CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-0036-01
NPDES NO. CA0079154

WASTE DISCHARGE REQUIREMENTS FOR
CITY OF TRACY
TRACY WASTEWATER TREATMENT PLANT
SAN JOAQUIN COUNTY

The following Discharger is authorized to discharge in accordance with the conditions set forth in this Order:

Table 1. Discharger Information

Discharger	City of Tracy
Name of Facility	Tracy Wastewater Treatment Plant
Facility Address	3900 Holly Drive Tracy, CA 95304 San Joaquin County
The U.S. Environmental Protection Agency (U.S. EPA) and the Regional Water Board have classified this discharge as a **major** discharge.	

The Discharger is authorized to discharge from the following discharge points as set forth below:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Treated Wastewater	37º, 48', 17" N	121º, 24', 03" W	Old River
002*	Treated Wastewater	37º, 48', 19" N	121º, 24', 13" W	Old River

*Future outfall proposed for Facility expansion

Table 3. Administrative Information

This Order was amended by the Regional Water Board on:	**3 February 2011**
This Order became effective on:	**June 23, 2007**
This Order shall expire on:	**May 1, 2012**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**180 days prior to the Order expiration date**

IT IS HEREBY ORDERED, that Order No. 96-104 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the federal Clean Water Act, and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements herein.

I, Pamela C. Creedon**,** Executive Officer, do hereby certify the following is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **May 4, 2007** and amended on **3 February 2011.**

Original Signed by Kenneth D. Landau for
PAMELA C. CREEDON, Executive Officer

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I. FACILITY INFORMATION

The following Discharger is authorized to discharge in accordance with the conditions set forth in this Order:

Discharger	City of Tracy
Name of Facility	Tracy Wastewater Treatment Plant
Facility Address	3900 Holly Drive Tracy, CA 95304 San Joaquin County
Facility Contact, Title, and Phone	Mr. Steve Bayley, Deputy Director of Public Works (209) 831-4434
Mailing Address	SAME
Type of Facility	POTW
Facility Design Flow	9.0 million gallons per day (mgd) (with expansion to 16 mgd)

II. FINDINGS

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

A. **Background.** The City of Tracy (hereafter Discharger) is currently discharging under Order No. 96-104 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079154. On November 1, 2000, the City of Tracy submitted a Report of Waste Discharge (ROWD) for NPDES permit renewal. Subsequently, on February 3, 2003**,** the City of Tracy submitted a modified ROWD and applied for a NPDES permit renewal to increase the discharge from 9 mgd to 16 mgd of treated wastewater from the Tracy Wastewater Treatment Plant.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and State laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. **Facility Description.** The Discharger owns and operates a wastewater collection, treatment, and disposal system. The Tracy Wastewater Treatment Plant (hereafter "Facility") is composed of a main treatment facility and an industrial pretreatment facility. The main treatment facility consists of raw influent bar screening, primary sedimentation, biofiltration, conventional activated sludge, and secondary sedimentation. Secondary effluent is disinfected by chlorination and dechlorinated prior to discharge. Biosolids are thickened by dissolved air flotation, anaerobically digested, and dewatered in drying beds. The dried biosolids are hauled off-site for land application or for disposal in a landfill. The industrial pretreatment facility consists of four unlined industrial ponds. In addition, Leprino Foods Company (Leprino), a local cheese manufacturer, leases two aerated lagoons and one unlined oxidation pond from the Discharger for pretreatment of its industrial food processing wastewater. Per an industrial pretreatment permit, the Discharger accepts pretreated industrial food processing wastewater from Leprino. The industrial wastewater and other process

water from the main facility are stored in the unlined industrial ponds and returned to the primary sedimentation basins of the main facility.

Wastewater is discharged from Discharge Point 001 (see table on cover page) to Old River, a water of the United States and part of the Sacramento-San Joaquin Delta (Delta). Attachment B (Figure B-1) provides a topographic map describing the location of the Facility. Attachment C (Figures C-1 and C-2) provide wastewater flow schematics for the Facility. The Discharger is upgrading the Facility to improve treatment and expand capacity. The treatment system capacity will be expanded to 16 mgd through a four-phase expansion. The improvements will improve the effluent quality over the current secondary level treatment, including nitrification/denitrification and tertiary filtration. Only Phase 1 of the proposed expansion is scheduled to be completed during the term of this Order, which would increase the treatment capacity to 10.8 mgd. A detailed description of the planned changes are discussed in Attachment F, Section II.E.

C. **Legal Authorities.** This Order is issued pursuant to section 402 of the Federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California Water Code (CWC). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to Article 4, Chapter 4 of the CWC for discharges that are not subject to regulation under CWA section 402.

D. **Background and Rationale for Requirements**. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and through special studies. Attachments A through F, which contain background information and rationale for Order requirements, are hereby incorporated into this Order and, thus, constitute part of the Findings for this Order.

E. **California Environmental Quality Act (CEQA).** This action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of Division 13 of the Public Resources Code in accordance with Section 13389 of the CWC.

F. **Technology-based Effluent Limitations***.* Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (CFR)[1] require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at Part 133. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

[1] All further statutory references are to title 40 of the Code of Federal Regulations unless otherwise indicated.

G. **Water Quality-based Effluent Limitations.** Section 301(b) of the CWA and section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The Regional Water Board has considered the factors listed in CWC Section 13241 in establishing these requirements. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in the Fact Sheet.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) EPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided in 40 CFR section 122.44(d)(1)(vi).

H. **Water Quality Control Plans.** The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised September 2004), for the Sacramento River and San Joaquin River Basins* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters of the Basins. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Beneficial uses applicable to Old River and the Sacramento-San Joaquin Delta downstream of the discharge as identified in Table II-1 of the Basin Plan are as follows:

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	**Old River**	Existing: Municipal and domestic supply (MUN), agricultural supply and stock watering (AGR), industrial process water supply (PROC), industrial service supply (IND), water contact recreation (REC-1), other non-contact water recreation (REC-2), warm freshwater aquatic habitat (WARM), cold freshwater aquatic habitat (COLD), warm and cold fish migration habitat (MIGR), warm spawning habitat (SPAWN), wildlife habitat (WILD), and navigation (NAV). Intermittent: None Potential: None

The State Water Board adopted a *Water Quality Control Plan for Control of Temperature in the Coastal* and *Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for inland surface waters.

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.).*" The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The listing for the western portion Sacramento-San Joaquin Delta waterways includes: diazinon and chlorpyrifos, organo-chlorine Group A pesticides, DDT, mercury, electrical conductivity, and unknown toxicity. The listing for Old River between the San Joaquin River and the Delta-Mendota Canal also includes dissolved oxygen deficiencies.

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

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About 40 criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR, which adopted new water quality criteria and also incorporated the NTR criteria that were applicable in California. The CTR was amended on February 13, 2001. These rules contain water quality criteria for priority pollutants.

J. **State Implementation Policy.** On March 2, 2000, State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP*).* The SIP became effective

on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Boards in their basin plans, with the exception of the provision on alternate test procedures for individual discharges that have been approved by USEPA Regional Administrator. The alternate test procedures provision was effective on May 22, 2000. The SIP became effective on May 18, 2000. The SIP includes procedures for determining the need for and calculating WQBELs and requires dischargers to submit data sufficient to do so.

K. **Compliance Schedules and Interim Requirements.** In general, an NPDES permit must include final effluent limitations that are consistent with Clean Water Act section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board has concluded that where the Regional Water Board's Basin Plan allows for schedules of compliance and the Regional Water Board is newly interpreting a narrative standard, it may include schedules of compliance in the permit to meet effluent limits that implement a narrative standard. See In the Matter of Waste Discharge Requirements for Avon Refinery (State Board Order WQ 2001-06 at pp. 53-55). See also Communities for a Better Environment et al. v. State Water Resources Control Board, 34 Cal.Rptr.3d 396, 410 (2005). The Basin Plan for the Sacramento and San Joaquin Rivers includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives that are adopted after the date of adoption of the Basin Plan, which was September 25, 1995 (See Basin Plan at page IV-16). Consistent with the State Water Board's Order in the CBE matter, the Regional Water Board has the discretion to include compliance schedules in NPDES permits when it is including an effluent limitation that is a "new interpretation" of a narrative water quality objective. This conclusion is also consistent with the United States Environmental Protection Agency policies and administrative decisions. See, e.g., Whole Effluent Toxicity (WET) Control Policy. The Regional Water Board, however, is not required to include a schedule of compliance, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Basin Plan, should consider feasibility of achieving compliance, and must impose a schedule that is as short as practicable to achieve compliance with the objectives, criteria, or effluent limit based on the objective or criteria.

For CTR constituents, Section 2.1 of the SIP provides that, based on a discharger's request and demonstration that it is infeasible for an existing discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion, compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or May 18, 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation that exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may

also be granted to allow time to implement a new or revised water quality objective. This Order includes compliance schedules and interim effluent limitations. A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) is included in the Fact Sheet (Attachment F).

L. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16. Resolution 68-16 is consistent withthe federal antidegradation policy, where the federal policy applies under federal law. Resolution 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed in detail in the Fact Sheet (Attachment F, Section III.A.4.) the discharge is consistent with the antidegradation provision of 40 CFR section 131.12 and State Water Board Resolution 68-16.

M. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised State and Tribal water quality standards (WQS) become effective for CWA purposes (40 CFR 131.21, 65 FR 24641, April 27, 2000). Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

N. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD_5 and TSS. The water quality-based effluent limitations consist of restrictions on pathogens. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. These limitations are more stringent than required by the CWA. Specifically, this Order includes effluent limitations for BOD, TSS, and pathogens that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in the Fact Sheet. In addition, the Regional Water Board has considered the factors in Water Code section 13241 in establishing these requirements.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR section 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. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to May 30, 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to May 30, 2000, but not approved by USEPA before that date, are nonetheless "*applicable water quality standards for purposes of the [Clean Water] Act*" pursuant to 40 CFR section 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

P. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR 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. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

Q. **Monitoring and Reporting.** Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

R. **Standard and Special Provisions.** Standard Provisions, which apply to all NPDES permits in accordance with section 122.41, and additional conditions applicable to specified categories of permits in accordance with section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under section 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet (Attachment F).

S. **Notification of Interested Parties.** The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity for a public hearing and to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet (Attachment F) of this Order.

T. **Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet (Attachment F) of this Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of wastewater at a location or in a manner different from that described in this Order is prohibited.

B. The by-pass or overflow of untreated wastewater or wastes to surface waters or surface water drainage courses is prohibited, except as allowed by Provision I.G. and I.H. of Attachment D, Federal Standard Provisions.

C. Neither the discharge nor its treatment shall create a nuisance or pollution as defined in CWC section 13050.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001 and Discharge Point 002

1. Final Effluent Limitations

Effective immediately, the discharge of treated wastewater shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E, Section IV)

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 4:

Table 4. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	--	6.5	8.5
Aluminum (total recoverable)	µg/L	462	--	755	--	--
Copper (total recoverable)[1]	µg/L	9.1	--	10.4	--	--
Iron (total recoverable)	µg/L	--	--	300	--	--
Dichlorobromomethane	µg/L	6.8	--	9.5	--	--
Chlorodibromomethane	µg/L	3.6	--	7.6	--	--

[1] This Order includes interim effluent limitations for copper (Section IV.A5.e.) Effective immediately, the interim effluent limitations shall apply in lieu of final effluent limitations for copper. The final effluent limitations for copper become effective when the Discharger complies with Special Provisions VI.C.4.b. or May 18, 2010, whichever is sooner.

b. **Percent Removal.** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.

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

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

d. **Temperature.** The maximum temperature of the discharge shall not exceed the natural receiving water temperature by more than 20°F.

e. **Total Recoverable Aluminum.** For a calendar year, the annual average total recoverable aluminum concentration in the effluent shall not exceed 200 µg/L.

f. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

i. 0.01 mg/L, as a 4-day average;
ii. 0.02 mg/L, as a 1-hour average;

g. **Total Coliform Organisms[2].** Effluent total coliform organisms shall not exceed:

i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median;
ii. 23 MPN/100 mL, more than once in any 30-day period; and
iii. 240 MPN/100 mL, at any time.

h. **Dissolved Oxygen (DO).** The daily average effluent DO concentration shall not be less than 5.0 mg/L.

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

j. **Electrical Conductivity.** The electrical conductivity in the discharge shall not exceed a monthly average of 700 µmhos/cm (April 1 to August 31) and a monthly average of 1000 µmhos/cm (September 1 to March 31), if: (1) the Discharger fails to submit a Salinity Plan to reduce its salinity impacts to the Southern Delta, including a schedule, to comply with conditions (1) – (3) below to the Regional Water Board within six months of the effective date of this permit, or (2) the Discharger fails to timely implement the Salinity Plan upon the Regional Water Board's approval. The proposed Salinity Plan will be circulated for no less than 30 days of public comment prior to the Regional Water Board's consideration of the Salinity Plan, and the Regional Water Board may revise the Salinity Plan prior to approving it.

1) The Discharger implements all reasonable steps to obtain alternative, lower salinity water supply sources; and

2) The Discharger develops and implements a salinity source control program that will identify and implement measures to reduce salinity in discharges from residential, commercial, industrial and infiltration sources in an effort to meet the interim salinity goal of a maximum 500 umhos/cm electrical

[2] This Order includes interim effluent limitations for total coliform organisms (Section IV.A.5.c.) Effective immediately, the interim effluent limitations shall apply in lieu of final effluent limitations for total coliform organisms. The final effluent limitations for total coliform organisms become effective when the Discharger complies with Special Provisions VI.C.4.b. or August 1, 2008, whichever is sooner.

conductivity increase over the weighted average electrical conductivity of the City of Tracy's water supply; and

3) The Discharger participates financially in the development of the Central Valley Salinity Management Plan at a level commensurate with its contributions of salinity to the Southern Delta.

Upon determination by the Regional Water Board that the Discharger has materially failed to comply with the approved Salinity Plan due to circumstances within its control, the final effluent limitations for electrical conductivity shall become effective immediately.

2. Final Effluent Limitations (9 mgd)

Effective immediately[3] and until the Discharger complies with Special Provisions VI.C.4.b., the discharge of treated wastewater shall maintain compliance with the following effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E, Section IV)

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 5:

Table 5. Effluent Limitations (9 mgd)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C	mg/L	10	15	20	--	--
	lbs/day[1]	751	1126	1501	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	751	1126	1501	--	--
Ammonia (as N)	mg/L	1.3	--	2.1	--	--
	lbs/day [1]	98	--	158	--	--
Nitrate (as N)	mg/L	10	--	--	--	--
Nitrite (as N)	mg/L	1	--	--	--	--

[1] Based on a design flow of 9 mgd (see Section VII.F. for procedures for compliance determination)

b. **Average Daily Discharge Flow.** The Average Daily Discharge Flow shall not exceed 9.0 million gallons per day.

[3] This Order includes interim effluent limitations for ammonia, BOD_5 and Total Suspended Solids (TSS) (Section IV.A5.a.). Effective immediately, the interim effluent limitations shall apply in lieu of final effluent limitations for ammonia, nitrate, nitrite, BOD_5 and TSS. The final effluent limitations for ammonia, nitrate, nitrite, BOD_5 and TSS become effective when the Discharger complies with Special Provisions VI.C.4.b. or August 1, 2008, whichever is sooner.

3. Final Effluent Limitations (10.8 mgd)

Effective upon compliance with **Special Provisions VI.C.4.b**. and until compliance with **Special Provisions VI.C.4.c.**, the permitted Average Daily Discharge Flow is increased to 10.8 mgd. The discharge of treated wastewater shall maintain compliance with the effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E, Section IV)

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 6:

Table 6: Effluent Limitations (10.8 mgd)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C	mg/L	10	15	20	--	--
	lbs/day[1]	900	1351	1801	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	900	1351	1801	--	--
Ammonia (as N)	mg/L	1.3	--	2.1	--	--
	lbs/day[1]	117	--	189	--	--
Nitrate (as N)	mg/L	10	--	--	--	--
Nitrite (as N)	mg/L	1	--	--	--	--

[1] Based on a design flow of 10.8 mgd (see Section VII.F. for procedures for compliance determination)

b. **Average Daily Discharge Flow.** The Average Daily Discharge Flow shall not exceed 10.8 million gallons per day.

4. Final Effluent Limitations (16 mgd)

Effective upon compliance with Special Provisions VI.C.4.c., the permitted Average Daily Discharge Flow is increased to 16 mgd. The discharge of treated wastewater shall maintain compliance with the effluent limitations at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E, Section IV)

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 7:

Table 7: Effluent Limitations (16 mgd)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C	mg/L	10	15	20	--	--
	lbs/day[1]	1334	2002	2669	--	--
Total Suspended Solids	mg/L	10	15	20	--	--
	lbs/day[1]	1334	2002	2669	--	--
Ammonia (as N)	mg/L	1.3	--	2.1	--	--
	lbs/day[1]	174	--	280	--	--
Nitrate (as N)	mg/L	10	--	--	--	--
Nitrite (as N)	mg/L	1	--	--	--	--

[1] Based on a design flow of 16 mgd (see Section VII.F. for procedures for compliance determination)

b. **Average Daily Discharge Flow.** The Average Daily Discharge Flow shall not exceed 16 mgd.

5. **Interim Effluent Limitations**

a. **Effective immediately and ending on July 31, 2008, or upon compliance with Special Provisions VI.C.4.b., whichever is sooner**, the discharge of treated effluent shall maintain compliance with the effluent limitations specified in Table 8 at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E). These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters during the time period indicated in this Order.

Table 8: Interim Effluent Limitations (non-CTR constituents)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C	mg/L	20	40	50	--	--
	lbs/day[1]	1501	3002	3753	--	--
Total Suspended Solids	mg/L	20	40	50	--	--
	lbs/day[1]	1501	3002	3753	--	--
Ammonia (as N)	mg/L	--	--	42	--	--
	lbs/day[1]	--	--	3156	--	--

[1] Based on a design treatment capacity of 9 mgd (see Section VII.F. for procedures for compliance determination)

b. **Effective immediately and ending on July 31, 2008, or upon compliance with Special Provisions VI.C.4.b., whichever is sooner**, total coliform organisms shall not exceed 23 MPN/100 mL, as a 30-day median, and shall not

exceed 500 MPN/100 mL, as a daily maximum. This interim effluent limitation shall apply in lieu of Final Effluent Limitations IV.A.1.g.

c. **Effective immediately**, the total monthly mass discharge of total mercury shall not exceed 0.042 pounds/month. This interim performance-based limitation shall be in effect until the Regional Water Board establishes final effluent limitations after adoption of the final mercury Delta TMDL.

d. **Effective immediately and until May 18, 2010,** the discharge of treated effluent shall maintain compliance with the effluent limitations specified in Table 9 at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E, Section IV). These interim effluent limitations shall apply in lieu of Final Effluent Limitations IV.A.1.a. for the same parameters.

Table 9: Interim Effluent Limitations (CTR constituents)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Copper (total recoverable)	µg/L	--	--	19	--	--
	lbs/day[1]	--	--	1.4	--	--

[1] Based on a design treatment capacity of 9 mgd (see Section VII.F. for procedures for compliance determination)

e. **Effective immediately**, the total annual mass discharge of total dissolved solids shall not exceed 13,688 tons/year. This interim performance-based limitation shall be in effect until the Regional Water Board establishes final effluent limitations for salinity.

