0.5	EPA 8260B
101	1,2,4-Trichlorobenzene	120821	0.5	EPA 8260B
76	1,3-Dichlorobenzene	541731	0.5	EPA 8260B
32	1,3-Dichloropropene	542756	0.5	EPA 8260B
77	1,4-Dichlorobenzene	106467	0.5	EPA 8260B
17	Acrolein	107028	5	EPA 8260B
18	Acrylonitrile	107131	2	EPA 8260B
19	Benzene	71432	0.5	EPA 8260B
20	Bromoform	75252	0.5	EPA 8260B
34	Bromomethane	74839	1	EPA 8260B
21	Carbon tetrachloride	56235	0.5	EPA 8260B
22	Chlorobenzene (mono chlorobenzene)	108907	0.5	EPA 8260B
24	Chloroethane	75003	0.5	EPA 8260B
25	2- Chloroethyl vinyl ether	110758	1	EPA 8260B
26	Chloroform	67663	0.5	EPA 8260B
35	Chloromethane	74873	0.5	EPA 8260B
23	Dibromochloromethane	124481	0.5	EPA 8260B
27	Dichlorobromomethane	75274	0.5	EPA 8260B
36	Dichloromethane	75092	0.5	EPA 8260B
33	Ethylbenzene	100414	0.5	EPA 8260B
88	Hexachlorobenzene	118741	1	EPA 8260B
89	Hexachlorobutadiene	87683	1	EPA 8260B
91	Hexachloroethane	67721	1	EPA 8260B
94	Naphthalene	91203	10	EPA 8260B
38	Tetrachloroethene	127184	0.5	EPA 8260B

Suggested Analytical Methods

CTR #	Constituent	CAS Number	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
39	Toluene	108883	0.5	EPA 8260B
40	trans-1,2-Dichloroethylene	156605	0.5	EPA 8260B
43	Trichloroethene	79016	0.5	EPA 8260B
44	Vinyl chloride	75014	0.5	EPA 8260B
	Methyl-tert-butyl ether (MTBE)	1634044	0.5	EPA 8260B
	Trichlorofluoromethane	75694	5	EPA 8260B
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	10	EPA 8260B
	Styrene	100425	0.5	EPA 8260B
	Xylenes	1330207	0.5	EPA 8260B
SEMI-VOLATILE ORGANICS				
60	1,2-Benzanthracene	56553	5	EPA 8270C
85	1,2-Diphenylhydrazine	122667	1	EPA 8270C
45	2-Chlorophenol	95578	2	EPA 8270C
46	2,4-Dichlorophenol	120832	1	EPA 8270C
47	2,4-Dimethylphenol	105679	2	EPA 8270C
49	2,4-Dinitrophenol	51285	5	EPA 8270C
82	2,4-Dinitrotoluene	121142	5	EPA 8270C
55	2,4,6-Trichlorophenol	88062	10	EPA 8270C
83	2,6-Dinitrotoluene	606202	5	EPA 8270C
50	2-Nitrophenol	25154557	10	EPA 8270C
71	2-Chloronaphthalene	91587	10	EPA 8270C
78	3,3'-Dichlorobenzidine	91941	5	EPA 8270C
62	3,4-Benzofluoranthene	205992	10	EPA 8270C
52	4-Chloro-3-methylphenol	59507	5	EPA 8270C
48	4,6-Dinitro-2-methylphenol	534521	10	EPA 8270C
51	4-Nitrophenol	100027	5	EPA 8270C
69	4-Bromophenyl phenyl ether	101553	10	EPA 8270C
72	4-Chlorophenyl phenyl ether	7005723	5	EPA 8270C
56	Acenaphthene	83329	1	EPA 8270C
57	Acenaphthylene	208968	10	EPA 8270C
58	Anthracene	120127	10	EPA 8270C
59	Benzidine	92875	5	EPA 8270C
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	0.1	EPA 8270C