B. Land Discharge Specifications (Set forth in WDR Order No. R5-2007-0038)

C. Reclamation Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in Old River:

1. **Dissolved Oxygen.** Concentrations of dissolved oxygen to fall below 5 mg/L.

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

3. **pH.** Changes in normal ambient pH levels shall not exceed 0.5 units on a 30-day average.

4. **Temperature.**

   a. The creation of a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of the river channel at any point.

   b. A surface water temperature rise greater than 4°F above the natural temperature of the receiving water at any time or place.

5. **Settleable Matter.** Substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

6. **Radioactivity.**

   a. Radionuclides to be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life.

   b. 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 CCR.

7. **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.

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

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

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

11. **Taste and Odor.** Taste- or odor-producing substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin or to domestic or municipal water supplies.

12. **Turbidity. Effective immediately and ending when turbidity operational requirements become effective (Special Provisions VI.C.5.a),** the discharge shall not cause changes in turbidity that cause nuisance or adversely affect beneficial uses in Old River. Turbidity attributable to controllable water quality factors may not exceed:

    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.

13. **Pesticides.**

a. Pesticides in individual or combined concentrations that adversely affect beneficial uses.

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 Board Resolution No. 68-16 and 40CFR 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

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

15. Esthetically undesirable discoloration.

16. Fungi, slimes, or other objectionable growths

B. Groundwater Limitations (Set forth in WDR Order No. R5-2007-0038)

VI. PROVISIONS

A. Standard Provisions

1. **Federal Standard Provisions.** The Discharger shall comply with all Federal Standard Provisions included in Attachment D of this Order.

2. **Regional Water Board Standard Provisions.** The Discharger shall comply with the following Regional Water Board standard provisions:

a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by the California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, Division 3, Chapter 26.

b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

   i. Violation of any term or condition contained in this Order;
   ii. Obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
   iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
   iv. A material change in the character, location, or volume of discharge.

   The causes for modification include:

   i. **New regulations.** New regulations have been promulgated under section 405(d) of the Clean Water Act, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

   ii. **Land application plans.** When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

   iii. **Change in sludge use or disposal practice.** Under 40 CFR section 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

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

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

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

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

   i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

ii. Controls any pollutant limited in the Order.

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

e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal, and adequate public notification to downstream water agencies or others who might contact the non-complying discharge.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. The discharge of any radiological, chemical or biological warfare agent or high-level, radiological waste is prohibited.

i. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

j. Safeguard to electric power failure:

i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, failure of electric power, the discharge shall comply with the terms and conditions of this Order.

ii. Upon written request by the Regional Water Board the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past five years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Regional Water Board.

iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Regional Water Board not approve the existing safeguards, the Discharger shall, within ninety (90) days of having been advised in writing by the Regional Water Board that the existing

safeguards are inadequate, provide to the Regional Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of compliance shall, upon approval of the Regional Water Board, become a condition of this Order.

k. The Discharger, upon written request of the Regional Water Board, shall file with the Regional Water Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events.

   The technical report shall:

   i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

   ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

   iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

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

l. A publicly owned treatment works (POTW) whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the Discharger shall notify the Regional Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies, and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Regional Water Board may extend the time for submitting the report.

m. The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

n. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

o. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the CWC, including, but not limited to, sections 13385, 13386, and 13387.

p. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Regional Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within five days, unless the Regional Water Board waives confirmation. The written notification shall include the information required by Attachment D, Section V.E.1 [40 CFR section 122.41(l)(6)(i)].

q. Prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (CWC section 1211)

r. The Discharger shall file with the Regional Water Board technical reports on self-monitoring performed according to the detailed specifications contained in the Monitoring and Reporting Program attached to this Order.

B. Monitoring and Reporting Program Requirements

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

2. Within **60 days** of permit adoption, the Discharger shall submit a report outlining minimum levels, method detection limits, and analytical methods for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in Section 2.3 and 2.4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of*

California, adopted 2 March 2000 by the State Water Resources Control Board. All peaks identified by analytical methods shall be reported.

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including:

   i. If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

   ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

b. **Dissolved Oxygen (DO) TMDL.** In January 2005, the Regional Water Board adopted a TMDL for DO in the Stockton Deep Water Ship Channel (DWSC). At this time it is unknown if the DO TMDL will affect the discharge from the Facility. This Order may be reopened in the event the TMDL requires load allocations for the Facility's discharge.

c. **Mercury.** If mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted, this Order shall be reopened and the interim mass effluent limitation modified (higher or lower) or an effluent concentration limitation imposed. If the Regional Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, then this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program for the Discharger.

d. **Pollution Prevention.** This Order requires the Discharger prepare pollution prevention plans following CWC section 13263.3(d)(3) for copper, salinity, and mercury. Based on a review of the pollution prevention plans, this Order may be reopened for addition and/or modification of effluent limitations and requirements for these constituents.

e. **Whole Effluent Toxicity.** As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

f. **Dilution Credits.** Dilution has not been granted in this Order for most constituents[4], thus end-of-pipe effluent limitations are required for most constituents where reasonable potential is demonstrated. As discussed in the Attachment F, Section IV.C.2.b., the Discharger has not provided adequate information for the allowance of dilution credits, most importantly, real-time flow monitoring data in the vicinity of the discharge. Should a real-time flow monitoring station be installed in the vicinity of the discharge, and if real-time flow monitoring data from the station and supporting mathematical modeling analysis demonstrates that sufficient dilution flows are available in Old River, this Order may be reopened to allow dilution credits based on the real-time flow monitoring data.

g. **Water Effects Ratios (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for copper, iron, manganese, and aluminum. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

h. **Human Health Dilution Credits.** Based on performance of the Facility after the Phase 1 improvements are complete, it may not be necessary to grant the entire assimilative capacity of the receiving water for CTR human carcinogens. Therefore, to ensure compliance with the Antidegradation Policy, this Order may be reopened to lower the allowable human health dilution credits for development of effluent limitations for CTR human carcinogens, such that the CTR human health water quality objectives would be met in the receiving water when effluent concentrations are at estimated maximum concentrations. Any change in allowable dilution credits would necessitate modifications of the applicable effluent limitations.

i. **Central Valley Drinking Water Policy.** If water quality objectives for organic carbon, nutrients, salinity, bromide, and/or pathogens are adopted to protect drinking water supplies in the Central Valley, this Order may be reopened and modified to include appropriate effluent limitations, as necessary, to require compliance with these objectives.

j. **Thermal Impacts.** As described in the Final EIR for the expansion of the Facility, the Discharger has proposed mitigation measures to ensure that any thermal impacts will be less than significant. The Discharger proposes to conduct four years of intensive monitoring of thermal impacts in the vicinity of the outfall and develop an appropriate range of mitigation measures, if necessary. Furthermore, as required by other regulations, the Discharger is required to conduct consultations with the United States Fish and Wildlife Services, National

[4] Harmonic dilution has been granted for effluent limitations developed for human carcinogens.

Marine Fisheries Service, and California Department of Fish and Game to develop mitigation measures for the protection of aquatic species, including rare, threatened, and endangered species protected under the Endangered Species Act. This Order may be reopened should the thermal studies conducted by the Discharger and/or the consultations result in the need for new or revised temperature effluent limitations or requirements.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). Furthermore, this Provision requires the Discharger, if applicable, to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the toxicity numeric monitoring trigger established in this Provision, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE work plan, and take actions to mitigate the impact of the discharge and prevent reoccurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of whole effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes requirements for the Discharger to develop and submit a TRE Workplan and also procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Toxicity Reduction Evaluation (TRE) Workplan. Within 90 days of the effective date of this Order,** the Discharger shall submit to the Regional Water Board a TRE Workplan for approval by the Executive Officer. The TRE Workplan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Workplan shall be developed in accordance with EPA guidance[5] and be of adequate detail to allow the Discharger to immediately initiate a TRE as required in this Provision.

ii. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, and the testing meets all test acceptability criteria, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. WET testing results exceeding the monitoring trigger during accelerated monitoring demonstrates a pattern of toxicity and requires the Discharger to initiate a TRE to address the effluent toxicity.

iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is > **1 TUc** (where TUc = 100/NOEC). The monitoring trigger is not an effluent

[5] See Attachment F, Section VII.B.2.a. for a list of EPA guidance documents that must be considered in development of the TRE Workplan.

limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.

iv. **Accelerated Monitoring Specifications.** If the monitoring trigger is exceeded during regular chronic toxicity testing, within 14-days of notification by the laboratory of the test results, the Discharger shall initiate accelerated monitoring. Accelerated monitoring shall consist of four (4) chronic toxicity tests in a six-week period (i.e. one test every two weeks) using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

b) If the source(s) of the toxicity is easily identified (i.e. temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of the test results exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Regional Water Board including, at minimum:

1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including TRE WET monitoring schedule;

2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

3) A schedule for these actions.

b. **Best Practicable Treatment or Control (BPTC) of Salinity**. The Discharger shall submit to the Regional Water Board for approval by the Executive Officer, a work plan, including a time schedule for a comprehensive technical evaluation of the Facility's waste treatment and control of salinity, to determine BPTC of its discharge to Old River, to meet the requirements of State Water Board Resolution 68-16. The technical report describing the work plan and schedule shall contain a preliminary evaluation and propose a time schedule for completing the comprehensive technical evaluation. To comply with Resolution 68-16, the treatment or control of discharges of waste to waters of the state must be sufficient to provide the minimum degradation of such waters that is feasible

and consistent with the maximum benefit to the people of the State, but in no case can the discharge cause the exceedance of applicable water quality objectives.

Following completion of the evaluation, the Discharger shall submit to the Regional Water Board a technical report describing the evaluation's results and critiquing the treatment facility with respect to BPTC. Where deficiencies are documented, the technical report shall provide recommendations for necessary modifications (e.g., new or revised salinity source control measures, facility component upgrade and retrofit) to achieve BPTC and identify the source(s) of funding and proposed schedule for modifications. The schedule shall be as short as practicable. The technical report shall include specific methods the Discharger proposes as a means to measure processes and assure continuous optimal performance of BPTC measures. The Discharger shall comply with the following compliance schedule in implementing the work required by this Provision:

Task	Compliance Date
1 - Submit technical report: work plan and schedule for comprehensive evaluation	**Within 6 months** following Order adoption
2 - Commence comprehensive evaluation	**30 days** following Executive Officer approval of Task 1.
3 - Complete comprehensive evaluation	As established by Task 1 and/or 2 years following Task 2, whichever is sooner
4 - Submit technical report: comprehensive evaluation results	**60 days** following completion of Task 3.
5 - Submit annual report describing the overall status of BPTC implementation over the past reporting year	To be submitted in accordance with the MRP (Attachment E, Section X.D.1.)

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan for Mercury.** The Discharger shall prepare and implement a pollution prevention plan for mercury in accordance with CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet, Attachment F, Section VII.B.3.c. A work plan and time schedule for preparation of the pollution prevention plan shall be completed and submitted to the Regional Water Board **within 6 months of the effective date of this Order** for approval by the Executive Officer. The Pollution Prevention Plan shall be completed and submitted to the Regional Water Board **within two (2) years following work plan approval by the Executive Officer**, and progress reports shall be submitted in accordance with the Monitoring and

Reporting Program (Attachment E, Section X.D.1.). The Pollution Prevention Plan required herein is not incorporated by reference into this Order.

b. **Pollution Prevention Plan for Salinity.** The Discharger shall prepare and implement a pollution prevention plan for salinity in accordance with CWC section 13263.3(d)(3) to reduce the salinity of its discharge. The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet, Attachment F, Section VII.B.3.c. A work plan and time schedule for preparation of the pollution prevention plan shall be completed and submitted to the Regional Water Board **within 6 months of the effective date of this Order** for approval by the Executive Officer. The Pollution Prevention Plan shall be completed and submitted to the Regional Water Board **within two (2) years following work plan approval by the Executive Officer**, and progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.). The Pollution Prevention Plan required herein is not incorporated by reference into this Order.

c. **Salinity Reduction Goal.** The Discharger shall provide to the Regional Water Board annual reports demonstrating reasonable progress in the reduction of salinity in its discharge to Old River. The Regional Water Board finds that a monthly average salinity of 1350 µmhos/cm as electrical conductivity (EC) is a reasonable intermediate goal that can be achieved in this permit term. The annual reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

4. Compliance Schedules

a. **Title 22 Disinfection Requirements.** By **August 1, 2008**, or upon compliance with Special Provisions VI.C.4.b., whichever is sooner, wastewater discharged to Old River shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DHS reclamation criteria, Title 22 CCR, Division 4, Chapter 3, (Title 22) or equivalent. Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

b. **Phase 1 Improvements.** The Discharger has requested an expansion of allowable flows to be discharged to Old River. The permitted average daily discharge flow may increase to 10.8 mgd upon compliance with the following conditions:

i. **Effluent and Receiving Water Limitation Compliance.** The discharge shall demonstrate compliance with Final Effluent Limitations IV.A.1. Interim Effluent Limitations IV.A.5.d. and f., and Receiving Water Limitations V.A.

ii. **Best Practicable Treatment or Control (BPTC) of Salinity.** The Discharger shall demonstrate compliance with the time schedule to submit a technical report evaluating BPTC of salinity in its discharge, as required by Special Provisions VI.C.2.b.

iii. **Salinity Reductions.** The Discharger shall demonstrate progress in reducing the salinity in its discharge. Progress must be demonstrated by maintaining compliance with the time schedule to develop and implement a pollution

prevention plan for salinity (Special Provisions VI.C.3.b.) and through documentation of efforts to meet the salinity goal identified in Special Provisions VI.C.3.c.

iv. **Facility Improvements.** The Discharger shall have completed construction of the Phase 1 improvements, as identified in the Fact Sheet (Attachment F, Section II.E.).

v. **Request for Increase.** The Discharger shall submit to the Regional Water Board a request for an increase in the permitted discharge flow rate, which demonstrates compliance with items i. through iv. above. The increase in the permitted discharge flow rate shall not be effective until the Executive Officer verifies compliance with Special Provisions VI.C.4.b. and approves the Discharger's request.

c. **Phases 2-4 Improvements.** The Discharger has requested an expansion of allowable flows to be discharged to Old River. The permitted average daily discharge flow may increase to 16 mgd upon compliance with the following conditions:

i. **Effluent Limitation and Receiving Water Compliance.** The discharge shall demonstrate compliance with Final Effluent Limitations IV.A.1., Interim Effluent Limitations IV.A.5.d., and Receiving Water Limitations V.A. Prior to increasing the allowable discharge flow rate to 16 mgd, this Order will be reopened to modify Final Effluent Limitations IV.A.1. to include an effluent limitation for electrical conductivity that fully protects the beneficial use of agricultural supply.

ii. **Thermal Plan Compliance.** The discharge shall be in compliance with Receiving Water Limitations V.A.4. or the Discharger shall have obtained an exception to the Thermal Plan, which would necessitate modification of the effluent and/or receiving water limitations for temperature.

iii. **Facility Improvements.** The Discharger shall have completed construction of its Phase 1, 2, 3, and 4 improvements, as identified in the Fact Sheet (Attachment F, Section II.E.).

iv. **Request for Increase.** The Discharger shall submit to the Regional Water Board a request for an increase in the permitted discharge flow rate, which demonstrates compliance with items i. through iii., above. The increase in the permitted discharge flow rate shall not be effective until the Executive Officer verifies compliance with Special Provisions VI.C.4.c. and approves the Discharger's request.

d. **Compliance Schedules for Final Effluent Limitations for Copper**

i. **By May 18, 2010,** the Discharger shall comply with the final effluent limitations for copper. On November 15, 2005, the Discharger submitted a compliance schedule justification for copper. The compliance schedule justification included all items specified in Paragraph 3, items (a) through (d), of section 2.1 of the SIP. As this compliance schedule is greater than one year, the Discharger shall submit annual progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.)

ii. **Corrective Action Plan/Implementation Schedule.** The Discharger shall submit to the Regional Water Board a corrective action plan and implementation schedule to assure compliance with the final effluent limitations for copper by **November 1, 2007**.

iii. **Pollution Prevention Plan.** The Discharger shall prepare a pollution prevention plan for copper, in accordance with CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet, Attachment F, Section VII.B.3.d. A work plan and time schedule for preparation of the pollution prevention plan shall be completed and submitted to the Regional Water Board **within 6 months of the effective date of this Order** for approval by the Executive Officer. The Pollution Prevention Plan shall be completed and submitted to the Regional Water Board **within two (2) years following work plan approval by the Executive Officer**, and progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.). The Pollution Prevention Plan required herein is not incorporated by reference into this Order.

iv. **Treatment Feasibility Study.** The Discharger is required to perform an engineering treatment feasibility study examining the feasibility, costs and benefits of different treatment options that may be required to remove copper from the discharge. A work plan and time schedule for preparation of the treatment feasibility study shall be completed and submitted to the Regional Water Board **within 6 months of the effective date of this Order** for approval by the Executive Officer. The treatment feasibility study shall be completed and submitted to the Regional Water Board **within two (2) years following work plan approval by the Executive Officer**, and progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

e. **Compliance Schedules for Final Effluent Limitations for Ammonia.** By **August 1, 2008**, or upon compliance with Special Provisions VI.C.4.b., whichever is sooner, the Discharger shall comply with the final effluent limitations for ammonia. Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

5. Construction, Operation and Maintenance Specifications

a. Turbidity. The Discharger shall operate the treatment system to ensure that the turbidity measured at M-001, as described in the MRP (Attachment E), shall not exceed:

i. 2 NTU, as a daily average;
ii. 5 NTU, more than 5% of the time within a 24-hour period; and
iii. 10 NTU, at any time.

6. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Requirements.

i. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or the U.S. Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the CWA.

ii. The Discharger shall enforce the Pretreatment Standards promulgated under sections 307(b), 307(c), and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR Part 403 including, but not limited to:

a) Adopting the legal authority required by 40 CFR 403.8(f)(1);

b) Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;

c) Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and

d) Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).

iii. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:

a) Wastes which create a fire or explosion hazard in the treatment works;

b) Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;

c) Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;

d) Any waste, including oxygen demanding pollutants (BOD, *etc*.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;

e) Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Regional Water Board approves alternate temperature limits;

f) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

g) Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and:

h) Any trucked or hauled pollutants, except at points predesignated by the Discharger.

iv. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:

a) Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or:

b) Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.

b. **Collection System.** On May 2, 2006, the State Water Board adopted State Water Board Order 2006-0003, a Statewide General WDR for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order 2006-0003 and any future revisions thereto, which are not incorporated herein.

Regardless of the coverage obtained under Order 2006-0003, the Discharger's collection system is part of the treatment system that is subject to this Order. As such, pursuant to federal regulations, the Discharger must properly operate and maintain its collection system [40 CFR section 122.41(e)], report any non-compliance [40 CFR section 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR. section 122.41(d)].

7. Other Special Provisions

a. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Regional Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Water Board and a statement. The statement shall comply with the signatory and certification requirements in the

Federal Standard Provisions (Attachment D, Section V.B.) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

VII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in Section IV of this Order will be determined as specified below:

A. **BOD and TSS Effluent Limitations** (Sections IV.A.1.b., IV.A.2.a.., IV.A.3.a.., IV.A.4.a., and IV.A.5.a.). Compliance with the final effluent limitations for BOD and TSS required in sections IV.A.1.b., IV.A.2.a.., IV.A.3.a.., IV.A.4.a., and IV.A.5.a.shall be ascertained by 24-hour composite samples. Compliance with effluent limitations IV.A.1.b. for percent removal shall be calculated using the arithmetic mean of 20°C BOD (5-day) and total suspended solids in effluent samples collected over a monthly period as a percentage of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period.

B. **Aluminum Effluent Limitations** (Sections IV.A.1.a.). Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by US EPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

C. **Total Mercury Mass Loading Effluent Limitations (Section IV.A.5.d.).** The procedures for calculating mass loadings are as follows:

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

D. **Total Coliform Organisms Effluent Limitations (Section IV.A.1.g.).** For each day that an effluent sample is collected and analyzed for total coliform organisms, the 7-day median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last seven days for which analyses have been completed. If the 7-day median of total coliform organisms exceeds a most probable number (MPN) of 2.2 per 100 milliliters, the

Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period.

E. **Average Daily Discharge Flow Effluent Limitations (Sections IV.A.2.b., IV.A.3.b., and IV.A.4.b.)**.. The Average Daily Discharge Flow represents the daily average flow when groundwater is at or near normal and runoff is not occurring. Compliance with the Average Daily Discharge Flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g. July, August, and September).

F. **Effluent Mass Limitations.** The effluent mass limitations contained in Final Effluent Limitations IV.A.2.a., IV.A.3.a., IV.A.4.a., and Interim Effluent Limitations IV.A.5.a. are based on the permitted average daily discharge flow, and calculated as follows:

Mass (lbs/day) = Flow (mgd) x Concentration (mg/L) x 8.34 (conversion factor)

If the effluent flow exceeds the permitted average daily discharge flow due to wet-weather storm events or when groundwater is above normal and runoff is occurring, the effluent mass limitations contained in Final Effluent Limitations IV.A.2.a., IV.A.3.a., IV.A.4.a., and Interim Effluent Limitations IV.A.5.a.shall not apply. Under these specific circumstances the effluent mass limitations shall be recalculated based on the wet weather effluent flow rate rather than the permitted average daily discharge flow.

G. **Total Residual Chlorine Effluent Limitations (Section IV.A.1.e.).** Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive.

H. **Total Dissolved Solids Annual Mass Loading Effluent Limitation (Section IV.A.5.f.).** The procedures for calculating mass loadings are as follows:

1. The total pollutant mass load for each individual calendar month shall be determined using an average of all concentration data collected that month and the corresponding total monthly flow. All monitoring data collected under the

monitoring and reporting program, pretreatment program and any special studies shall be used for these calculations.

2. Monthly mass loadings shall be calculated for each calendar month and reported with the monthly self-monitoring reports. The Discharger shall calculate the cumulative total of mass loadings for the calendar year (i.e. January through December) and submit with the annual report.

I. **Chronic Whole Effluent Toxicity Effluent Limitation.** Compliance with the accelerated monitoring and TRE/TIE provisions of Provision VI.C.2.a shall constitute compliance with effluent limitations IV.A.1.h for chronic whole effluent toxicity.

ATTACHMENT A – DEFINITIONS

Acute Toxic Unit (TU_a): the reciprocal of the effluent concentration that causes 50 percent of the organisms to die in an acute toxicity test ($TU_a = 100/LC_{50}$) (see LC_{50})

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL): the highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Practicable Treatment or Control (BPTC): BPTC is a requirement of State Water Resources Control Board Resolution 68-16 – "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (referred to as the "Antidegradation Policy"). BPTC is the treatment or control of a discharge necessary to assure that, "*(a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.*" Pollution is defined in CWC Section 13050(l). In general, an exceedance of a water quality objective in the Basin Plan constitutes "pollution".

Biosolids: sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities.

Chronic Toxic Unit (TU_c): the reciprocal of the effluent concentration that causes no observable effect on the test organisms in a chronic toxicity test ($TU_c = 100/NOEC$) (see NOEC)

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Effect Concentration (EC): a point estimate of the toxicant concentration that would cause an observable adverse effect (e.g. death, immobilization, or serious incapitation) in a given percent of the test organisms, calculated from a continuous model (e.g. Probit Model). EC_{25} is a point estimate of the toxicant concentration that would cause an observable adverse effect in 25 percent of the test organisms.

Inhibition Concentration (IC): a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g. reproduction or growth), calculated from a continuous model (e.g. Interpolation Method). IC_{25} is a point estimate of the toxicant concentration that would cause a 25 percent reduction in a non-lethal biological measurement.

Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

LC_{50}, Lethal Concentration, 50 percent: the toxic or effluent concentration that would cause death in 50 percent of the test organisms over a specified period of time.

LOEC, Lowest Observed Effect Concentration: the lowest concentration of an effluent or toxicant that results in adverse effects on the test organism (i.e. where the values for the observed endpoints are statistically different from the control).

Maximum Daily Effluent Limitation (MDEL): the highest allowable daily discharge of a pollutant.

NOEC, No Observed Effect Concentration: the highest tested concentration of an effluent or test sample whose effect is not different from the control effect, according to the statistical test used (see LOEC). The NOEC is usually the highest tested concentration of an effluent or toxic that causes no observable effects on the test organisms (i.e. the highest concentration of toxicity at which the values for the observed responses do not statistically differ from the controls).

Residual Sludge: sludge that will not be subject to further treatment at the Facility.

Sludge: the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes.

Solid Waste: grit and screening material generated during preliminary treatment.

Toxicity Test: the procedure using living organisms to determine whether a chemical or an effluent is toxic. A toxicity test measures the degree of the effect of a specific chemical or effluent on exposed test organisms.

Toxic Unit: the measure of toxicity in an effluent as determined by the acute toxic units (TU_a) or chronic toxic units (TU_c) measured. The larger the TU, the greater the toxicity.

FIGURE B-1
TOPOGRAPHIC MAP

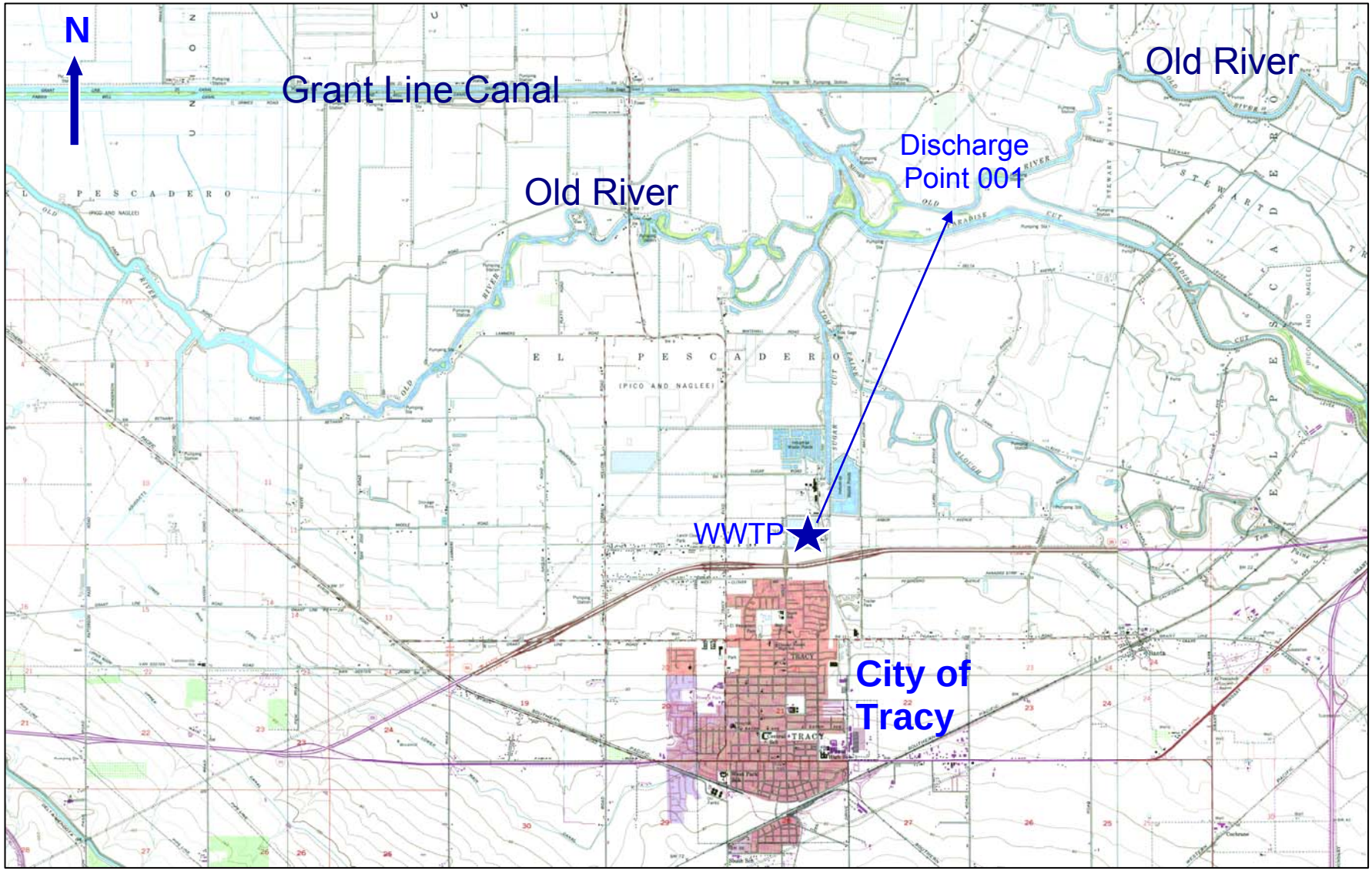


FIGURE C-1
MAIN WASTEWATER TREATMENT FACILITY
FLOW SCHEMATIC

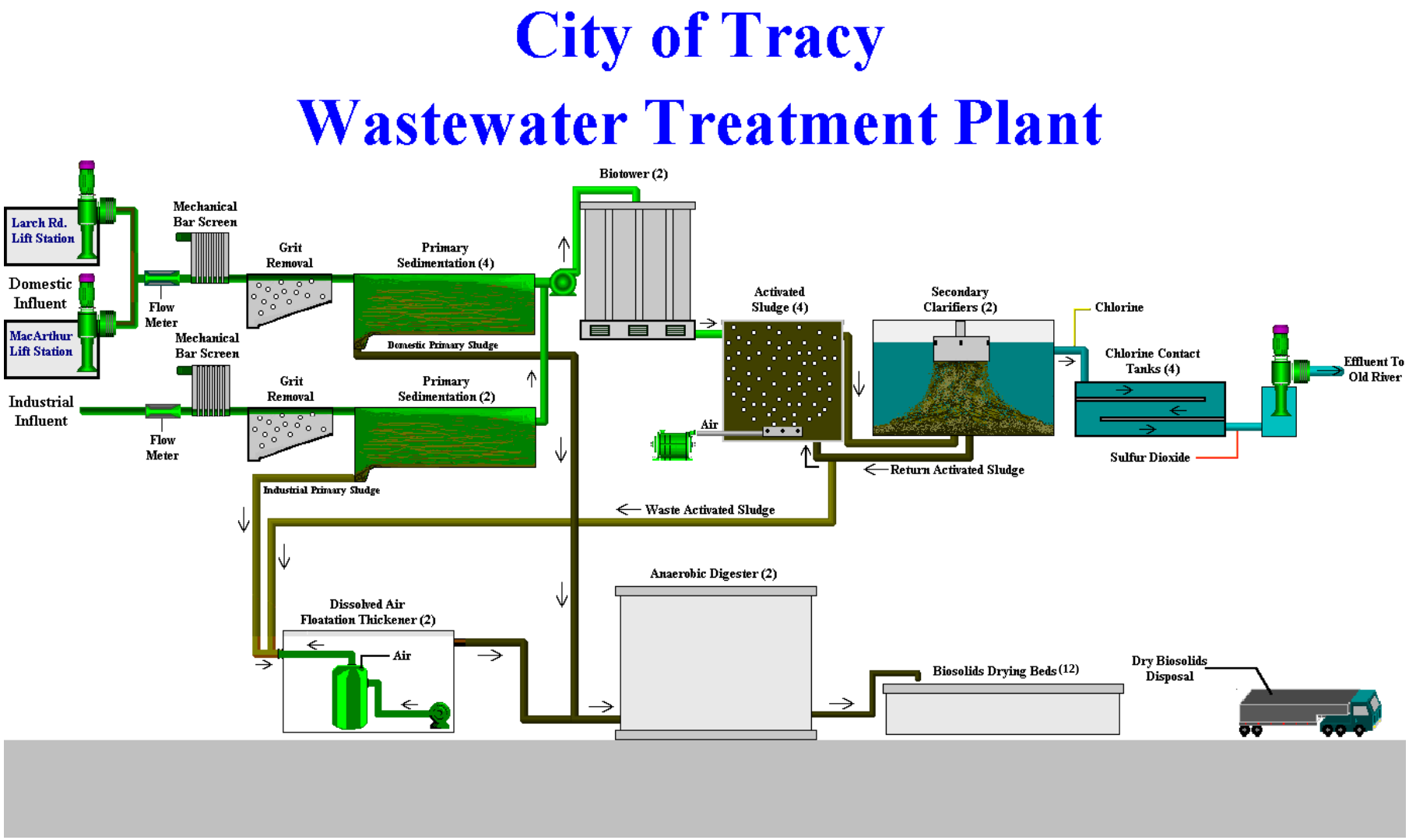
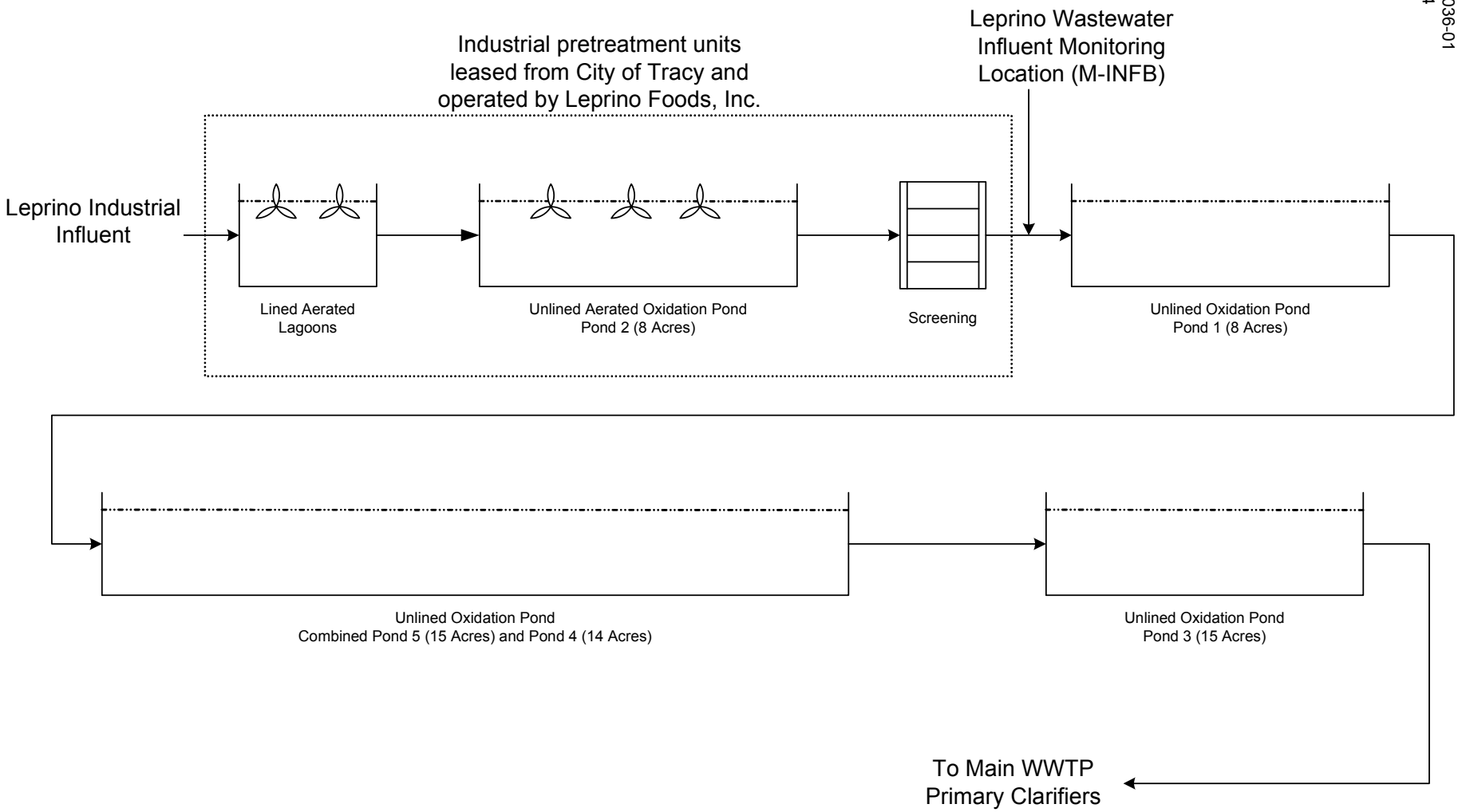


FIGURE C-2
INDUSTRIAL WASTEWATER FACILITY
FLOW SCHEMATIC



ATTACHMENT D – FEDERAL STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (CWC) and is grounds for enforcement action, for permit termination, revocation and reissuance, or denial of a permit renewal application [*40 CFR section 122.41(a)*].

2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not been modified to incorporate the requirement [*40 CFR section 122.41(a)(1)*].

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order [*40 CFR section 122.41(c)*].

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment [*40 CFR section 122.41(d)*].

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [*40 CFR section 122.41(e)*].

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges [*40 CFR section 122.41(g)*].

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations [*40 CFR section 122.5(c)*].

F. Inspection and Entry

The Discharger shall allow the Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [*40 CFR section 122.41(i)*] [*CWC 13383(c)*]:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [*40 CFR section 122.41(i)(1)*];

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [*40 CFR section 122.41(i)(2)*];

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [*40 CFR section 122.41(i)(3)*];

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the CWC, any substances or parameters at any location [*40 CFR section 122.41(i)(4)*].

G. Bypass

1. Definitions

   a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility [*40 CFR section 122.41(m)(1)(i)*].

   b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [*40 CFR section 122.41(m)(1)(ii)*].

2. Bypass not exceeding limitations – The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3 and I.G.5 below [*40 CFR section 122.41(m)(2)*].

3. Prohibition of bypass – Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless [*40 CFR section 122.41(m)(4)(i)*]:

    a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [*40 CFR section 122.41(m)(4)(A)*];

    b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [*40 CFR section 122.41(m)(4)(B)*]; and

    c. The Discharger submitted notice to the Regional Water Board as required under Standard Provision – Permit Compliance I.G.5 below [*40 CFR section 122.41(m)(4)(C)*].

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above [*40 CFR section 122.41(m)(4)(ii)*].

5. Notice

    a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [*40 CFR section 122.41(m)(3)(i)*].

    b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below [*40 CFR section 122.41(m)(3)(ii)*].

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [*40 CFR section 122.41(n)(1)*].