Suggested Analytical Methods

CTR #	Constituent	CAS Number	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
63	Benzo(g,h,i)perylene	191242	5	EPA 8270C
64	Benzo(k)fluoranthene	207089	2	EPA 8270C
65	Bis(2-chloroethoxy) methane	111911	5	EPA 8270C
66	Bis(2-chloroethyl) ether	111444	1	EPA 8270C
67	Bis(2-chloroisopropyl) ether	39638329	10	EPA 8270C
68	Bis(2-ethylhexyl) phthalate	117817	3	EPA 8270C
70	Butyl benzyl phthalate	85687	10	EPA 8270C
73	Chrysene	218019	5	EPA 8270C
81	Di-n-butylphthalate	84742	10	EPA 8270C
84	Di-n-octylphthalate	117840	10	EPA 8270C
74	Dibenzo(a,h)-anthracene	53703	0.1	EPA 8270C
79	Diethyl phthalate	84662	2	EPA 8270C
80	Dimethyl phthalate	131113	2	EPA 8270C
86	Fluoranthene	206440	10	EPA 8270C
87	Fluorene	86737	10	EPA 8270C
90	Hexachlorocyclopentadiene	77474	1	EPA 8270C
92	Indeno(1,2,3-c,d)pyrene	193395	0.05	EPA 8270C
93	Isophorone	78591	1	EPA 8270C
98	N-Nitrosodiphenylamine	86306	1	EPA 8270C
96	N-Nitrosodimethylamine	62759	5	EPA 8270C
97	N-Nitrosodi-n-propylamine	621647	5	EPA 8270C
95	Nitrobenzene	98953	10	EPA 8270C
53	Pentachlorophenol	87865	0.2	EPA 8270C
99	Phenanthrene	85018	5	EPA 8270C
54	Phenol	108952	1	EPA 8270C
100	Pyrene	129000	10	EPA 8270C
INORGANICS				
	Aluminum	7429905	50	EPA 6020/200.8
1	Antimony	7440360	5	EPA 6020/200.8
2	Arsenic	7440382	1	EPA 1632
15	Asbestos	1332214	0.2 MFL >10um	EPA/600/R-93/116(PCM)

ATTACHMENT C

Suggested Analytical Methods

CTR #	Constituent	CAS Number	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
	Barium	7440393	100	EPA 6020/200.8
3	Beryllium	7440417	1	EPA 6020/200.8
4	Cadmium	7440439	0.25	EPA 1638/200.8
5a	Chromium (total)	7440473	2	EPA 6020/200.8
5b	Chromium (VI)	18540299	5	EPA 7199/ 1636
6	Copper	7440508	0.5	EPA 6020/200.8
14	Cyanide	57125	5	EPA 9012A
	Fluoride	7782414	100	EPA 300
	Iron	7439896	100	EPA 6020/200.8
7	Lead	7439921	0.5	EPA 1638
8	Mercury	7439976	0.0005 (11)	EPA 1669/1631
	Manganese	7439965	20	EPA 6020/200.8
9	Nickel	7440020	5	EPA 6020/200.8
10	Selenium	7782492	5	EPA 6020/200.8
11	Silver	7440224	1	EPA 6020/200.8
12	Thallium	7440280	1	EPA 6020/200.8
	Tributyltin	688733	0.06	EV-024/025
13	Zinc	7440666	10	EPA 6020/200.8
PESTICIDES - PCBs				
110	4,4'-DDD	72548	0.02	EPA 8081A
109	4,4'-DDE	72559	0.01	EPA 8081A
108	4,4'-DDT	50293	0.01	EPA 8081A
112	alpha-Endosulfan	959988	0.02	EPA 8081A
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01	EPA 8081A
	Alachlor	15972608	1	EPA 8081A
102	Aldrin	309002	0.005	EPA 8081A
113	beta-Endosulfan	33213659	0.01	EPA 8081A

ATTACHMENT C

Suggested Analytical Methods

CTR #	Constituent	CAS Number	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
104	beta-Hexachlorocyclohexane	319857	0.005	EPA 8081A
107	Chlordane	57749	0.1	EPA 8081A
106	delta-Hexachlorocyclohexane	319868	0.005	EPA 8081A
111	Dieldrin	60571	0.01	EPA 8081A
114	Endosulfan sulfate	1031078	0.05	EPA 8081A
115	Endrin	72208	0.01	EPA 8081A
116	Endrin Aldehyde	7421934	0.01	EPA 8081A
117	Heptachlor	76448	0.01	EPA 8081A
118	Heptachlor Epoxide	1024573	0.01	EPA 8081A
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.019	EPA 8081A
119	PCB-1016	12674112	0.5	EPA 8082
120	PCB-1221	11104282	0.5	EPA 8082
121	PCB-1232	11141165	0.5	EPA 8082
122	PCB-1242	53469219	0.5	EPA 8082
123	PCB-1248	12672296	0.5	EPA 8082
124	PCB-1254	11097691	0.5	EPA 8082
125	PCB-1260	11096825	0.5	EPA 8082
126	Toxaphene	8001352	0.5	EPA 8081A
	Atrazine	1912249	1	EPA 8141A
	Bentazon	25057890	2	EPA 643/ 515.2
	Carbofuran	1563662	5	EPA 8318
	2,4-D	94757	10	EPA 8151A
	Dalapon	75990	10	EPA 8151A
	1,2-Dibromo-3-chloropropane (DBCP)	96128	0.01	EPA 8260B
	Di(2-ethylhexyl)adipate	103231	5	EPA 8270C
	Dinoseb	88857	2	EPA 8151A
	Diquat	85007	4	EPA 8340/ 549.1/HPLC
	Endothal	145733	45	EPA 548.1
	Ethylene Dibromide	106934	0.02	EPA 8260B/ 504
	Glyphosate	1071836	25	HPLC/ EPA 547
	Methoxychlor	72435	10	EPA 8081A
	Molinate (Ordram)	2212671	2	EPA 634