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph H.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and

before an action for noncompliance, is final administrative action subject to judicial review [*40 CFR section 122.41(n)(2)*].

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [*40 CFR section 122.41(n)(3)*]:

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset [*40 CFR section 122.41(n)(3)(i)*];

   b. The permitted facility was, at the time, being properly operated [*40 CFR section 122.41(n)(3)(i)*];

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b [*40 CFR section 122.41(n)(3)(iii)*]; and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above [*40 CFR section 122.41(n)(3)(iv)*].

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [*40 CFR section 122.41(n)(4)*].

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [*40 CFR section 122.41(f)*].

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [*40 CFR section 122.41(b)*].

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the CWC [*40 CFR section 122.41(l)(3)*] [*40 CFR section 122.61*].

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [*40 CFR section 122.41(j)(1)*].

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order [*40 CFR section 122.41(j)(4)*] [*40 CFR section 122.44(i)(1)(iv)*].

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time [*40 CFR section 122.41(j)(2)*].

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements [*40 CFR section 122.41(j)(3)(i)*];

2. The individual(s) who performed the sampling or measurements [*40 CFR section 122.41(j)(3)(ii)*];

3. The date(s) analyses were performed [*40 CFR section 122.41(j)(3)(iii)*];

4. The individual(s) who performed the analyses [*40 CFR section 122.41(j)(3)(iv)*];

5. The analytical techniques or methods used [*40 CFR section 122.41(j)(3)(v)*]; and

6. The results of such analyses [*40 CFR section 122.41(j)(3)(vi)*].

C. Claims of confidentiality for the following information will be denied [*40 CFR section 122.7(b)*]:

1. The name and address of any permit applicant or Discharger [*40 CFR section 122.7(b)(1)*]; and

2. Permit applications and attachments, permits and effluent data [*40 CFR section 122.7(b)(2)*].

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, SWRCB, or USEPA within a reasonable time, any information which the Regional Water Board, SWRCB, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, SWRCB, or USEPA copies of records required to be kept by this Order [*40 CFR section 122.41(h)*] [*CWC 13267*].

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, SWRCB, and/or USEPA shall be signed and certified in accordance with paragraph (2.) and (3.) of this provision [*40 CFR section 122.41(k)*].

2. All permit applications shall be signed as follows:

   a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [*40 CFR section 122.22(a)(1)*];

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively [*40 CFR section 122.22(a)(2)*]; or

   c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA) [*40 CFR section 122.22(a)(3)*].

3. All reports required by this Order and other information requested by the Regional Water Board, SWRCB, or USEPA shall be signed by a person described in

paragraph (b) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in paragraph (2.) of this provision [*40 CFR section 122.22(b)(1)*];

b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) [*40 CFR section 122.22(b)(2)*]; and

c. The written authorization is submitted to the Regional Water Board, SWRCB, or USEPA [*40 CFR section 122.22(b)(3)*].

4. If an authorization under paragraph (3.) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (3.) of this provision must be submitted to the Regional Water Board, SWRCB or USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR section 122.22(c)].

5. Any person signing a document under paragraph (2.) or (3.) of this provision shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [*40 CFR section 122.22(d)*].

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order [*40 CFR section 122.41(l)(4)*].

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or SWRCB for reporting results of monitoring of sludge use or disposal practices [*40 CFR section 122.41(l)(4)(i)*].

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board [*40 CFR section 122.41(l)(4)(ii)*].

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [*40 CFR section 122.41(l)(4)(iii)*].

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [*40 CFR section 122.41(l)(5)*].

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [*40 CFR section 122.41(l)(6)(i)*].

2. The following shall be included as information that must be reported within 24 hours under this paragraph [*40 CFR section 122.41(l)(6)(ii)*]:

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order [*40 CFR section 122.41(l)(6)(ii)(A)*].

   b. Any upset that exceeds any effluent limitation in this Order [*40 CFR section 122.41(l)(6)(ii)(B)*].

   c. Violation of a maximum daily discharge limitation [*40 CFR section 122.41(l)(6)(ii)(C)*].

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [*40 CFR section 122.41(l)(6)(iii)*].

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [*40 CFR section 122.41(l)(1)*]:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR section 122.29(b) [*40 CFR section 122.41(l)(1)(i)*]; or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR Part 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1) [*40 CFR section 122.41(l)(1)(ii)*].

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [*40 CFR section 122.41(l)(1)(iii)*].

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or SWRCB of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements [*40 CFR section 122.41(l)(2)].*

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C., V.D., and V.E., above, at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E [*40 CFR section 122.41(l)(7)*].

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, SWRCB, or USEPA, the Discharger shall promptly submit such facts or information [*40 CFR section 122.41(l)(8)*].

VI. STANDARD PROVISIONS – ENFORCEMENT – NOT APPLICABLE

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Regional Water Board as soon as they know or have reason to believe [*40 CFR section 122.42(a)*]:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR section 122.42(a)(1)*]:

    a. 100 micrograms per liter (µg/L) [*40 CFR section 122.42(a)(1)(i)*];

    b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [*40 CFR section 122.42(a)(1)(ii)*];

    c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR section 122.42(a)(1)(iii)*]; or

    d. The level established by the Regional Water Board in accordance with 40 CFR section 122.44(f) [*40 CFR section 122.42(a)(1)(iv)*].

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels" [*40 CFR section 122.42(a)(2)*]:

    a. 500 micrograms per liter (µg/L) [*40 CFR section 122.42(a)(2)(i)*];

    b. 1 milligram per liter (mg/L) for antimony [*40 CFR section 122.42(a)(2)(ii)*];

    c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR section 122.42(a)(2)(iii)*]; or

    d. The level established by the Regional Water Board in accordance with 40 CFR section 122.44(f) [*40 CFR section 122.42(a)(2)(iv)*].

B. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following [*40 CFR section 122.42(b)*]:

1. Any new introduction of pollutants into the POTW from an indirect discharge that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants [*40 CFR section 122.42(b)(1)*]; and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order [*40 CFR section 122.42(b)(2)*].

Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW [*40 CFR section 122.42(b)(3)*].

Attachment E – Monitoring and Reporting Program

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

40 CFR section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. CWC sections 13267 and 13383 also authorize the Regional Water Board to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and state regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of this Regional Water Board.

B. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the Discharger, analyses performed by a noncertified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Regional Water Board staff. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Regional Water Board. Laboratories that perform sample analyses shall be identified in all monitoring reports.

C. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

D. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

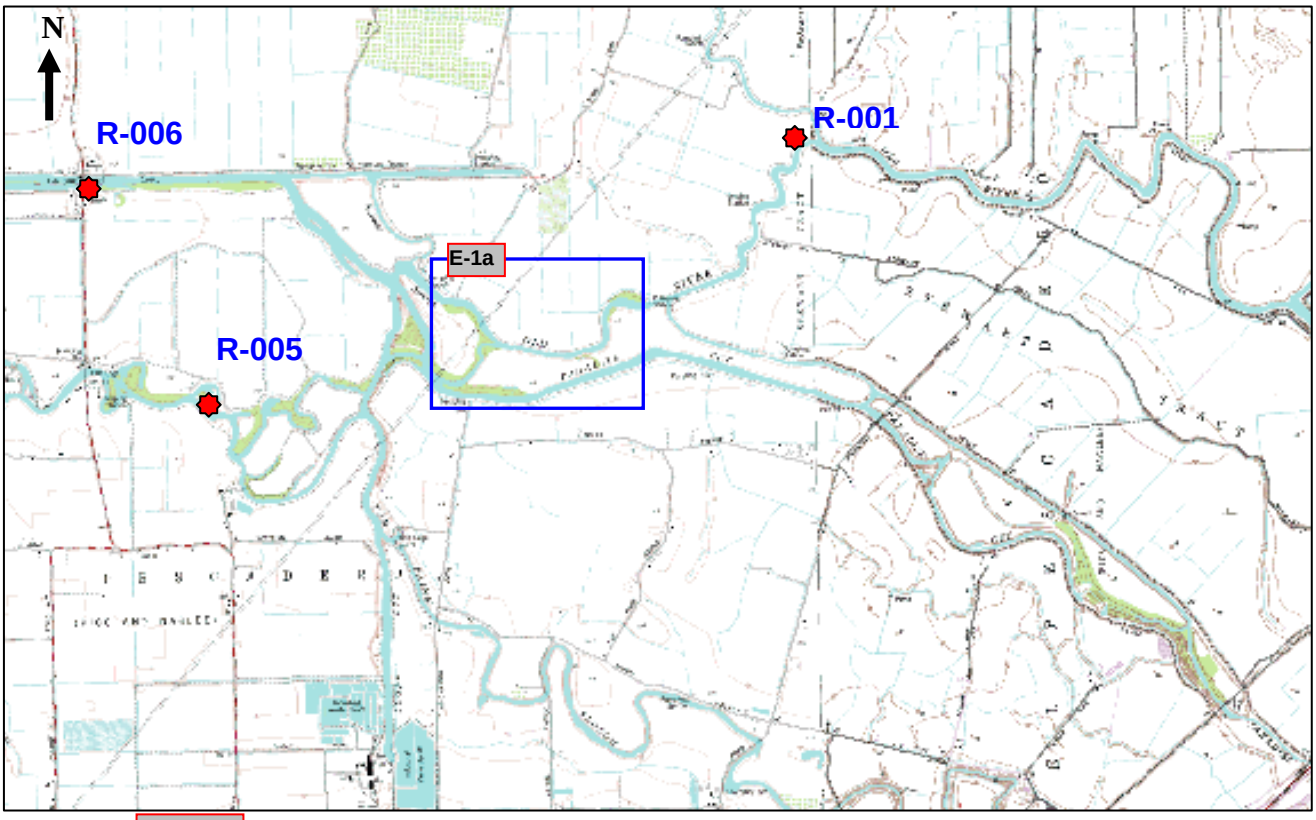
II. MONITORING LOCATIONS

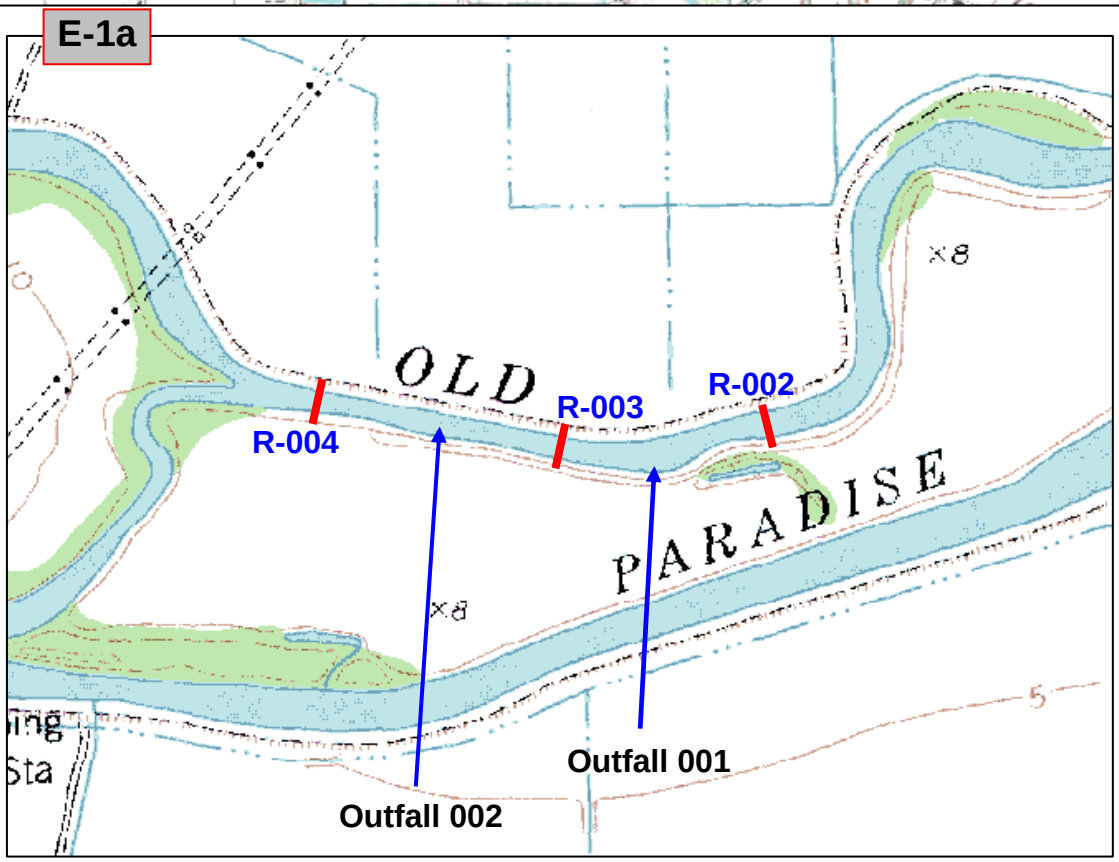
The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Discharge Point Name	Monitoring Location Name	Monitoring Location Description[1]
--	M-INFA	Domestic Influent to Facility
--	M-INFB	Leprino Foods Company Influent as measured at influent to Treatment Pond 1 (see Attachment C, Figure C-2).
001, 002[2]	M-001	Effluent discharged through Outfall 001 and Outfall 002*, measured at final effluent pump station
--	R-001	Old River, approximately 1 mile upstream of Outfall 001, downstream of confluence with Middle River (37.8218ºN, 121.3735ºW) see Figure E-1
--	R-002	Old River, approximately 500 feet upstream of Outfall 001 (37.8057ºN, 121.3992ºW) see Figure E-1a
--	R-003	Old River, approximately 500 feet downstream of Outfall 001 (37.8053ºN, 121.4025ºW) see Figure E-1a
--	R-004[3]	Old River, approximately 500 feet downstream of Outfall 002 (37.8060ºN, 121.4051ºW) see Figure E-1a
--	R-005	Old River, approximately 3 miles downstream of Outfall 001 (37.8010ºN, 121.4370ºW) see Figure E-1
--	R-006	Grant Line Canal, approximately 3 miles downstream of Outfall 001, east of Grant Line Canal temporary agricultural barrier (37.8200ºN, 121.4428ºW) see Figure E-1
--	S-001	Municipal Water Supply

1 Latitude and longitude coordinates are approximate
2 Future outfall proposed for Facility expansion
3 The Discharger is not required to monitor at R-004 until Discharge Point 002 is operational.

Figure E-1
Receiving Water Monitoring Locations





III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Locations M-INFA and M-INFB

1. The Discharger shall monitor domestic influent to the facility at M-INFA as follows. Influent samples shall be collected at approximately the same time as effluent samples and shall be representative of the influent.

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
BOD 5-day 20°C	mg/L	24-hr Composite[1]	1/day	
Suspended Solids	mg/L	24-hr Composite[1]	1/day	
Flow	mgd	Meter	Continuous	
pH	Standard units	Meter	Continuous	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/week	
TDS	mg/L	Grab	1/week	
Methylmercury	ng/L	Grab	1/month	Method 1630[2]

[1] 24-hour flow proportional composite

[2] Unfiltered methylmercury samples shall be taken using clean hands/dirty hands procedures, as described in U.S. EPA method 1669: *Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels,* for collection of equipment blanks (section 9.4.4.2), and shall be analyzed by U.S. EPA method 1630 (Revision E) with a method detection limit of 0.02 ng/l

2. The Discharger shall monitor Leprino Foods Company influent to the facility at M-INFB as follows. Influent samples shall be collected at approximately the same time as effluent samples and shall be representative of the influent.

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
BOD 5-day 20°C	mg/L	24-hr Composite[1]	1/day	
Suspended Solids	mg/L	24-hr Composite[1]	1/day	
Flow	mgd	Meter	Continuous	
pH	Standard units	Grab	1/day	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/week	
TDS	mg/L	Grab	1/week	

[1] 24-hour flow proportional composite

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-001

1. The Discharger shall monitor treated effluent discharged to Old River at Discharge Point 001 and Discharge Point 002 at M-001 as follows. Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the volume and quality of the discharge.

Parameter	Units	Sample Type	Minimum Sampling Frequency [9]	Required Analytical Test Method
Flow	mgd	Meter	Continuous	
Total Residual Chlorine[1]	mg/L	Meter	Continuous	
Temperature	°F	Meter	Continuous	
pH	Standard Units	Meter	Continuous	
BOD 5-day 20°C	mg/L	24-hr Composite[7]	1/day	
Total Suspended Solids	mg/L	24-hr Composite[7]	1/day	
Total Coliform Organisms	MPN/100 mL	Grab	1/day	
Settleable Solids	mL/L	Grab	1/month	
Oil and Grease	mg/L	Grab	1/month	
Dissolved Oxygen	mg/L	Meter	Continuous	
Ammonia (as N) [2, 3]	mg/L	Grab	1/week	
Nitrate (as N)	mg/L	Grab	1/week	
Nitrite (as N)	mg/L	Grab	1/week	
Total Phosphorus	mg/L	Grab	1/month	
Total Kjeldahl Nitrogen (as N)	mg/L	Grab	1/month	
Total Organic Carbon	mg/L	Grab	1/month	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/week	
Total Dissolved Solids	mg/L	Grab	1/month	
Aluminum, Total [4]	µg/L	24-hr Composite[7]	1/month	
Copper, Total [4]	µg/L	24-hr Composite[7]	1/month	
Iron, Total	µg/L	24-hr Composite[7]	1/month	
Manganese, Total	µg/L	24-hr Composite[7]	1/month	
Bromoform [4]	µg/L	Grab	1/month	
Chloroform [4]	µg/L	Grab	1/month	
Dichlorobromomethane [4]	µg/L	Grab	1/month	
Chlorodibromomethane [4]	µg/L	Grab	1/month	
Mercury, Total	ng/L	24-hr Composite[7]	1/month	Method 1631[10]
Bis(2-ethylhexyl)phthalate [8]	µg/L	Grab	1/month	
Methylmercury	ng/L	24-hr Composite[7]	1/month	Method 1630[10]
Standard Minerals [5]	mg/L	Grab	1/year	
Priority Pollutants [4, 6]	µg/L	Grab	1/year	

[1] Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

[2] Concurrent with biotoxicity monitoring

[3] Report as total.

[4] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

[5] Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

[6] Concurrent with receiving surface water sampling.

[7] 24-hour flow proportioned composite

[8] The Discharger shall monitor the effluent monthly for bis(2-ethylhexyl)phthalate for 12 months after the effective date of this Order. The Discharger shall use a method detection limit equal to or less than 1.8 µg/L, and shall use sample collection and handling techniques to reduce the possibility of bis(2-ethylhexyl)phthalate contamination. After one year of monthly monitoring, if there have been no detectable concentrations exceeding the CTR criterion (1.8 µg/L), effluent bis(2-ethylhexyl)phthalate monitoring shall be performed annually as part of the Priority Pollutants monitoring.

[9] If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all constituents listed above, except for those required to be monitored annually (i.e. Standard Minerals and Priority Pollutants), after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

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

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

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

1. *Monitoring Frequency* – the Discharger shall perform weekly acute toxicity testing, concurrent with effluent ammonia sampling.

2. *Sample Types* – For Static Non-renewal and Static Renewal testing, the samples shall be 24-hour flow proportional composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location M-001.

3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*) or rainbow trout (*Oncorhchus mykiss*).