ATTACHMENT C

Suggested Analytical Methods

CTR #	Constituent	CAS Number	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
	Oxamyl	23135220	20	EPA 8318/ 632
	Picloram	1918021	1	EPA 8151A
	Simazine (Princep)	122349	4	EPA 8141A
	Thiobencarb	28249776	1	HPLC/ EPA 639
16	2,3,7,8-TCDD (Dioxin)	1746016	5.00E-06	EPA 8290 (HRGC) MS
	2,4,5-TP (Silvex)	93765	1	EPA 8151A
	Diazinon	333415	0.25	EPA 8141A/ GCMS
	Chlorpyrifos	2921882	1	EPA 8141A/ GCMS
OTHER CONSTITUENTS				
	Ammonia (as N)	7664417		EPA 350.1
	Chloride	16887006		EPA 300.0
	Flow			
	Hardness (as $CaCO_3$)			EPA 130.2
	Foaming Agents (MBAS)			SM5540C
	Nitrate (as N)	14797558	2,000	EPA 300.0
	Nitrite (as N)	14797650	400	EPA 300.0
	pH		0.1	EPA 150.1
	Phosphorus, Total (as P)	7723140		EPA 365.3
	Specific conductance (EC)			EPA 120.1
	Sulfate		500	EPA 300.0
	Sulfide (as S)			EPA 376.2
	Sulfite (as SO_3)			SM4500-SO3
	Temperature			
	Total Disolved Solids (TDS)			EPA 160.1

Table 1
Summary of Applicable Water Quality Criteria and Objectives
Considered in the RPA

ATTACHMENT D

Constituent / Parameter	Water Quality Objective	Source	Criterion[1]	Units	MEC[4]	Projected MEC[5]	Max RW Conc. [6]	RP[7]
Aluminum	Chemical Constituents	California Primary MCL	1000	ug/L	5.4	25.38		N
		California Secondary MCL	200	ug/L				
		Water Quality for Agriculture (Ayers & Westcot)	5000	ug/L				
	Tastes and Odors	California Secondary MCL	200	ug/L				
	Toxicity - humans	California Public Health Goal for Drinking Water	600	ug/L				
	Toxicity - aquatic life	USEPA National Recomm. W Q Criteria / 4-day avg (total) (f)	87	ug/L				
		USEPA National Recomm. W Q Criteria / 1-hour avg (total) (f)	750	ug/L				
Ammonia	Tastes and Odors	Odor threshold (Amoore and Hautala)	1500	ug/L				
(Ammonium)	Toxicity - humans	USEPA Draft Health Advisory	30,000	ug/L				
	Toxicity - aquatic life	*USEPA National Ambient Water Quality Criteria - continuous concentration*[2]	**591**	ug/L	2500	11750		Y
	Toxicity - aquatic life	*USEPA National Ambient Water Quality Criteria – maximum*[2]	**2140**	ug/L	2500	11750		Y
Arsenic (CTR # 2)	Chemical Constituents	California Primary MCL	50	ug/L				
		USEPA Primary MCL	**10**	ug/L	21		15	Y
	Trace Element Objective	*Basin Plan Table III-1 – Maximum, Dissolved*	**10**	ug/L	21		15	Y
	Toxicity - humans	Cal/EPA Cancer Potency Factor as a drinking water level (b)	0.023	ug/L				
		USEPA National Ambient Water Quality Criteria	0.018	ug/L				
	CTR - aquatic life	California Toxics Rule (USEPA) - continuous concentration	150	ug/L				
		California Toxics Rule (USEPA) - maximum criterion	340	ug/L				
Barium	Trace Element Objective	**Basin Plan Table III-1 – Maximum, Dissolved**	**100**	ug/L	340	1598	390	Y
	Chemical Constituents	California Primary MCL	1000	ug/L				
	Toxicity - humans	USEPA IRIS Reference Dose (c)	490	ug/L				
Cadmium (CTR # 4)	Chemical Constituents	California Primary MCL	5	ug/L	ND		0.61	N
		Water Quality for Agriculture (Ayers & Westcot)	10	ug/L				
	Toxicity - humans	California Public Health Goal for Drinking Water	0.07	ug/L				
	CTR-aquatic life	California Toxics Rule (USEPA) - acute criteria[3]	2.4	ug/L				
	CTR - aquatic life	California Toxics Rule (USEPA) - chronic criteria[3]	1.6	ug/L				
Chloride	Chemical Constituents	California Secondary MCL	250,000	ug/L	48000	225600	44000	N
		Water Quality for Agriculture (Ayers & Westcot)	106,000	ug/L				
	Tastes and Odors	California Secondary MCL	250,000	ug/L				
	Toxicity - aquatic life	USEPA National Ambient W Q Criteria / 4-day average	230,000	ug/L				

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ATTACHMENT D

Constituent / Parameter	Water Quality Objective	Source	Criterion[1]	Units	MEC[4]	Projected MEC[5]	Max RW Conc. [6]	RP[7]
		USEPA National Ambient W Q Criteria / 1-hour average	860,000	ug/L				
Chromium (III) (CTR # 5a)	Chemical Constituents	California Primary MCL	50	ug/L	17		3.6	N
	Toxicity - humans	USEPA IRIS Reference Dose (c)	10,500	ug/L				
	NTR - aquatic life	National Toxics Rule (USEPA) - continuous concentration (2)	132.5	ug/L				
Chromium (VI) (CTR #5b)	Chemical Constituents	California Primary MCL	50	ug/L				
		Water Quality for Agriculture (Ayers & Westcot)	100	ug/L				
	Toxicity - humans	USEPA IRIS Reference Dose (c)	21	ug/L				
	CTR - aquatic life	*California Toxics Rule (USEPA) - chronic criteria*	**11**	ug/L	17		1.8	Y
		California Toxics Rule (USEPA) - acute criteria	**16**	ug/L	17		1.8	Y
Copper (CTR #6)	Chemical Constituents	California Primary MCL	1300	ug/L				
		California Secondary MCL	1000	ug/L				
	Toxicity - aquatic life	Basin Plan Table III-1 - Acute	10	ug/L				
	Tastes and Odors	California Secondary MCL	1000	ug/L				
	CTR - humans	California Toxics Rule (USEPA) for sources of drinking water	1300	ug/L				
	CTR - aquatic life	*California Toxic Rule (USEPA) - acute criteria[3]*	**8.4**	ug/L	1.3		28	Y-RW
	CTR - aquatic life	*California Toxics Rule (USEPA)- chronic criteria[3]*	**5.9**	ug/L	1.3		28	Y-RW
delta-BHC	(Toxicity)	Basin Plan ND for Chlorinated Pesticides	**ND**		ND		0.07	Y-RW
	Toxicity - humans	Drinking Water Health Advisories - NAS (7-day)	500	ug/L				
DDT (CTR #108)	Toxicity	*Basin Plan ND for Chlorinated Pesticides*	**ND**		ND		0.06	Y-RW
	CTR - humans	California Toxics Rule (USEPA) for sources of drinking water	0.00059	ug/L				
	CTR - aquatic life	California Toxics Rule (USEPA) - continuous concentration	0.001	ug/L				
		California Toxics Rule (USEPA) - maximum criterion	1.1	ug/L				
DDE (CTR #109)	Toxicity	*Basin Plan ND for Chlorinated Pesticides*	**ND**		**ND**		0.08	Y-RW
	CTR - humans	California Toxics Rule (USEPA) for sources of drinking water	0.00059	ug/L				
DDD (CTR #110)	Toxicity	*Basin Plan ND for Chlorinated Pesticides*	**ND**		**ND**		0.8	Y-RW
	CTR - humans	California Toxics Rule (USEPA) for sources of drinking water	0.00083	ug/L				
(Bis(2-ethylhexyl)phthalate (CTR #68))	Chemical Constituents	California Primary MCL	4	ug/L	ND		2.9	Unk
(DEHP)	NTR - humans	National Toxics Rule (USEPA) for sources of drinking water	1.8	ug/L				
Iron	Trace Element Objective	*Basin Plan Table III-1 – Dissolved, Maximum*	**300**	ug/L	1100	5170	1900	Y

Table 1
Summary of Applicable Water Quality Criteria and Objectives
Considered in the RPA