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. Until **July 31, 2008,** or until compliance with Special Provisions VI.C.4.b., whichever is sooner, pH adjustments may only by allowed to reduce ammonia-related toxicity, after which no pH adjustments will be allowed unless approved by the Executive Officer.

5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

6. *Ammonia Toxicity* – The acute toxicity testing may be modified to eliminate ammonia-related toxicity until **July 31, 2008,** or until compliance with Special Provisions VI.C.4.b., whichever is sooner, at which time the Discharger shall be required to implement the test without modifications to eliminate ammonia toxicity.

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

1. *Monitoring Frequency* – the Discharger shall perform quarterly three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be 24-hour flow proportional composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location M-001. The receiving water control shall be a grab sample obtained from the R-001 sampling location.

3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.

4. *Test Species* – Chronic toxicity testing measures sublethal (e.g. reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
   - The green alga, *Selenastrum capricornutum* (growth test).

5. *Methods* – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition,* EPA/821-R-02-013, October 2002.

6. *Reference Toxicant* – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – The chronic toxicity testing shall be performed using the dilution series identified in Table E-1, below. The receiving water control shall be used as the diluent (unless the receiving water is toxic).

8. *Test Failure* – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days from the time the Discharger becomes aware of the test failure. A chronic toxicity test fails if:

   a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

   b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page. 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in Special Provisions VI.C.2.a.iii.)

9. *Ammonia Toxicity* – The chronic toxicity testing may be modified to eliminate ammonia-related toxicity until **July 31, 2008**, or until compliance with Special Provisions VI.C.4.b., whichever is sooner, at which time the Discharger shall be required to implement the test without modifications to eliminate ammonia toxicity.

Table E-1
Chronic Toxicity Testing Dilution Series

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

C. **WET Testing Notification Requirements.** The Discharger shall notify the Regional Water Board within 24-hrs from the time the Discharger becomes aware of the test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

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

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Regional Water Board within 30 days following completion of the test, and shall contain, at minimum:

   a. The results expressed in TUc, measured as 100/NOEC, and also measured as $100/LC_{50}$, $100/EC_{25}$, $100/IC_{25}$, and $100/IC_{50}$, as appropriate.

   b. The statistical methods used to calculate endpoints;

   c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

   d. The dates of sample collection and initiation of each toxicity test; and

   e. The results compared to the numeric toxicity monitoring trigger.

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

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

3. **TRE Reporting.** Reports for Toxicity Reduction Evaluations shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Work Plan.

4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:

   a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.

   b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.

   c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS - SET FORTH IN MRP ORDER NO. R5-2007-0038

VII. RECLAMATION MONITORING REQUIREMENTS (NOT APPLICABLE)

VIII. RECEIVING WATER MONITORING REQUIREMENTS – Surface Water And Groundwater

A. Surface Water Monitoring

1. The Discharger shall monitor Old River at R-001, R-002, R-003, R-004[1], R-005, and R-006 as follows:

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Dissolved Oxygen	mg/L	Grab	1/week	
pH	Standard Units	Grab	1/week	
Temperature	°F (°C)	Grab	1/week	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/week	
Fecal Coliform Organisms	MPN/100 ml	Grab	1/week	
Ammonia (as N)[1,9]	mg/L	Grab	1/week	
Nitrate (as N)	mg/L	Grab	1/week	
Nitrite (as N)	mg/L	Grab	1/week	
Total Phosphorus	mg/L	Grab	1/month	
Total Kjeldahl Nitrogen (as N)	mg/L	Grab	1/month	
Total Organic Carbon	mg/L	Grab	1/month	
Total Chlorine Residual	mg/L	Grab	1/week	
Turbidity	NTU	Grab	1/week	
Hardness as $CaCO_3$	mg/L	Grab	1/month	
Aluminum, Total	µg/L	Grab	1/quarter	
Copper, Total[2]	µg/L	Grab	1/quarter	
Iron, Total	µg/L	Grab	1/quarter	
Manganese, Total	µg/L	Grab	1/quarter	
Mercury, Total	ng/L	Grab	1/quarter	Method 1631[8]
Methylmercury	ng/L	Grab	1/quarter	Method 1630[8]
Trihalomethanes [2, 3]	µg/L	Grab	1/quarter	
Bis(2-ethylhexyl)phthalate[2, 6]	µg/L	Grab	1/quarter	
Standard Minerals[4]	mg/L	Grab	1/year	
Priority Pollutants[2, 5, 7]	µg/L	Grab	1/year	

[1] Monitoring at R-004 is not required until the discharge begins at Outfall 002.

[1] Temperature and pH shall be determined at the time of sample collection.

[2] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

[3] Trihalomethanes include bromoform, chloroform, dichlorobromomethane, and chlorodibromomethane. Concentrations of each constituent shall be separately monitored and reported.

[4] Standard minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness, and include verification that the analysis is complete (i.e., cation/anion balance).

[5] Concurrent with effluent sampling.

[6] The Discharger shall monitor the receiving water quarterly for bis(2-ethylhexyl)phthalate for 12 months after the effective date of this Order. The Discharger shall use a method detection limit equal to or less than 1.8 µg/L, and shall use sample collection and handling techniques to reduce the possibility of bis(2-ethylhexyl)phthalate contamination. After one year of quarterly monitoring, if there have been no detectable concentrations exceeding the CTR criterion (1.8 µg/L), receiving water bis(2-ethylhexyl)phthalate monitoring shall be performed annually as part of the Priority Pollutants monitoring.

[7] Annual Priority Pollutants monitoring shall only be required at monitoring location R-001.

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

[9] The ammonia method detection limit must be less than or equal to 0.5 mg/L.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-00l and R-005. River Flow direction will be determined for each sampling event. Attention shall also be given to the presence or absence of:

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

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

IX. OTHER MONITORING REQUIREMENTS

A. Municipal Water Supply

1. Monitoring Location S-001

The Discharger shall monitor the Municipal Water Supply at S-001 as follows. A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Municipal water supply samples shall be collected at approximately the same time as effluent samples.

Parameter	Units	Sample	Minimum Sampling	Required Analytical

		Type	Frequency	Test Method
Total Dissolved Solids[1]	mg/L	Grab	1/month	
Electrical Conductivity @ 25°C[1]	µmhos/cm	Grab	1/month	
Standard Minerals[2]	mg/L	Grab	1/year	

1 If the water supply is from more than one source, the TDS and EC shall be reported as a weighted average and include copies of supporting calculations.
2 Standard minerals shall include all major cations and anions and include verification that the analysis is complete (i.e., cation/anion balance).

B. Disinfection System

1. Disinfection System Monitoring

The Discharger shall monitor the chlorine disinfection system as follows:

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow rate[1]	mgd	Meter	Continuous
Turbidity[1,2]	NTU	Meter	Continuous

1 To be monitored at M-001.
2 Report daily average and daily maximum turbidity.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

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

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit self-monitoring reports. Until such notification is given, the Discharger shall submit self-monitoring reports in accordance with the requirements described below.
2. Monitoring results shall be submitted to the Regional Water Board by the **first day** of the second month following sample collection. Quarterly and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter, semi-annual period, and year**, respectively.
3. 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 removal efficiencies (%) for BOD and Total Suspended Solids, shall be determined and recorded as needed to demonstrate compliance.
4. With the exception of flow, all constituents monitored on a continuous basis (metered), shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.
5. 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.
6. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit Effective Date	All	First day of second calendar month following month of sampling
1 / hour	Permit Effective Date	Hourly	First day of second calendar month following month of sampling
1 / day	Permit Effective Date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	First day of second calendar month following month of sampling
1 / week	Sunday following Permit Effective Date	Sunday through Saturday	First day of second calendar month following month of sampling
1/ / month	1st day of calendar month following Permit Effective Date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1 / quarter	July 1, 2007	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
1 / semi-annual period	July 1, 2007	January 1 through June 30 July 1 through December 31	August 1 February 1
1 / year	January 1, 2008	January 1 through December 31	February 1

7. The Discharger shall report with each sample result the applicable Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.
8. A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions.
9. SMRs must be submitted to the Regional Water Board, signed and certified as required by the standard provisions (Attachment D), to the address listed below:

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

C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the discharger to electronically submit self-monitoring reports. Until such notification is given, the Discharger shall submit discharge monitoring reports (DMRs) in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharger shall submit the original DMR and one copy of the DMR to the address listed below:

STANDARD MAIL	FEDEX/UPS/ OTHER PRIVATE CARRIERS
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated cannot be accepted unless they follow the exact same format as EPA form 3320-1.

D. Other Reports

1. **Progress Reports.** As specified in the compliance time schedules required in Special Provisions VI, progress reports shall be submitted in accordance with the following reporting requirements. At minimum, the progress reports shall include a discussion of the status of final compliance, whether the Discharger is on schedule to meet the final compliance date, and the remaining tasks to meet the final compliance date.

Special Provision	Reporting Requirements
Pollution Prevention Plan for Mercury (Special Provisions VI.C.3.a.)	**1 June**, annually, after approval of work plan
Pollution Prevention Plan for Salinity (Special Provisions VI.C.3.b.)	**1 June**, annually, after approval of work plan
Salinity Reduction Goal (Special Provisions VI.C.3.c.)	**1 August**, annually
Title 22 Disinfection Requirements (Special Provisions VI.C.4.a.)	**1 December**, annually, until final compliance

Special Provision	Reporting Requirements
Compliance Schedule for Final Effluent Limitations for Ammonia (Special Provisions VI.C.4.e.)	**1 May**, annually, until final compliance
BPTC of Salinity (Special Provisions VI.C.2.b.)	**1 February**, annually**,** following completion of Task 4 of compliance schedule
Compliance Schedules for Final Effluent Limitations for copper, compliance with final effluent limitations. (Special Provisions VI.C.4.d.i.)	**1 June**, annually, until final compliance
Compliance Schedules for Final Effluent Limitations for copper, Pollution Prevention Plan (Special Provisions VI.C.4.d.iii.)	**1 June**, annually, after approval of work plan until final compliance
Compliance Schedules for Final Effluent Limitations for copper, Treatment Feasibility Study (Special Provisions VI.C.4.d.iv.)	**1 June**, annually, after approval of work plan until final compliance

2. **Annual Operations Report**. By **30 January** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:
   a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.
   b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.
   c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.
   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.
   e. The Discharger may also be requested to submit an annual report to the Regional Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

3. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Regional Water Board, with copies to US EPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the

previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

An annual report shall be submitted by **28 February** and include at least the following items:

a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants EPA has identified under Section 307(a) of the CWA which are known or suspected to be discharged by industrial users.

   Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling and analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least annually. The discharger shall also provide any influent, effluent or sludge monitoring data for nonpriority pollutants which may be causing or contributing to Interference, Pass-Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto.

b. A discussion of Upset, Interference, or Pass-Through incidents, if any, at the treatment plant which the Discharger knows or suspects were caused by industrial users of the POTW. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of, the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Pass-Through, Interference, or noncompliance with sludge disposal requirements.

c. The cumulative number of industrial users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of industrial user responses.

d. An updated list of the Discharger's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Discharger shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards by specifying which set(s) of standards are applicable. The list shall indicate which categorical industries, or specific pollutants from each industry, are subject to local limitations that are more stringent than the federal categorical standards. The Discharger shall also list the noncategorical industrial users that are subject only to local discharge limitations. The Discharger shall characterize the compliance status through the year of record of each industrial user by employing the following descriptions:

i. complied with baseline monitoring report requirements (where applicable);

ii. consistently achieved compliance;

iii. inconsistently achieved compliance;

iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);

v. complied with schedule to achieve compliance (include the date final compliance is required);

vi. did not achieve compliance and not on a compliance schedule; and

vii. compliance status unknown.

A report describing the compliance status of each industrial user characterized by the descriptions in items iii. through vii. above shall be submitted for each calendar quarter **within 21 days of the end of the quarter**. The report shall identify the specific compliance status of each such industrial user and shall also identify the compliance status of the POTW with regards to audit/pretreatment compliance inspection requirements. If none of the aforementioned conditions exist, at a minimum, a letter indicating that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter must be submitted. The information required in the fourth quarter report shall be included as part of the annual report. This quarterly reporting requirement shall commence upon issuance of this Order.

e. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the industrial users. The summary shall include:

i. the names and addresses of the industrial users subjected to surveillance and an explanation of whether they were inspected, sampled, or both and the frequency of these activities at each user; and

ii. the conclusions or results from the inspection or sampling of each industrial user.

f. A summary of the compliance and enforcement activities during the past year. The summary shall include the names and addresses of the industrial users affected by the following actions:

i. Warning letters or notices of violation regarding the industrial users' apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations.

ii. Administrative orders regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

iii. Civil actions regarding the industrial users' noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

iv. Criminal actions regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.

v. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.

vi. Restriction of flow to the POTW.

vii. Disconnection from discharge to the POTW.

g. A description of any significant changes in operating the pretreatment program which differ from the information in the Discharger's approved Pretreatment Program including, but not limited to, changes concerning: the program's administrative structure, local industrial discharge limitations, monitoring program or monitoring frequencies, legal authority or enforcement policy, funding mechanisms, resource requirements, or staffing levels.

h. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.

Duplicate signed copies of these Pretreatment Program reports shall be submitted to the Regional Water Board and the:

State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130

and the

Regional Administrator
U.S. Environmental Protection Agency W-5
75 Hawthorne Street
San Francisco, CA 94105

Attachment F – Fact Sheet

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ATTACHMENT F – FACT SHEET

As described in Section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

WDID	5B 390108001
Discharger	City of Tracy
Name of Facility	Tracy Wastewater Treatment Plant
Facility Address	3900 Holly Drive Tracy, CA 95304 San Joaquin County
Facility Contact, Title and Phone	Mr. Steve Bayley, Deputy Director of Public Works (209) 831-4434
Authorized Person to Sign and Submit Reports	Mr. Steven Bayley, Deputy Director of Public Works
Mailing Address	SAME
Billing Address	SAME
Type of Facility	POTW
Major or Minor Facility	Major
Threat to Water Quality	Category 1
Complexity	Category A
Pretreatment Program	Y
Reclamation Requirements	Not Applicable
Facility Permitted Flow	9 mgd[(1)]
Facility Design Flow	9 mgd[(1)]
Watershed	Sacramento-San Joaquin Delta
Receiving Water	Old River
Receiving Water Type	Sacramento-San Joaquin Delta

[(1)] Effective immediately, the design and permitted treatment capacity is 9.0 mgd. Effective August 1, 2008, and in compliance with Special Provisions IV.C.4.b., the permitted flow may increase to 10.8 mgd. Upon compliance with Special Provisions IV.C.4.c., the permitted flow may increase to 16 mgd.

A. The Tracy Wastewater Treatment Plant (hereafter Facility) treats primarily domestic wastewater collected via the City of Tracy's wastewater collection system. The Facility also accepts industrial food processing wastewater from Leprino Foods Company (Leprino), which is stored in unlined industrial ponds at the Facility prior to final treatment at the main treatment plant. Leprino transports its food processing waste to pretreatment facilities located at the Facility through a segregated industrial wastewater pipeline. Leprino leases two aerated lagoons and one unlined oxidation pond from the Discharger for pretreatment of its industrial food processing wastewater, as discussed in Section II.A.3., below.

B. The Facility discharges wastewater to Old River, located within the Sacramento-San Joaquin Delta, a water of the United States. The discharge was previously regulated by Order No. 96-104, which was adopted on May 3, 1996 and expired on May 3, 2001. The terms of Order No.
96-104 automatically continued in effect after the permit expiration date.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on November 1, 2000. Subsequently, on February 3, 2003, the Discharger submitted a revised report of waste discharge, which included a request for expansion. Supplemental information was received on September 25, 2003, September 30, 2003, and April 29, 2004. A site visit was conducted on November 9, 2004, to observe Facility operations and conditions.

D. This Order regulates the discharge of treated municipal wastewater from the Facility to Old River. As discussed above, as part of its treatment train the Discharger utilizes unlined industrial ponds, unlined sludge drying beds, and unlined sludge storage basins, which discharge wastes to groundwater. Waste Discharge Requirements Order No. R5-2007-0038. has been developed to regulate the incidental land discharges from these treatment facilities, in order to protect groundwater.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment or Controls

1. The Facility treats primarily domestic wastewater collected via the City of Tracy's wastewater collection system. The wastewater treatment plant also accepts industrial food processing wastewater from Leprino through a segregated industrial wastewater pipeline. The industrial food processing wastewater is pretreated in separate treatment facilities, which are located at the Facility, and introduced into the main treatment plant for final treatment and disposal, as discussed in more detail in Section II.A.3., below.

2. The Discharger provides wastewater treatment and disposal services for residences, businesses, and industries within the Tracy area. The Facility was originally constructed in 1930 and has experienced three major expansions. The last expansion was completed in 1987, expanding treatment capacity from 5.5 million gallons per day (mgd) to 9.0 mgd.

3. The Facility is composed of a main treatment facility and an industrial facility. The main treatment facility consists of raw influent bar screening, primary sedimentation, biofiltration, conventional activated sludge, and secondary sedimentation. Secondary effluent is disinfected by chlorination and dechlorinated prior to discharge. Biosolids are thickened by dissolved air flotation, anaerobically digested, and dewatered in unlined sand drying beds. The dried biosolids are hauled off-site for land application or disposed in a landfill.

   The Discharger's industrial facility consists of four unlined industrial ponds (approximately 52 acres). In addition, Leprino, a local cheese manufacturer, leases two lined aerated lagoons and one 8-acre unlined oxidation pond from the Discharger for preliminary treatment of its industrial food processing wastewater and discharges to the Facility under an industrial pretreatment permit issued by the Discharger. Leprino transports its industrial wastewater to the Facility via a segregated industrial waste line. Leprino employees operate and maintain the

industrial wastewater pipeline and leased pretreatment units. Leprino's industrial pretreatment program permit allows for a discharge of up to 850,000 gallons per day of industrial food-processing wastewater. Compliance with Leprino's industrial pretreatment permit is measured prior to discharge to Pond 1 (see Attachment C, Figure C-2). Leprino's industrial wastewater and process water from the main treatment plant are stored in the unlined industrial ponds and introduced into the primary sedimentation basins of the main treatment facility for treatment and disposal.

B. Discharge Points and Receiving Waters

1. The Facility is located just north of Section 21, T2S, R5E, MDB&M, as shown in Attachment B (Figure B-1), a part of this Order.

2. Treated effluent is discharged at Discharge Point 001, located 3.5-miles north of the Facility, through a 72-foot diffuser that includes ten 8-inch diameter risers spaced 8 feet on center. Discharge point 001 is located at Old River near the junction of Paradise Cut, Tom Paine Slough, Salmon Slough, and Sugar Cut Slough at a point Latitude 37°, 48', 17" N and longitude 121°, 24', 03" W. In order to increase discharge capacity, the Discharger is planning to construct a second outfall, Discharge Point 002, approximately 800 feet downstream of Discharge Point 001. Discharge Point 002 will be located at a point Latitude 37°, 48', 19" N and longitude 121°, 24', 13" W and will utilize a 77-foot diffuser that includes twelve 8-inch diameter risers spaced 7 feet on center. Both outfalls will be utilized to discharge treated effluent.