ATTACHMENT D

Constituent / Parameter	Water Quality Objective	Source	Criterion[1]	Units	MEC[4]	Projected MEC[5]	Max RW Conc. [6]	RP[7]
	Chemical Constituents	*California Secondary MCL*	**300**	ug/L	1100	5170	1900	Y
	Chemical Constituents	Water Quality for Agriculture (Ayers & Westcot)	5000	ug/L				
	Toxicity - aquatic life	USEPA National Ambient W Q Criteria / 4-day average	1000	ug/L				
Lead (CTR #7)	Chemical Constituents	California Primary MCL	15	ug/L				
		Water Quality for Agriculture (Ayers & Westcot)	5000	ug/L				
	Toxicity - humans	California Public Health Goal for Drinking Water	2	ug/L				
	CTR - aquatic life	California Toxic Rule (USEPA) - acute criteria[3]	**41**	ug/L	**0.52**		71	**Y-RW**
	CTR - aquatic life	*California Toxics Rule (USEPA) - chronic criteria[3]*	**1.6**	ug/L	**0.52**		71	**Y-RW**
Manganese	*Trace Element Objective*	Basin Plan Table III-1 – Maximum, Dissolved	**50**	ug/L	88	413.6	160	**Y**
	Chemical Constituents	*California Secondary MCL*	**50**	ug/L	88	413.6	160	**Y**
	Chemical Constituents	Water Quality for Agriculture (Ayers & Westcot)	200	ug/L				
	Toxicity - humans	California DHS Action Level for drinking water	500	ug/L				
Methyl t-butyl ether	Chemical Constituents	California Primary MCL	13	ug/L	4.1	na	na	N
(MTBE)		California Secondary MCL	5	ug/L				
	Toxicity - humans	California Public Health Goal for Drinking Water	13	ug/L				
Mercury (CTR #8)	Chemical Constituents	California Primary MCL	2	ug/L				
	Toxicity - aquatic life	USEPA National Ambient W Q Criteria / 4-day average	0.77	ug/L				
		USEPA National Ambient W Q Criteria / 1-hour average	1.4	ug/L				
	CTR - humans	California Toxics Rule (USEPA) - sources of drinking water	**0.05**	ug/L	0.11		0.13	**Y**
Nickel	Chemical Constituents	California Primary MCL	100	ug/L	2.7		5.9	N
		Water Quality for Agriculture (Ayers & Westcot)	200	ug/L				
	CTR - humans	Californa Toxics Rule (USEPA) for sources of drinking water	610	ug/L				
	CTR - aquatic life	*California Toxic Rule (USEPA) - acute criteria*	*295.9*	*ug/L*				
	CTR - aquatic life	California Toxics Rule (USEPA) - chronic criteria	32.9	ug/L				
Nitrate + Nitrite (as N)	Chemical Constituents	California Primary MCL	10,000	ug/L	2100	9870		N
Selenium (CTR #10)	Chemical Constituents	California Primary MCL	50	ug/L	1.4		1.1	N
		Water Quality for Agriculture (Ayers & Westcot)	20	*ug/L*				
	Toxicity - humans	USEPA IRIS Reference Dose (c)	35	ug/L				
	NTR - aquatic life	***National Toxics Rule (USEPA) - continuous concentration***	5	ug/L				
		National Toxics Rule (USEPA) - maximum criterion	20	ug/L				
Specific conductance	Chemical Constituents	California Secondary MCL	900	umhos/cm	1600		680	Unk

Table 1
Summary of Applicable Water Quality Criteria and Objectives
Considered in the RPA

ATTACHMENT D

Constituent / Parameter	Water Quality Objective	Source	Criterion[1]	Units	MEC[4]	Projected MEC[5]	Max RW Conc. [6]	RP[7]
Electrical conductivity		Water Quality for Agriculture (Ayers & Westcot)	700	umhos/cm				
(EC)	Tastes and Odors	California Secondary MCL	900	umhos/cm				
Sulfate	Chemical Constituents	California Secondary MCL (Ambient level)	250	mg/L	68	319.6	56	Unk
		California Secondary MCL (upper level)	500	mg/L				
	Tastes and Odors	California Secondary MCL (Ambient level)	250	mg/L				
	Toxicity - humans	USEPA Proposed MCL Goal	500	mg/L				
Tetrachloroethylene (PCE)	Chemical Constituents	California Primary MCL	5	ug/L				
	Tastes and Odors	Odor threshold (Amoore and Hautala)	170	ug/L				
	Toxicity - aquatic life	USEPA National Ambient W Q Criteria / chronic tox info	840	ug/L				
	NTR - humans	National Toxics Rule (USEPA) for sources of drinking water	0.8	ug/L	2.2		nd	Y
Total Dissolved Solids	Chemical Constituents	California Secondary MCL	500,000	ug/L	570000	na	480000	Unk
(TDS)		Water Quality for Agriculture (Ayers & Westcot)	450,000	ug/L				
	Tastes and Odors	California Secondary MCL	500,000	ug/L				
Zinc (CTR #13)	Trace Element Objective	Basin Plan Table III-1 – Maximum, Dissolved	100	ug/L				
	Chemical Constituents	California Secondary MCL	5000	ug/L				
		Water Quality for Agriculture (Ayers & Westcot)	*2000*	*ug/L*				
	Tastes and Odors	California Secondary MCL	5000	ug/L				
	Toxicity - humans	USEPA IRIS Reference Dose (c)	2100	ug/L				
	CTR - aquatic life	**California Toxic Rule (USEPA) - acute criteria[3]**	**76**	ug/L	ND		160	Y - RW
	CTR - aquatic life	*California Toxics Rule (USEPA) - chronic criteria[3]*	**76**	ug/L	ND		160	Y - RW

(1) Source in italics used in RPA
(2) Using pH=8.5 and temperature = 24 degrees C for Criterion Continuous Concentration, pH = 8.5 for Criterion Maximum Concentration
(3) Based on hardness = 58 mg/L as CaCO3
(4) Maximum Effluent Concentration
(5) The projected MEC (maximum effluent concentration) is determined by multiplying the maximum detected concentration with a reasonable potential multiplying factor that accounts for statistical variation. The multiplying factor (for 99% confidence level and 99% probability basis) is dependent on the coefficient of variation (CV) and number of reported effluent results. For less than 10 effluent data points, CV is estimated to equal 0.6. The multiplying factor is 4.7 for four samples and a CV of 0.6.
(6) Maximum Receiving Water Concentration
(7) Reasonable Potential Determination- "Y" means effluent has reasonable potential to cause or contribute to an exceedance of the most stringent criteria or objective. "Y-RW" means maximum concentration of receiving water exceeded most stringent water quality criteria or objective

Table 2
CTR Constituents
Reasonable Potential Analysis Summary

ATTACHMENT D

CTR Parameter #	PRIORITY POLLUTANTS	Effluent Data Available (Y/N)?	Are all data points non-detects (Y/N)?	MEC (ug/L) or Projected MEC (ug/L)		Maximum B (ug/L)		Lowest (most stringent) Criterion[2]	RPA Result
1	Antimony	Y	N	0		0		6.00	No
2	**Arsenic**	Y	Y	**21**	4 Hits	**15**	3 Hits	10.00	Yes
3	Beryllium	Y	Y	0		0		4.00	No
4	Cadmium	Y	N	0		**0.61**	1 Hit	1.61	No
5a	**Chromium (III) (or total Cr)**	Y	N	**17**	3 Hits	**3.6**	2 Hits	50.00	No
5b	**Chromium (VI)**	Y	N	**17**	4 Hits	**2.2**	2 Hits	11.43	Yes
6	Copper	Y	Y	**1.3**	1 Hit	**28**	2 Hits	5.86	Yes
7	Lead	Y	N	0.52	1 Hit	**71**	2 Hits	1.59	Yes
8	Mercury	Y	N	**0.11**	1 Hit	**0.13**	1 Hit	0.05	Yes
9	Nickel	Y	N	**2.7**	1 Hit	**5.9**	1 Hit	32.90	No
10	**Selenium**	Y	Y	**1.4**	2 Hits	**1.1**	2 Hits	5.00	No
11	Silver	Y	Y	0		0		1.59	No
12	Thallium	Y	Y	0		0		1.70	No
13	Zinc	Y	Y	0		**160**	4 Hits	75.52	Yes
14	Cyanide	Y	Y	0		0		5.20	No
15	Asbestos	Y	Y	0		0		7000000.00	No
16	2,3,7,8-TCDD (Dioxin)	Y	Y	0		0		0.000000013	No
17	Acrolein	Y	Y	0		0		320.00	No
18	Acrylonitrile	Y	Y	0		0		0.06	No
19	Benzene	Y	Y	0		0		1.00	No
20	Bromoform	Y	Y	0		0		4.30	No
21	Carbon Tetrachloride	Y	Y	0		0		0.25	No
22	Chlorobenzene	Y	Y	0		0		680.00	No
23	Chlordibromomethane	Y	Y	0		0		0.41	No
24	Chloroethane	Y	Y	0		0		No Criteria	No
25	2-Chloroethylvinyl Ether	Y	Y	0		0		No Criteria	No
26	Chloroform	Y	Y	0		0		No Criteria	No
27	Dichlorobromomethane	Y	Y	0		0		0.56	No
28	1,1-Dichloroethane	Y	Y	0		0		5.00	No
29	1,2-Dichloroethane	Y	Y	0		0		0.38	No
30	1,1-Dichloroethylene	Y	Y	0		0		0.06	No
31	1,2-Dichloropropane	Y	Y	0		0		0.52	No
32	1,3-Dichloropropylene	Y	Y	0		0		10.00	No
33	Ethylbenzene	Y	Y	0		0		700.00	No
34	Methyl Bromide	Y	Y	0		0		48.00	No
35	Methyl Chloride	Y	Y	0		0		No Criteria	No
36	Methylene Chloride	Y	Y	0		0		4.70	No
37	1,1,2,2-Tetrachloroethane	Y	Y	0		0		0.17	No
38	Tetrachloroethylene	Y	Y	0		0		0.80	No
39	Toluene	Y	Y	0		0		150.00	No
40	1,2-Trans-Dichloroethylene	Y	Y	0		0		10.00	No