3. Old River, in the vicinity of the discharge, is tidally influenced. River flow moves upstream during the incoming or flood tide, while downstream flows occur during the outgoing or ebb tide. Multiple dosing of the receiving water with effluent may occur as the tide moves the water column upstream and downstream past the outfall. Upstream San Joaquin River releases, tidal influences, the South Delta Temporary Barriers Program, and State Water Project and Central Valley Project pumping at Clifton Court Forebay affect the amount of flow in Old River. A more detailed discussion of Old River hydrodynamics and dilution is provided in Attachment F, Section IV.C.2.b.

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

1. Effluent limitations/Discharge Specifications contained in the previous Order for discharges from Discharge Point 001 and representative monitoring data from the term of the previous Order are as follows:

	Effluent Limitations			Monitoring Data (From 1 July 1998 – To 31 Dec 2004)		
Parameter (units)	**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Highest Average Monthly Discharge**	**Highest Average Weekly Discharge**	**Highest Daily Discharge**
BOD[1] (mg/L)	20	40	50	26.6	30.8	42.8
TSS (mg/L)	20	40	50	27.2	34.2	43.5
Settleable Solids (ml/L)	0.1	--	0.2	0.22	--	5
Chlorine Residual (mg/L)	--	--	0.1		--	--
Oil and Grease (mg/L)	10	--	15		--	--
Total Coliform Organisms (MPN/100ml)	23[2]	--	500		--	--
Ammonia-N (mg/L)	--	--	--	15.9[3]	--	42.3
Nitrate-N (mg/L)	--	--	--	2.4[3]	--	7.7
Nitrite-N (mg/L)	--	--	--	1.9[3]	--	2.1
Total Dissolved Solids (mg/L)	--	--	--	1019[4]	--	--
EC (uS/cm)	--	--	--	1753[4]	--	--
Chloride (mg/L)	--	--	--	298[4]	--	--
Copper (µg/L)				9.8[3]		20
Aluminum (µg/L)				59[3]		74
Chlorodibromomethane (µg/L)				2.9[3]		4.3
Dichlorobromomethane (µg/L)				1.4[3]		2.0
Arsenic (µg/L)				2.2[3]		3.2
Barium (µg/L)				2.7[3]		23.1
Manganese (µg/L)				20.2[3]		40
Zinc (µg/L)				7.9[3]		25.3

[1] 5-day, 20°C biochemical oxygen demand
[2] 30-day median
[3] Average of all monitoring data points
[4] Highest Annual Average

2. The Report of Waste Discharge describes the existing discharge as follows:

Design Flow (dry weather):	**9.0**	**million gallons per day (mgd)**
Annual Average Daily Flow Rate:	**7.09**	**mgd**
Maximum Daily Flow Rate:	**9.4**	**mgd**
Average Temperature, Summer:	**75.5**	**ºF**
Average Temperature, Winter:	**63.5**	**ºF**
Average BOD[1]:	**15.9**	**mg/L**
Average Total Suspended Solids:	**10.9**	**mg/L**

[1] 5-day, 20°C biochemical oxygen demand

D. Compliance Summary

1. On June 25, 2004, the Executive Officer issued an administrative civil liability complaint of $9,000 for seven (7) effluent violations occurring from January 1, 2000 through December 31, 2002. The ACLC was for the assessment of mandatory penalties, pursuant to CWC section 13385.

2. On October 21, 2005, the Regional Water Board adopted ACL Order No. 2005-0143, with a penalty of $80,000. The ACL Order was issued due to a chlorine release from the Facility that occurred on October 21, 2003. The ACL Order allowed 50 percent of the penalty to go towards implementation of a supplemental environmental project.

E. Planned Changes

The Discharger is upgrading the Facility to improve treatment and expand capacity. The treatment system capacity will be expanded to 16 mgd through a four-phase expansion. The improvements will improve the effluent quality over the current secondary level treatment. Only Phase 1 of the proposed expansion is estimated to be completed during the term of this Order, which would increase the treatment capacity to 10.8 mgd. The Report of Waste Discharge describes the proposed changes as follows:

1. **Phase 1 (10.8 mgd Design Capacity).** Phase 1 improvements will increase treatment to include nitrification /denitrification and tertiary filtration. The proposed improvements include the construction of new headworks with mechanical screening, replacement of existing primary clarifiers, construction of a flow equalization basin, construction of three additional secondary aeration basins, installation of two tertiary treatment modules, construction of new chemical building, and paving of sludge drying beds (1/6 of capacity, approx.). The expected initiation of operation of Phase 1 improvements is August 1, 2008.
2. **Phases 2 – 4 (16 mgd Design Capacity).** Phases 2-4 improvements expand the treatment and discharge capacity to 16 mgd. The proposed Phase 2 improvements include construction of a second outfall near the existing outfall, and paving of additional sludge drying beds. The proposed Phase 3 improvements include construction of one aeration basin/secondary clarifier, installation of a new filter pump for tertiary treatment, and paving of sludge drying beds. The proposed Phase 4 improvements include construction of a new primary clarifier, replacement of two effluent pumps with larger capacity pumps, construction of a sludge digester, and paving the remaining sludge drying beds. The proposed initiation of operation of the Phase 2, 3 and 4 improvements are October 1, 2012, September 1, 2014, and November 1, 2016, respectively.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in section II of the Order (Findings). This section provides

supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans**. The Regional Water Board adopted a *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Board Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. The beneficial uses of the Sacramento-San Joaquin Delta, including Old River downstream of the discharge, as identified in Table II-1 of the Basin Plan, are municipal and domestic supply, agricultural supply, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.

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

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

   This Order contains Effluent Limitations requiring a tertiary level of treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. The Regional Water Board has considered the factors listed in CWC section

13241 in establishing these requirements, as discussed in more detail in the Fact Sheet, Attachment F, Section IV.C.3.v.

2. **Thermal Plan.** The State Water Board adopted a Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for inland surface waters. The Thermal Plan is applicable to this discharge. For purposes of the Thermal Plan, the Discharger is considered to be an Existing Discharger of Elevated Temperature Waste. The Thermal Plan in section 5.A., requires the following:

   "5. Estuaries

   A. Existing discharges

   (1) Elevated temperature waste discharges shall comply with the following:

   a. The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F.

   b. Elevated temperature waste discharges either individually or combined with other discharges shall not create a zone, defined by water temperatures of more than 1°F above natural receiving water temperature, which exceeds 25 percent of the cross-sectional area of a main river channel at any point.

   c. No discharge shall cause a surface water temperature rise greater than 4°F above the natural temperature of the receiving waters at any time or place.

   d. Additional limitations shall be imposed when necessary to assure protection of beneficial uses.

   (2) Thermal waste discharges shall comply with the provisions of 5A (1) above and, in addition, the maximum temperature of thermal waste discharges shall not exceed 86°F."

   Modeling[1] by the Discharger indicates that the 1 °F limitation of Objective 5.A.(1)b of the Thermal Plan may be exceeded 3 months of the year at the expanded discharge flow rate of 16 mgd. As described in the Final EIR for the expansion of the Facility, the Discharger has proposed mitigation measures to ensure that any thermal impacts will be less than significant. The Discharger proposes to conduct four years of intensive monitoring of thermal impacts in the vicinity of the outfall and develop an appropriate range of mitigation measures, if necessary. Furthermore, as required by other regulations, the Discharger is required to conduct consultations with the United States Fish and Wildlife Services, National Marine Fisheries Service, and California Department of Fish and Game to develop mitigation measures for the protection of aquatic species, including rare, threatened, and endangered species protected under the Endangered Species Act.

[1] See section IV.C.2.c.(iv) of the Attachment F for a discussion on model results

3. **Bay-Delta Plan.** The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) was adopted in May 1995 by the State Water Board superseding the 1991 Bay-Delta Plan. The Bay-Delta Plan was last updated on December 13, 2006. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection.

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

4. **Anti-degradation Policy.** State Water Board Resolution No. 68-16 (Resolution 68-16) and
   40 CFR section 131.12, require the Regional Water Board, in regulating discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies. Resolution 68-16 requires the discharge be regulated to meet best practicable treatment or control to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State be maintained.

   Although this Order may allow some degradation of the quality of waters of the state, it is consistent with Resolution 68-16 because (1) such degradation is consistent with the maximum benefit to the people of the state, (2) the discharge is the result of wastewater utility service that is necessary to accommodate housing and economic expansion, and (3) it results in a high level of treatment of sewage waste. This Order requires tertiary treatment or equivalent, which is a high level of treatment that is considered best practicable treatment or control (BPTC) for most constituents in the wastewater and will result in attaining water quality standards applicable to the discharge. This Order allows for an increase in the volume and mass of some pollutants to be discharged to Old River (see Table F-1). The increase will not cause significant impacts to aquatic life, which is the beneficial use most likely affected by the pollutants discharged (e.g. from temperature and metals). The discharge from the facility may currently cause or contribute to exceedances of applicable water quality objectives for certain constituents as described in this Order. However, this Order requires the Discharger, in accordance with specified compliance schedules, to meet requirements that will result in the use of BPTC of the discharge for those constituents and will result in compliance with water quality objectives. This Order requires compliance with technology-based standards and more stringent water quality-based standards.

This Order authorizes the Discharger to increase the total discharge to surface water from 9 million gallons per day (mgd) to 16 mgd. During this permit term, however, it is expected that the Discharger will only complete the necessary upgrades to increase the discharge to 10.8 mgd. Based on the Discharger's construction schedules, the increase to 16 mgd is not expected until November 1, 2016. The Discharger must comply with the conditions set forth in Sections VI.C.4.b. and VI.C.4.c. prior to increasing the discharge to Old River from 9 mgd to 10.8 mgd and from 10.8 mgd to 16 mgd, respectively. Table F-1 lists the pollutants of concern and the corresponding effluent concentrations and mass loadings. The effluent concentrations for all constituents will remain the same or decrease and the increase in mass for some constituents will increase only very slightly and for some there will be a decrease. In the case of oxygen demanding substances (e.g. BOD, ammonia, nitrate, and nitrite) the concentration and mass will be decreased significantly due to increased treatment. The accommodation of the development, as set forth in the federal antidegradation policy and in the Water Code (see Water Code section 13241(e)), justifies lowering of receiving water quality. In this case, however, the Order authorizes very minimal, if any, lowering of receiving water quality given the increased level of treatment required by the Order.

With respect to salinity, this Order establishes an annual effluent mass loading limit for total dissolved solids (TDS) of 13,688 tons/year, which is based on the Discharger's current level of performance. This effluent limitation holds the Discharger at its current salinity mass loading as the discharge to Old River is increased. Therefore, the expanded discharge will not include an increase in the loading of salt to the southern Delta. The Discharger can implement pollution prevention and/or change its source water to comply with the effluent limitation for TDS. Prior to increasing the discharge to 16 mgd, this Order requires the Discharger to evaluate and implement BPTC of salinity in the discharge, including source control. Prior to the increase in discharge to 16 mgd, this Order will be reopened to include an effluent limit for salinity that is protective of the beneficial use of agricultural supply and will require implementation of BPTC.

This Order was revised by Order No. R5-2011-0012 on 3 February 2011, resulting in the revision of the effluent limitations for aluminum. The revised effluent limitations for aluminum do not degrade the receiving water because of the aluminum concentrations present in the in the receiving water. The Regional Water Board finds that any possible degradation associated with the revision of the aluminum effluent limitations does not reasonably affect the present and anticipated beneficial uses of the receiving waters, and allowing such degradation is to the maximum benefit of the people of the State.

Table F-1
Surface Water Antidegradation Analysis

		9.0 MGD Existing Effluent Concentration			16 MGD Projected Effluent Concentration						
Constituent	Units	Maximum	Average	Average Mass Loading (lbs/day)	Maximum	Average	Average Mass Loading (lbs/day)	Increase or Decrease (lbs/day)	Increase or Decrease (%)	Significant Increase (Y/N)	Limits to Apply Water Quality Objectives and Promulgated Criteria
ORGANICS											
1,4-Dichlorobenzene	ug/L	0.30	0.20	0.02	0.30	0.20	0.03	0.012	**78%**	N	5
Chloroform	ug/L	4.30	2.93	0.22	4.3	2.9	0.39	0.17	**78%**	N	80 (a)
Dibromochloromethane	ug/L	0.60	0.42	0.03	0.60	0.41	0.05	0.023	**74%**	N	0.41
Bromodichloromethane	ug/L	2.00	1.36	0.10	1.1	0.56	0.07	-0.027	-27%		0.56
Methyl-tert-butyl ether (MTBE)	ug/L	1.40	0.48	0.04	1.4	0.48	0.06	0.028	**77%**	N	5
Di(2-ethylhexyl) phthalate	ug/L	79	20	1.5	3.6	1.8	0.24	-1.2	-84%		1.8
PESTICIDES - PCBs											
2,4-D	ug/L	0.19	0.19	0.014	0.19	0.19	0.025	0.011	**78%**	N	
INORGANICS											
Aluminum	ug/L	74.0	59.0	4.4	74	59	7.9	3.4	**78%**	N	87
Antimony	ug/L	13.0	1.3	0.1	0.40	0.35	0.05	-0.051	-52%		6
Arsenic	ug/L	3.2	2.2	0.2	3.0	2.0	0.27	0.10	**62%**	N	10
Barium	ug/L	28.0	23.1	1.7	28	23	3.1	1.4	**78%**	N	100
Cadmium	ug/L	0.88	0.25	0.019	0.10	0.05	0.01	-0.012	-65%		0.7
Chromium (total)	ug/L	4.7	1.4	0.11	1.0	0.50	0.07	-0.042	-39%		50
Copper	ug/L	20.0	9.8	0.74	10	8.5	1.1	0.40	**54%**	N	9.6
Fluoride	ug/L	220	169	12.7	220	169	23	9.8	**77%**	N	1000
Iron	ug/L	120	66	4.9	120	66	8.8	3.8	**78%**	N	300
Lead	ug/L	1.2	0.3	0.02	1.0	0.30	0.04	0.018	**79%**	N	2.0
Mercury	ug/L			0.0014			0.0014	0.00	0%		0.05
Manganese	ug/L	40	20	1.5	40	20	1.2	-0.33	-22%		50
Nickel	ug/L	7.7	3.9	0.3	5.0	2.5	0.33	0.040	**14%**	N	56
Selenium	ug/L	2.0	1.5	0.1	1.0	0.50	0.07	-0.049	-42%		5
Silver	ug/L	0.4	0.2	0.0	0.40	0.20	0.03	0.014	**114%**	N	4
Thallium	ug/L	0.2	0.1	0.0	0.20	0.09	0.01	0.006	**88%**	N	1.7
Zinc	ug/L	43	25	1.9	43	25	3.3	1.4	**75%**	N	100
OTHER CONSTITUENTS											
BOD	mg/L	50	20	1501	20	10	1334	-167	-11%		10
TSS	mg/L	50	20	1501	20	10	1334	-167	-11%		10
Ammonia	mg/L	32	15	1126	2	1	67	-1059	-94%		1.5
EC	umhos/cm		1800			(c)					700 (b)
TDS[(d)]	mg/L		1110	83317		624 (c)	83317	0	**0%**		450 (b)
Chloride	mg/L		297	22304		(c)					106 (b)
Foaming Agents (MBAS)	mg/L	253	183	13698	253	183	24420	10721	**78%**	N	500
Nitrate (as N)	mg/L	7.6	3.2	240		3.2	427	187	**78%**	N	10
Nitrite (as N)	mg/L	2.0	1.9	140		1	133	-6.7	-5%		1
Phosphorus, Total (as P)	mg/L	5.6	3.2	241	5.6	3.2	427	186	**77%**	N	
Sulfate	mg/L	350	251	18818		125	16680	-2138	-11%		250
Total Coliform	MPN/100mL	1600	23		23	2			-90%		200

(a) The 80 ug/L limit applies to total trihalomethanes, which includes bromoform, chloroform, bromodichloromethane, and dibromochloromethane.

(b) Agricultural water quality goals listed provide no restrictions on crop type or irrigation methods for maximum crop yield. Higher concentrations may require special irrigation methods to maintain crop yields or may restrict types of crops grown.

(c) The salinity of the future discharge is not known at this time. Effluent limitations for salinity constituents may be required prior to increasing the discharge to 16 mgd.

(d) TDS concentrations and loadings expressed as annual averages. Future concentration based on maintaining current loadings.
Effluent limitations for salinity constituents may be required prior to increasing the discharge to 16 mgd.

5. **EPCRA Reporting Requirements.** CWC section 13263.6(a) requires that "*The regional board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) indicate as discharged into the POTW, for which the state board or the regional board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective*."

   The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this facility. Therefore, a reasonable potential analysis based on information from Emergency Planning and Community Right to Know Act (EPCRA) cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to CWC section 13263.6(a).

   However, as detailed elsewhere in this Order, available effluent data indicate that there are constituents present in the effluent that have a reasonable potential to cause or contribute to exceedances of water quality standards and require inclusion of effluent limitations based on federal and state laws and regulations.

6. **Stormwater Requirements.** U.S. EPA promulgated Federal Regulations for stormwater on November 16, 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater Treatment Plants are applicable industries under the stormwater program and are obligated to comply with the Federal Regulations.

7. **Endangered Species Act.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

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

1. Under Section 303(d) of the 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control

technology. On July 25, 2003 USEPA gave final approval to California's 2002 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The listing for the western portion Sacramento-San Joaquin Delta waterways includes: diazinon and chlorpyrifos, organo-chlorine Group A pesticides, DDT, mercury, electrical conductivity, and unknown toxicity. The listing for Old River between the San Joaquin River and the Delta-Mendota Canal also includes dissolved oxygen (DO) deficiencies.

2. **Total Maximum Daily Loads.** The US EPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. The TMDL for DO deficiencies was adopted by the Regional Water Board on January 27, 2005. The TMDL for organo-phosphate pesticides (diazinon and chlorpyrifos) is scheduled for presentation to the Regional Water Board for approval in June 2006, the TMDL for methylmercury is scheduled for December 2006, and the TMDL for Group A pesticides is scheduled for 2011.

   Regional Water Board staff are developing a draft methylmercury TMDL that proposes methylmercury load reductions for facilities discharging to the South Delta, including Old River. Health advisories by the Cal/EPA Office of Environmental Health Hazard Assessment remain in effect for human consumption of fish in the Delta, including Old River at Tracy, due to excessive concentrations of mercury in fish tissue. Mercury fish tissue monitoring substantiates these health warnings. Based on 8 fish tissue monitoring samples of legally catchable largemouth bass collected from 1998-1999 in Old River near Paradise Cut, fish tissue concentrations ranged from 0.20 mg/kg to 0.58 mg/kg, with an average of 0.39 mg/kg, which exceeds the USEPA recommended criterion for the protection of human health (0.3 mg/kg in fish tissue). These fish tissue data confirm there is currently no assimilative capacity for mercury in Old River and applicable water quality standards must be applied as end-of-pipe effluent limitations. Effluent Limitations for mercury are included in this Order.

C. Other Plans, Policies and Regulations

1. The State Water Board adopted the *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*. The requirements within this Order are consistent with the Policy.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations),

304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The federal CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law. (33 U.S.C., section 1311(b)(1)(C); 40 CFR, section 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*."