Table 2
CTR Constituents
Reasonable Potential Analysis Summary

ATTACHMENT D

CTR Parameter #	**PRIORITY POLLUTANTS**	Effluent Data Available (Y/N)?	Are all data points non-detects (Y/N)?	MEC (ug/L) or Projected MEC (ug/L)		Maximum B (ug/L)		Lowest (most stringent) Criterion[(2)]	RPA Result
41	1,1,1-Trichloroethane	Y	Y	0		0		200.00	No
42	1,1,2-Trichloroethane	Y	Y	0		0		0.60	No
43	Trichloroethylene	Y	Y	0		0		2.70	No
44	Vinyl Chloride	Y	Y	0		0		0.50	No
45	Chlorophenol	Y	Y	0		0		120.00	No
46	2,4-Dichlorophenol	Y	Y	0		0		93.00	No
47	2,4-Dimethylphenol	Y	Y	0		0		540.00	No
48	2-Methyl-4,6-Dinitrophenol	Y	Y	0		0		13.40	No
49	2,4-Dinitrophenol	Y	Y	0		0		70.00	No
50	2-Nitrophenol	Y	Y	0		0		No Criteria	No
51	4-Nitrophenol	Y	Y	0		0		No Criteria	No
52	3-Methyl-4-Chlorophenol	Y	Y	0		0		No Criteria	No
53	Pentachlorophenol	Y	Y	0		0		0.28	No
54	Phenol	Y	Y	0		0		21000.00	No
55	2,4,6-Trichlorophenol	Y	Y	0		0		2.10	No
56	Acenaphthene	Y	Y	0		0		1200.00	No
57	Acenephthylene	Y	Y	0		0		No Criteria	No
58	Anthracene	Y	Y	0		0		9600.00	No
59	Benzidine	Y	Y	0		0		0.00	No
60	Benzo(a)Anthracene	Y	Y	0		0		0.00	No
61	Benzo(a)Pyrene	Y	Y	0		0		0.00	No
62	Benzo(b)Fluoranthene	Y	Y	0		0		0.00	No
63	Benzo(ghi)Perylene	Y	Y	0		0		No Criteria	No
64	Benzo(k)Fluoranthene	Y	Y	0		0		0.00	No
65	Bis(2-Chloroethoxy)Methane	Y	Y	0		0		No Criteria	No
66	Bis(2-Chloroethyl)Ether	Y	Y	0		0		0.03	No
67	Bis(2-Chloroisopropyl)Ether	Y	Y	0		0		1400.00	No
68	**Bis(2-Ethylhexyl)Phthalate**	Y	Y	0		**2.9**	1 Hit	1.80	Yes
69	4-Bromophenyl Phenyl Ether	Y	Y	0		0		No Criteria	No
70	Butylbenzyl Phthalate	Y	Y	0		0		3000.00	No
71	2-Chloronaphthalene	Y	Y	0		0		1700.00	No
72	4-Chlorophenyl Phenyl Ether	Y	Y	0		0		No Criteria	No
73	Chrysene	Y	Y	0		0		0.00	No
74	Dibenzo(a,h)Anthracene	Y	Y	0		0		0.00	No
75	1,2-Dichlorobenzene	Y	Y	0		0		600.00	No
76	1,3-Dichlorobenzene	Y	Y	0		0		400.00	No
77	1,4-Dichlorobenzene	Y	Y	0		0		5.00	No
78	3,3'-Dichlorobenzidine	Y	Y	0		0		0.04	No
79	Diethyl Phthalate	Y	Y	0		0		23000.00	No