The Regional Water Board's Basin Plan, page IV-17.00 contains an implementation policy ("Policy for Application of Water Quality Objectives") that specifies that the Regional Water Board "*will on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Regional Water Board must establish effluent limitations using one or more of three specified sources, including EPA'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 Water 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 of the receiving water include municipal and domestic supply, agricultural supply, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation. The beneficial uses of the underlying groundwater are municipal and domestic, industrial service, industrial process and agricultural supply. The Basin Plan states that material and relevant information, including numeric criteria and guidelines from other agencies and organizations will be considered in evaluating compliance with narrative water quality objectives, including the toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal and domestic supply, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCLs) of CCR Title 22. The

Basin Plan further states that, to protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

A. Discharge Prohibitions

1. As stated in section I.G of Attachment D, Federal Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal Regulations, 40 CFR 122.41 (m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the Federal Regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the Federal Regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

B. Technology-Based Effluent Limitations

1. **Scope and Authority.** 40 CFR section 133.102 contains regulations describing the minimum level of effluent quality—for biochemical oxygen demand (BOD) and total suspended solids (TSS)—attainable by secondary treatment.

2. **Applicable Technology-Based Effluent Limitations.** The Federal Clean Water Act, Section 301, requires that not later than July 1, 1977, publicly owned wastewater treatment works meet effluent limitations based on secondary treatment or any more stringent limitation necessary to meet water quality standards. Federal Regulations, 40 CFR, Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for five-day biological oxygen demand (BOD) and total suspended solids (TSS). Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD and TSS are based on the technical capability of the tertiary process. BOD is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD and TSS than the secondary standards currently prescribed; the 30-day average BOD and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. See Table F-2 for final technology-based effluent limitations required by this Order. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent.

If 85 percent removal of BOD and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD and TSS over each calendar month.

Table F-2.
Summary of Final Technology-based Effluent Limitations
Discharge Point 001 and Discharge Point 002
Effective August 1, 2008

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
BOD 5-day 20°C	mg/L	10	15	20
Total Suspended Solids	mg/L	10	15	20

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in 40 CFR section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

a. **Beneficial Uses.** The beneficial uses of the Sacramento-San Joaquin Delta, including Old River downstream of the discharge, as identified in Table II-1 of the Basin Plan are municipal and domestic supply, agricultural supply, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation. The beneficial uses of the underlying groundwater are municipal and domestic, industrial service, industrial process and agricultural supply.

b. **Dilution Credits/Mixing Zones.** The issues of dilution credits and mixing zones are complex. Subsection i. summarizes the flow management of the San Joaquin River (SJR) and the Bay Delta Plan, Subsection ii. discusses the flow dynamics of Old River, Subsection iii. reviews the history of available flow data, Subsection iv. discusses the existing hydrodynamic and water quality models, Subsection v. discusses available mixing zone guidance, Subsections vi. through x. provide evaluations of available dilution credits for compliance

with acute, chronic, human health, pathogens, and ammonia water quality criteria, respectively, Subsection xi. discusses the lack of assimilative capacity in the receiving water for specific constituents, and Subsection xii. explains the need for real-time flow monitoring data in the vicinity of the discharge for the allowance of dilution credits in future permits.

i. **Delta Operations, Bay-Delta Plan, and CALFED.** The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) was adopted in May 1995 by the State Water Board and was revised in December 2006. The Bay-Delta Plan identifies the beneficial uses of the estuary and includes objectives for flow, salinity, and endangered species protection. The Bay-Delta Plan is reviewed periodically in compliance with CWC section 13240 and federal CWA section 303(c).

In December 1999 and March 2000, the State Water Board adopted and revised Water Rights Decision 1641 (D-1641) as part of the State Water Board's implementation of the Bay-Delta Plan. Many of the objectives in the Bay-Delta Plan are best implemented by making changes in the flow of water or in the operation of facilities that move water. Accordingly, this decision amends certain water rights by assigning responsibilities to the persons or entities holding those rights to help meet the objectives.

a) **South Delta Temporary Barriers Program.** The responsibility for meeting certain objectives in the South Delta has been placed with the Department of Water Resources (DWR) and the United States Bureau of Reclamation (USBR). To meet these objectives, USBR controls the San Joaquin River flow at Vernalis and DWR utilizes temporary barriers in the south Delta through the South Delta Temporary Barriers Program, instituted in 1991. The South Delta Temporary Barriers Program provides temporary measures to mitigate flow, water quality, water availability, and the protection of migrating San Joaquin River salmon. This project is ongoing until permanent flow control structures are installed as part of the South Delta Improvements Program (see subsection (b) below).

The South Delta Temporary Barriers Program is comprised of temporary barriers that are installed at the Head of Old River, Middle River, Grant Line Canal, and Old River near Tracy. See Figure F-1 for a map of the barrier locations. The Head of Old River (HOR) barrier restricts flow from entering Old River. In the spring, the HOR barrier is principally a fish barrier and is installed to help reduce fishery impacts caused by the Central Valley Project and the State Water Project. The spring installation of the HOR barrier reduces entrainment of emigrating juvenile San Joaquin fall-run Chinook salmon in the southern Delta. In the fall, the HOR barrier is installed to maintain flow rates in the SJR thereby improving dissolved oxygen conditions in the Stockton Deep Water Ship Channel.

The Grant Line Canal, Middle River, and Old River barriers are agricultural barriers. These are intended to primarily benefit agricultural water users in the south Delta. The agricultural barriers allow incoming tides to flow upstream while restricting downstream flow. These barriers significantly reduce tidally caused flow reversals in the South Delta. The agricultural barriers are installed to reduce salinity in the South Delta in an effort to meet the D-1641 salinity objectives. The barriers also increase water levels and circulation patterns for local agricultural diversions.

The HOR barrier is installed for a month or so each in the fall and spring and the agricultural barriers are installed from spring to fall. Typically, the fall HOR barrier is installed in October and removed in November, the spring HOR barrier is installed in April and removed in May, and the agricultural barriers are installed in April and removed in November. The lowest flows in Old River occur when all barriers are installed, which can take place in May, October, and November. Figure F-2 shows the periods when the barriers have been installed between 1994 and 2004.

Continued installation of the barriers will allow DWR to perform monitoring to determine potential hydraulic effects on south Delta channels and biological effects on vegetation and fisheries within the south Delta. The information gathered will be used to assist the development of long-term solutions to agricultural water supply problems and improvements to salmon migration. Using temporary barriers will also allow DWR to improve permanent barrier designs and review alternative timing operations for the permanent barriers.

b) **CALFED South Delta Improvements Program (SDIP).** CALFED issued a Record of Decision (ROD) in August 2000, which included the following elements related to the South Delta:

- Dredge and install operable barriers to ensure delivery of adequate quantity and quality water to agricultural diverters within the South Delta.
- Consider increasing SWP pumping from March 15 to December 15, and modify existing pumping criteria from December 15 to March 15 to allow greater use of SWP export capacity up to 8,500 cfs.
- Design and construct new fish screens at the Clifton Court Forebay and Tracy pumping plant facilities to allow the export facilities to pump at full capacity more regularly.
- Consider increasing SWP pumping to the maximum capability of 10,300 cfs once improved screens are in place.

A significant change in the proposed program arose as a result of the pelagic organism decline, which emerged in spring 2005. Presently, the SDIP is segmented into two separate actions; 1) installation and

operation of physical structural component, and 2) increase the diversion capability of Clifton Court Forebay from a 6,680 cfs level to the 8,500 cfs level. Stage 1, which includes placement of a permanent operable fish gate at the head of Old River, up to three permanent operable flow control gates in south Delta channels, dredging of Middle River and extension of some agricultural diversions, is currently being sought through permitting and ESA consultation. Stage 2, which includes increasing the diversion capability, will be re-evaluated once more data is received as a part of the Pelagic Organism Decline (POD) Studies.

This resulted in the proposed South Delta Improvements Program (SDIP). DWR and USBR are responsible for implementing the SDIP. The final EIS/EIR was released in December 2006. DWR originally estimated that the permanent flow control structures would be operable by April 2009. However, due to delays in the Section 10 consultation by NMFS, the date for operation is now estimated to be late 2011.

ii. **South Delta/Old River Hydrodynamics.** Flow conditions in Old River in the vicinity of the discharge are affected by San Joaquin River flows, barrier operations, and state and federal pumping operations from the State Water Project and Central Valley Project. Additionally, the discharge is located in a tidal zone. River flow moves upstream during the incoming or flood tide, while downstream flows occur during the outgoing or ebb tide. Multiple dosing of the receiving water with effluent occurs as the tide moves the water column upstream and downstream past the point of discharge. The complex dynamics of the stream flow, the tidal flows, the barrier operations, and the state and federal pumping operations must be considered in an evaluation of the available dilution for the discharge.

The flow of diluting water at the point of discharge varies with the tidal cycle. Typically, as net river flow drops, at some point in the tidal cycle the incoming tide balances against the downstream river flow resulting in river flow stagnation and very little dilution of effluent. Below this net river flow, the direction of the river flow reverses with incoming tides resulting in short periods of time with zero net river flows. Additionally, with flow reversals, some volume of river water is multiple dosed with the effluent as the river flows downstream past the discharge, reverses, moves upstream past the discharge a second time, then again reverses direction and passes the discharge point a third time as it moves down the river. A particular volume of river water may move back and forth, past the discharge point many times due to tidal action, each time receiving an additional load of wastewater. This is exacerbated with the barriers installed in the South Delta. The barriers minimize inflow from the San Joaquin River and restrict downstream flows. Therefore, flows while the barriers are in place are primarily tidal, since the HOR barrier directs the majority of San Joaquin River flows north towards Stockton. In addition, the agricultural barriers allow flood tides through but the ebb tides are restricted. This maintains water levels for irrigation, but reduces downstream flow in Old River.

iii. **Historical Receiving Water Flow Data.** Real-time flow monitoring data for Old River in the vicinity of the discharge is not available. The nearest real-time flow monitoring station is located approximately 8 miles upstream at the Head of Old River. Less than two years of historical flow data is available (February 2000 through December 2002). DWR began collecting flow data at the Head of Old River in February 2000. However, the flow sensor was removed in January 2003 due to faulty instrumentation.

Based on discussions with DWR staff, the existing flow data may be unreliable under the conditions that result in critical low flows in Old River. The installation of the South Delta temporary barriers reduces flow in Old River and the lowest flow likely occurs when all barriers are installed. However, when the HOR barrier is in place, eddies are created in front of the flow-measuring instrument causing excessive noise and possible false negative flows. The instrumentation was changed in 2003 to correct the problem, however, data are not available during critical periods since that time.

Additional flow data in the area are also available from the United States Geological Survey (USGS) San Joaquin River (SJR) flow monitoring station at Vernalis, upstream of Head of Old River. SJR flow data from 1923 to the present are available from the Vernalis station. These flow data are not directly representative of that in Old River due to great variations that can occur with barrier operations and Delta withdrawals. However, the data are useful for determining critical low flow periods in the region.

The Discharger has not installed a real-time monitoring station in the vicinity of the outfall to provide continuous monitoring of flow direction and velocity. Real-time monitoring would provide an accurate assessment of dilution.

iv. **Water Quality Models.** Water quality dilution studies have been provided by the Discharger to support permit and CEQA requirements. Carollo Engineers prepared a dilution study for the Discharger titled *Dilution Study and Water Quality Attainability Assessment*, April 1999. The Carollo study includes dilution modeling by Flow Science Incorporated. Larry Walker Associates (LWA) prepared a dilution study for the Discharger titled *Water Quality Analysis of Surface Water Discharge*, 2001. The LWA study includes dilution modeling by Resource Management Associates (RMA).

Dilution Study and Water Quality Attainability Assessment, April 1999 (Carollo Engineers). The Carollo Engineers study includes a dilution analysis and river flow analysis utilizing the Fischer-Delta Model (FDM) to generate average seasonal dilution values. The FDM is a proprietary computer model used to simulate the hydrodynamics of the entire Delta. The study utilized 5.9 mgd for the effluent discharge rate and 20-year historical Delta inflow and outflow data were utilized to generate monthly average daily flows at the point of discharge. The model was calibrated with a rubidium tracer study conducted in September and November 1996.

Several deficiencies are found in the model that causes uncertainty in the accuracy of the results.

- The FDM model was calibrated during a wet water year hydrological classification with temporary barriers only partially installed. The extrapolation of the calibrated model from a wet water year with partial barrier installation to a critically dry water year with all barriers installed creates uncertainty that was not addressed in the study. Furthermore, calibration alone is not adequate to determine the predictive capability of a model for a particular receiving water. Validation and sensitivity analyses are necessary to determine if the model is predictively valid. Without validation testing, the calibrated model remains a description of the conditions defined by the calibrated data set.
- The model stated that average conditions were utilized, and failed to present additional information as to the error, uncertainty, sensitivity, or limitations of the site-specific model over the range of conditions considered in the study.
- Modeling was carried out with the condition that the downstream agricultural barriers were in place during the summer and the HOR fish barrier was in place in the spring and fall. The model did not anticipate the scenario where all barriers were installed, which greatly restricts river flow and tidal influence. This scenario has occurred several times, most recently in May and October 2001, October 2002, October 2003, and October 2004.
- The model only used 5.9 mgd for the effluent discharge when the Report of Waste Discharge requests a discharge of 16 mgd.
- The study did not consider the Mountain House Wastewater Treatment Facility located approximately 8 miles downstream of the outfall. Mountain House is projected to discharge 5.4 mgd of tertiary treated wastewater to Old River in the near future.
- The calculated dilution was based on the results of nested models. The calculated net Delta outflow was input into the FDM to calculate the flow, which was used to estimate the dilution. The study failed to discuss the confidence level in the model outputs or how the variable inputs affected the estimated final dilution (e.g. error, sensitivity, uncertainty, etc.).

Water Quality Analysis of Surface Water Discharge, 2001 (Larry Walker Associates). A water quality analysis was performed by Larry Walker Associates (LWA), as part of the CEQA process for the expansion of the Facility, to evaluate the impacts of the increased discharge on Old River. LWA developed the report titled, *Water Quality Analysis of Surface Water Discharge*, October 2001, which used modeling performed by Resource Management Systems, Inc. (*Analysis of the Fate and Water Quality Impacts of the City of Tracy Discharge*, May 15, 2001). The water quality analysis and modeling report are included in the October 2001 Tracy Wastewater Treatment Plant Expansion Draft Environmental Impact Report.

The USEPA approved CORMIX model was used to evaluate initial dilution in the vicinity of the diffuser and define the mixing zones. Computed tidally averaged minimum monthly average velocities, flows, and depths were used in the near-field analysis for temperature, ammonia, and other sensitive parameters. Model sensitivity analysis indicated that the initial dilution is dominated by the high exit velocity of the diffusers relative to the low current velocities and the temperature differences in the receiving stream.

The far field analysis utilized the Link Node hydrodynamic model to simulate the long-term transport and fate of a discharge. It uses monthly averaged hydrologic data from the DWR-SIM model covering the 1922 to 1995 hydrologic year period. The model was utilized to calculate the effluent fraction and the change in dissolved oxygen (DO) concentrations at various locations in the South Delta. The simulation was run with four different Delta configurations; (1) no barriers, (2) HOR barrier only, (3) agricultural barriers only, and (4) permanent barriers. The model was calibrated using stage and flow data from April 1997, a wet hydrologic water year, with the assumption that the Grant Line Canal (GLC) barrier was not installed.

Several deficiencies are found in the study that causes uncertainty in the accuracy of the results.

- CORMIX is not designed for discharges to tidally influenced receiving waters, whereas the tidal environment in Old River is significant. The study recognizes that "*tidal action causes reverse flows and prolonged periods of slake water (several hours) at low river flows*". This results in the receiving water being multiple-dosed with effluent. The study did not discuss the uncertainty in the near-field model results due to the multiple-dosing.
- The study did not consider the Mountain House Wastewater Treatment Facility located approximately 8 miles downstream of the outfall. Mountain House is projected to discharge 5.4 mgd of tertiary treated wastewater to Old River in the near future.
- The far-field water quality analysis did not evaluate the Delta configuration of all temporary barriers installed (HOR and agricultural barriers). It assumed the agricultural barriers are installed through September. However, recent configurations (2001-2004) have the agricultural barriers installed until the middle of November, which coincides with installation of the Head of Old River fish barrier from October through November. This configuration results in the lowest likely flows in Old River at the point of discharge.
- The study does not include details about the link node hydrodynamic mathematical model used for the far-field analysis. Based on the information provided, it appears the model is applicable to the Tracy discharge. However, there is no discussion of the underlying

fundamentals and assumptions of the model. Furthermore, there is no discussion of the limitations of the model or the level of confidence and uncertainty in the model results.

- The water quality analysis was developed to determine impacts of the proposed discharge on Old River for the CEQA process. Therefore, minimum 1-hour and 4-day average dilutions were not calculated, which are necessary to develop acute and chronic aquatic life effluent limitations.

The water quality dilution studies prepared by LWA and Carollo Engineers do not meet the standards necessary to develop protective effluent limitations. In order to use model results for the development of effluent limitations, it is necessary that adequate calibration and validation be performed to ensure the accuracy of the results. Furthermore, when multiple models are used as input parameters or boundary conditions for other models it is necessary to explain how the uncertainty of the individual models affects the uncertainty of the final results.

v. **Regulatory Guidance for Dilution Credits and Mixing Zones.** 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 section 122.44 and section 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.*"

Section 1.4.2.1 of the SIP defines a dilution credit as, "*a numerical value associated with the mixing zone that accounts for the receiving water entrained into the discharge. The dilution credit is a value used in the calculation of effluent limitations. Dilution credits may be limited or denied on a pollutant-by-pollutant basis, which may result in a dilution credit for all, some or no priority pollutants in a discharge.*"

Regarding, the SIP states, "*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 mixing zone is thus an administrative construct defined as an area around the outfall that may exceed water quality objectives, but is otherwise protective of the beneficial uses. Dilution is defined as the amount of mixing that has occurred at the edge of this mixing zone under critical conditions, thus protecting the beneficial uses at the concentration and for the duration and frequency required.

With the installation of temporary barriers in the South Delta, the hydrodynamics of Old River are such that during critically dry years there may be very limited flow available for dilution. Additionally, the receiving water is significantly impaired and a migratory corridor for threatened and endangered species. Old River and the Sacramento-San Joaquin Delta are listed as impaired under section 303(d) of the federal CWA and identified as "Toxic Hot Spots," pursuant to the Bay Protection and Toxic Hot Spot Cleanup Program. Therefore, to ensure the adequate protection of beneficial uses, dilution credits cannot be allowed for the acute and chronic aquatic life conditions and for human health protection in the absence of adequate information to accurately predict available dilution.

vi. **Evaluation of Available Dilution for Acute Aquatic Life Criteria.** The SIP requires that if a year-round dilution credit is to be considered for establishing effluent limitations for priority pollutants regulated under the California Toxics Rule (CTR), critical receiving water flows and maximum discharged effluent flows must be evaluated as part of the dilution calculation. For acute aquatic life criteria, the SIP requires an evaluation of the lowest one-day receiving water flow with a statistical frequency of once every 10 years (1Q10) compared against the maximum daily effluent flow during the discharge period. There is insufficient data for Old River near the point of discharge to make this evaluation. The Report of Waste Discharge reports the acute critical low flow of the receiving stream to be 0 cfs.