Table 2
CTR Constituents
Reasonable Potential Analysis Summary

ATTACHMENT D

CTR Parameter #	**PRIORITY POLLUTANTS**	Effluent Data Available (Y/N)?	Are all data points non-detects (Y/N)?	MEC (ug/L) or Projected MEC (ug/L)		Maximum B (ug/L)		Lowest (most stringent) Criterion[(2)]	RPA Result
80	Dimethyl Phthalate	Y	Y	0		0		313000.00	No
81	Di-n-Butyl Phthalate	Y	Y	0		0		2700.00	No
82	2,4-Dinitrotoluene	Y	Y	0		0		0.11	No
83	2,6-Dinitrotoluene	Y	Y	0		0		No Criteria	No
84	Di-n-Octyl Phthalate	Y	Y	0		0		No Criteria	No
85	1,2-Diphenylhydrazine	Y	Y	0		0		0.04	No
86	Fluoranthene	Y	Y	0		0		300.00	No
87	Fluorene	Y	Y	0		0		1300.00	No
88	Hexachlorobenzene	Y	Y	0		0		0.00	No
89	Hexachlorobutadiene	Y	Y	0		0		0.44	No
90	Hexachlorocyclopentadiene	Y	Y	0		0		50.00	No
91	Hexachloroethane	Y	Y	0		0		1.90	No
92	Indeno(1,2,3-cd) Pyrene	Y	Y	0		0		0.00	No
93	Isophorone	Y	Y	0		0		8.40	No
94	naphthalene	Y	Y	0		0		No Criteria	No
95	Nitrobenzene	Y	Y	0		0		17.00	No
96	N-Nitrosodimethylamine	Y	Y	0		0		0.00	No
97	N-Nitrosodi-n-Propylamine	Y	Y	0		0		0.01	No
98	N-Nitrosodiphenylamine	Y	Y	0		0		5.00	No
99	Phenanthrene	Y	Y	0		0		No Criteria	No
100	Pyrene	Y	Y	0		0		960.00	No
101	1,2,4-Trichlorobenzene	Y	Y	0		0		70.00	No
102	Aldrin	Y	Y	0		0		0.00	No
103	alpha-BHC	Y	Y	0		0		0.00	No
104	beta-BHC	Y	Y	0		0		0.01	No
105	gamma-BHC	Y	Y	0		0		0.02	No
106	delta-BHC	Y	Y	0		**0.07**	1 Hit	ND	Yes
107	Chlordane	Y	Y	0		0		0.00	No
108	4,4-DDT	Y	Y	0		**0.06**	1 Hit	ND	Yes
109	4,4-DDE	Y	Y	0		**0.08**	1 Hit	ND	Yes
110	4,4-DDD	Y	Y	0		**0.8**	1 Hit	ND	Yes
111	Dieldrin	Y	Y	0		0		0.00	No
112	alpha-Endosulfan	Y	Y	0		0		0.06	No
113	beta-Endosulfan	Y	Y	0		0		0.06	No
114	Endosulfan Sulfate	Y	Y	0		0		110.00	No
115	Endrin	Y	Y	0		0		0.04	No
116	Endrin Aldehyde	Y	Y	0		0		0.76	No
117	Heptachlor	Y	Y	0		0		0.00	No
118	Heptchlor Epoxide	Y	Y	0		0		0.00	No
119-125	PCBs sum [(3)]	Y	Y	0		0		0.00	No
126	Toxaphene			0		0		0.00	No

Table 3
Non- CTR Constituents
Projected Maximum Effluent Concentration (MEC) Calculations

ATTACHMENT D

		Applicable Criteria/Objectives			Monitoring Data					
Parameter	**Units**	**BasinPlan or Acute**	**Chronic**	**MCL or Human Health**	**Effluent Concentration on 5/29/2003**	**Effluent Concentration on 10/7/2003**	**Effluent Concentration on 12/3/2003**	**Effluent Concentration on 2/18/2004**	**Maximum Detected Effluent Concentration**	**Projected MEC[1]**
Barium	µg/L	100	n/a	490	14	340	330	310	340	1598
Iron	µg/L	300	n/a	300	120	1100	540	200	1100	5170
Manganese	µg/L	50	n/a	50	88	4.5	2.5	ND	88	413.6
Ammonia	mg/L	2.14	0.591	1.5	110	2500	190	ND	2500	11750
Specific conductance (EC @ 25°C)	µmhos/cm	n/a	n/a	900	Regularly monitored through M&RP, n=53				1600	1600

Footnotes:

[1] The projected MEC (maximum effluent concentration) is determined by multiplying the maximum detected concentration with a reasonable potential multiplying factor that accounts for statistical variation. The multiplying factor (for 99% confidence level and 99% probability basis) is dependent on the coefficient of variation (CV) and number of reported effluent results. For less than 10 effluent data points, CV is estimated to equal 0.6. The multiplying factor is 4.7 for four samples and a CV of 0.6. If no data or all data ND, did not make analysis due to lack of data.