During the tidal cycle, slack tide can last several hours, resulting in no flow available for dilution for acute aquatic life criteria (1-hr duration). Mixing of the effluent with the receiving water will occur at the diffuser ports. But with a continuous discharge from the Facility, the lack of receiving water flow, the limited size of the receiving water body, and the multiple dosing of effluent into the receiving water, the fraction of effluent in the receiving water around the outfall will increase, thus defeating further dilution. A year-round acute dilution credit and mixing zone are not available for compliance with acute aquatic life criteria.

vii. **Evaluation of Available Dilution for Chronic Aquatic Life Criteria.** The TSD states that: "*Concentrations above the chronic criteria are likely to prevent sensitive taxa from taking up long-term residence in the mixing*

zone. In this regard, benthic organisms and territorial organisms are likely to be of greatest concern. The higher the concentration occurring within the isopleth, the more taxa are likely to be excluded, thereby affecting the structure and function of the ecological community. It is thus important to minimize the overall size of the mixing zone and the size of elevated concentration isopleths within the mixing zone."

For the determination of a year-round chronic aquatic life criteria dilution credit, the SIP requires an evaluation of the lowest seven (7) consecutive day receiving water flows with a statistical frequency of once every 10 years (7Q10) compared against the four-day average of daily maximum effluent discharge flows during the discharge period. There is insufficient receiving water flow data to provide a 7Q10 design flow.

Flow through Old River, when not modified by barriers, is typically composed of the larger fraction of the flow from the San Joaquin River. Installation of the temporary barriers directs the majority of the San Joaquin River flow north, greatly reducing the flow in Old River. Therefore, with the barriers installed, most flow at the point of discharge can be attributed to tidal influences.

During critically dry years, the diluting flow for the chronic condition would likely be minimal. Without adequate information to accurately demonstrate available dilution, the discharge must meet end-of-pipe limits for compliance with chronic aquatic life criteria. No dilution credit will be applied year-round for the determination of effluent limitations for chronic aquatic life criteria. Should the Discharger present new information showing that seasonal dilution credits and mixing zones can be applied without adversely impacting water quality, this Order may be reopened and alternative effluent limitations considered (Attachment F, Section IV.C.2.b.xii.).

viii. **Evaluation of Available Dilution for Priority Pollutant Human Health Criteria and Agricultural Objectives.** The human health-based criteria for carcinogens, other than arsenic, are based on safe levels for lifetime exposure and dilution is based on the harmonic mean flow of the receiving water. Similarly, agricultural objectives are based on long-term average water supplies. In determining the available receiving water dilution for compliance with human carcinogen criteria, the SIP, section 1.4.2.1 requires that the harmonic mean of the receiving water flow be compared against the arithmetic mean of the effluent flow of the observed discharge period. However, direct Old River flow measurements do not exist over the required period.

The Final Environmental Impact Report (EIR) for the Facility expansion includes a short discussion of the harmonic mean flows. Table 2-9 of the Final EIR includes a table of modeled harmonic mean flows based on the DWR-SIM model. However, insufficient information is provided to determine how the modeled flows were calculated. No information

regarding the model inputs has been provided in the Final EIR, and the accuracy of the modeled flows cannot be verified.

The Discharger subsequently re-evaluated the harmonic mean flows and available dilution using DWRs Delta Simulation Model 2 (DSM2), which was used in the development of the draft Environmental Impact Statement/Environment Impact Report (EIS/R) for the South Delta Improvements Program (SDIP). Reasonable worst-case assumptions were used for the model inputs, which are outlined in a technical memorandum prepared by CH2M Hill for the Discharger, dated April 3, 2006, and in more detail in Appendix D of the draft EIS/R.

Modeling was performed for a 16-year period, from 1975-1991, with reasonable worst-case assumptions for the operation of SDIP's operable gates. The estimated daily harmonic mean flow was 549 cfs in Old River, near the discharge. When excluding the wet years of 1982 and 1985, the estimated daily harmonic mean flow was 492 cfs. The Discharger has requested an increase in design flow to 16 mgd. Therefore, using the estimated harmonic mean flow, excluding the wet years, and the future design flow, the maximum allowable harmonic dilution is 20:1.

DSM2, which has been used extensively for the South Delta Improvement Project, was also used to model the Tracy discharge to evaluate the salinity impacts of the discharge. Several factors influence the flow and dilution in the South Delta, including barrier operations, San Joaquin River (SJR) flow, Central Valley Project and State Water Project export pumping, delta tides, etc. During permit development a stakeholder group was formed that included representatives from the City of Tracy, Mountain House Community Services District, South Delta Water Agency, California Sportfishing Protection Alliance, DWR, and the Central Valley Water Board to develop appropriate scenarios for running the DSM2 model. The model was run under reasonable worst-case conditions and was used to predict the effluent volume fraction or effluent "finger printing" in the receiving water at given locations. The daily average wastewater volume fractions and the 15-minute flow and stage within the river channels were estimated at several select locations. The DWR modelers recommended evaluating the model output data on a minimum monthly average basis. This was recommended because several inputs to the model were set constant, such as SJR flow, agricultural inflow/outflow, and wastewater discharge rates. Therefore, the monthly average outputs are likely to be more accurate than shorter averaging periods (e.g., daily or weekly).

Although the intended use of the model was to evaluate the salinity impacts, the model output is also appropriate for determining the amount of human health dilution and the size of the human health mixing zone. Adverse human health effects from carcinogens are based on long-term exposure (e.g., drinking 2 liters per day for 70 years), therefore, the monthly average model outputs are appropriate. The permit allows a dilution of 20:1 for

human carcinogens based on the harmonic mean flow in Old River of 492 cfs. Using the reasonable worst-case modeling scenarios, DSM2 estimated the flow in Old River upstream of the discharge to be in the same range as the harmonic mean flow used to calculate the human carcinogen dilution credit. The average Old River flow estimated by the DSM2 model was 505 cfs with high exports and 491 cfs with low exports.

With a dilution credit of 20:1, the effluent volume fraction would be approximately 5%. As shown in Table F-3 below, an effluent fraction of 5% occurs 1 mile downstream of the discharge. Therefore, the human carcinogen mixing zone extends no more than 1 mile downstream of the discharge. Old River in the vicinity of the discharge is tidal and experiences reverse flows. Based on the model output, the human carcinogen mixing zone extends less than 0.5 miles upstream of the discharge. Modeling nodes closer to the discharge were not modeled, so it is not possible to determine the exact location of the upstream edge of the mixing zone. However, even if it were the full 0.5 miles upstream the impacts would be insignificant, because there are no drinking water or agricultural intakes within the mixing zone. The nearest drinking water intakes are the CVP and SWP, which are approximately 10 miles downstream of the discharge. Thus, a dilution credit of 20:1 for human carcinogens and agricultural objectives is appropriate and reasonable.

Table F-3
Maximum Rolling 30-Day Average Effluent Volume Fractions (% Effluent)

16 mgd Discharge Permanent Barriers Installed	**High Exports**	**Low Exports**	**Aprox. Distance from Outfall**
Old River 0.5 mi. Upstream of Outfall	0.5	0.4	0.5 miles upstream of outfall
Old River 1 mi. Downstream of Outfall	**5.0**	**4.5**	1 mile downstream of outfall
Old River at Tracy Rd	0.1	2.9	4 miles downstream of outfall
Grant Line Canal at Tracy Rd	4.3	4.6	2 miles downstream of outfall
Grant Line Canal at barrier	3.5	3.8	8 miles downstream of outfall
Channel Near CVP Pumps	0.5	2.0	10 miles downstream of outfall
Clifton Court Forebay (SWP Pumps)	0.0	0.2	10 miles downstream of outfall

ix. **Evaluation of Available Dilution for Pathogen/Disinfection Considerations.** For drinking water/municipal supply, the Delta has the designated beneficial use of drinking water/municipal supply and must be protected for that use even if the existing use is several miles downstream. For agricultural use and body contact recreational uses, the impacts to human health can result from very short exposures and can occur at or near the outfall. As discussed in the acute dilution section, dilution is not available over short timeframes at the outfall due to the slack water that occurs with the installation of barriers and their affect on tidal flows. The

quality of the discharge must be protective of drinking water/municipal supply, body contact recreation, and agricultural supply at the outfall. Therefore dilution is not available for pathogens.

x. **Evaluation of Available Dilution for Ammonia (30-Day Average Chronic Toxicity).** During critically dry years, the diluting flow for the 30-day average chronic condition would likely be minimal. Without adequate information to accurately demonstrate dilution for the development of protective dilution credits, the discharge must meet end-of-pipe limits for compliance with the ammonia 30-day average chronic aquatic life criteria. No dilution credit will be applied year-round for the determination of effluent limitations for ammonia. Should the Discharger present new information showing that seasonal dilution credits and mixing zones can be applied without adversely impacting water quality, this Order may be reopened and alternative effluent limitations considered (Attachment F, Section IV.C.2.b.xii.).

xi. **Evaluation of Available Dilution for Specific Constituents (Assimilative Capacity).** Dilution credits cannot be allowed for aluminum, electrical conductivity, iron, manganese, and mercury due to a lack of assimilative capacity in Old River. Based on data collected by the Discharger, the receiving water exceeds the water quality objectives for aluminum, electrical conductivity, iron, mercury, and manganese.

xii. **Dilution Credits for Future Permits.** No dilution has been granted in this Order, thus end-of-pipe effluent limitations for all constituents are required. As discussed in detail above, the Discharger has not provided adequate information for the allowance of dilution credits, most importantly, real-time flow monitoring data in the vicinity of the discharge. Real-time flow monitoring data in the vicinity of the discharge demonstrating that sufficient dilution flows are available is necessary and will be required for any consideration to allow dilution credits in future permit decisions.

c. **Hardness.** Based on 12 samples collected in 2002, the lowest receiving water hardness was measured as 109 mg/L as $CaCO_3$. This is a small dataset, but is the best information available for determination of reasonable potential and effluent limitation derivation for hardness dependant pollutants (e.g. copper, lead, and nickel). Significant hardness data are available in the San Joaquin River at Vernalis upstream of the Head of Old River. However, inadequate information is available to conclude that the hardness in the SJR at Vernalis is appropriate for use in Old River at the point of discharge. This Order requires hardness monitoring of the receiving water to provide a more robust dataset for determination of the design hardness.

d. **Translators.** The water quality objectives for most metals are defined as dissolved metal. Whereas effluent limitations for metals, and most water quality data, are expressed as total metal. Therefore, metal translators are used to convert dissolved metal to total metal or vice versa. There have been no approved studies to evaluate discharge-specific metal translators for the

discharge to Old River. Therefore, default USEPA translators have been used for reasonable potential analysis and effluent limitation derivation for metals. Where default USEPA translators are not available, a translator of 1.0 has been used.

Figure F-1
South Delta Temporary Barrier Locations

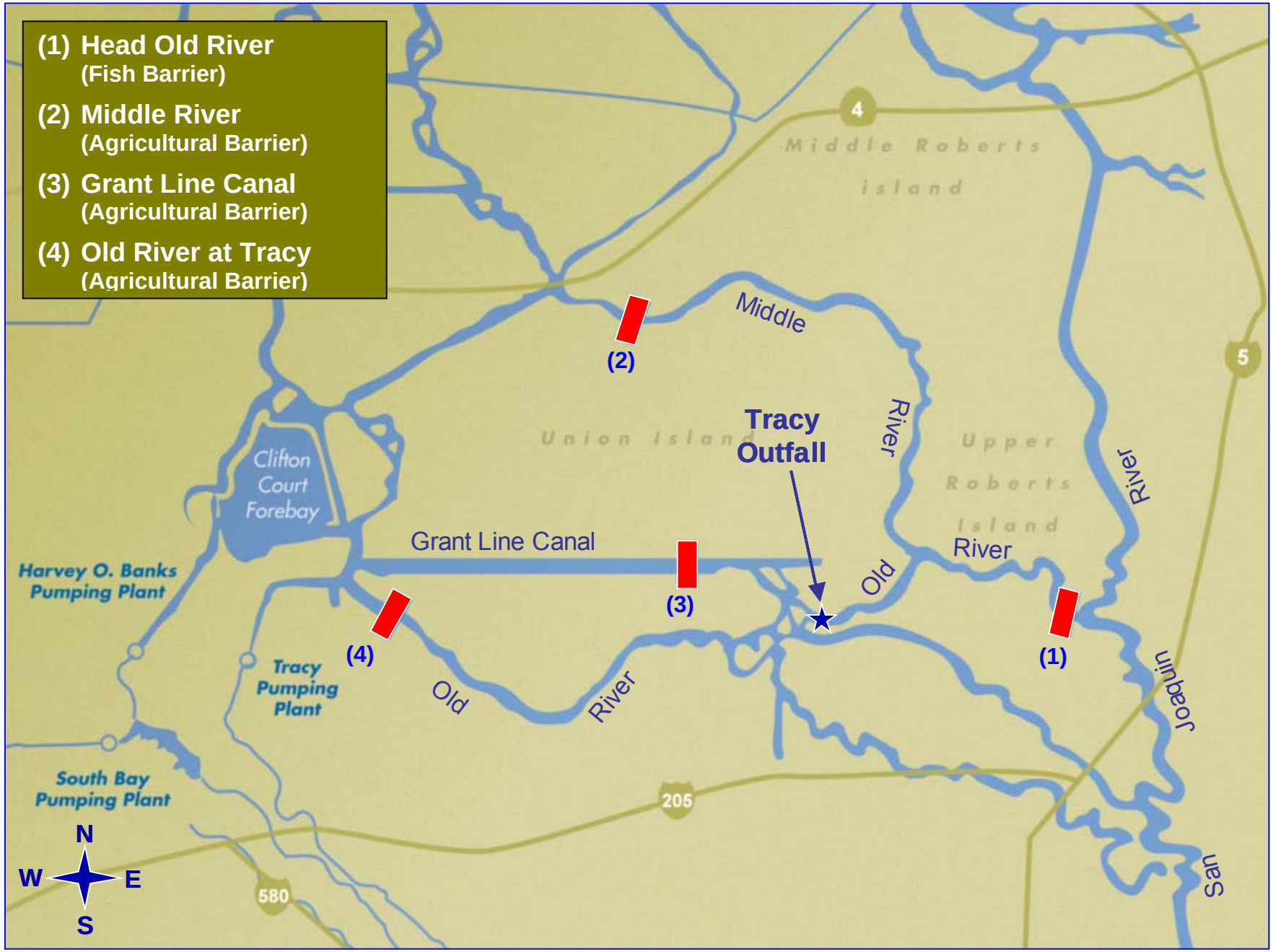
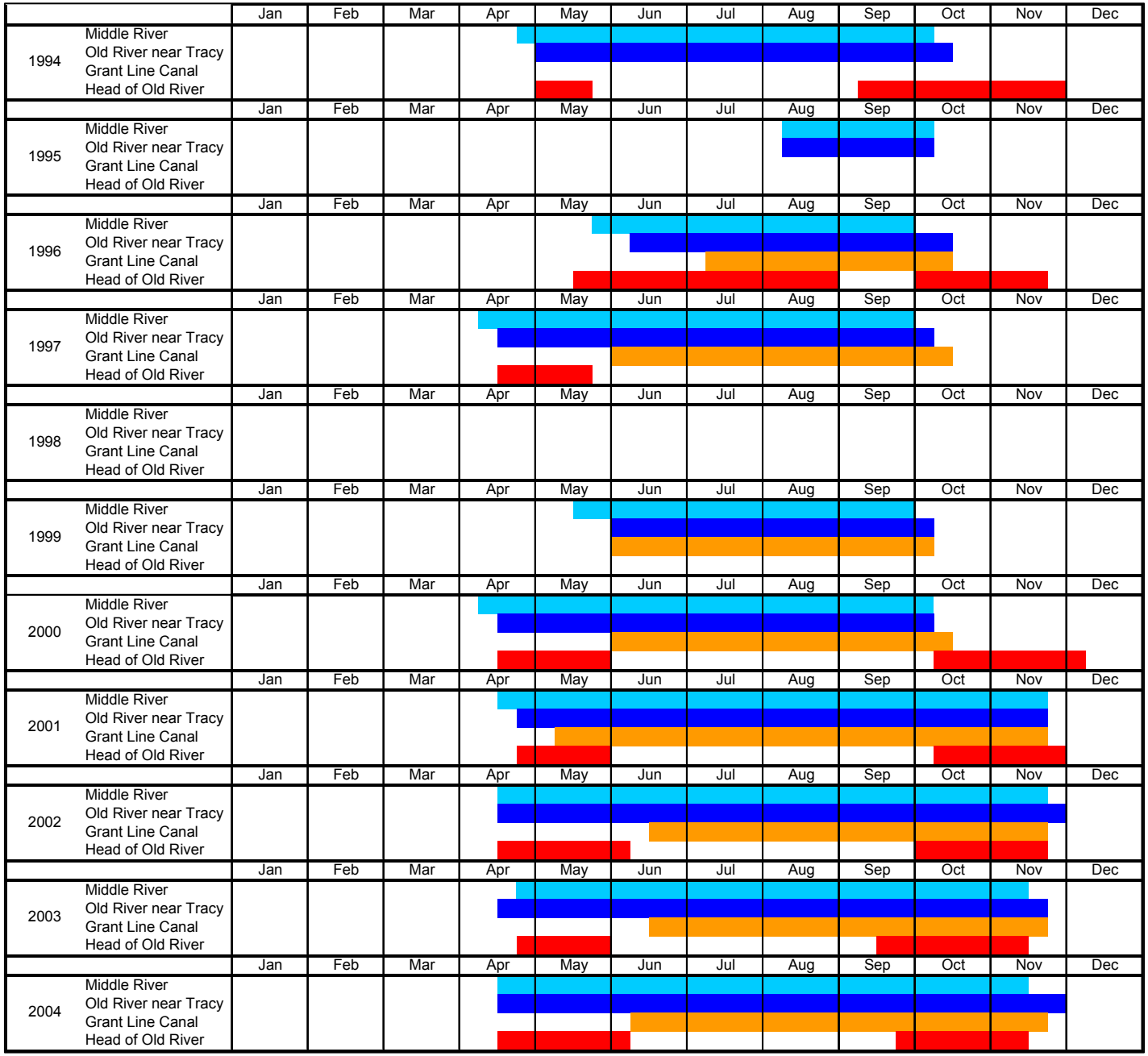


Figure F-2
South Delta Temporary Barrier Operations 1994-2004



3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) With regards to the narrative chemical constituents objective, the Basin Plan states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)*" in Title 22 of CCR. The narrative tastes and odors objective states: "*Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.*"

b. 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. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for aluminum, ammonia, chloride, copper, chlorodibromomethane, dichlorobromomethane, dissolved oxygen, electrical conductivity (EC), iron, mercury, nitrate, nitrite, oil and grease, pH, residual chorine, temperature, and total dissolved solids (TDS). Water quality-based effluent limitations (WQBELs) limitations for these constituents, with the exception of chloride, EC, and TDS, are included in this Order. A summary of the reasonable potential analysis (RPA) is provided in Table F-6, and a detailed discussion of the RPA for each constituent is provided below.

c. The Regional Water Board conducted the RPA in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control. The SIP states in the introduction "The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency." Therefore, in this

Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents.

d. WQBELswere calculated in accordance with section 1.4 of the SIP, as described in Attachment F, Section IV.C.4.

e. **Aluminum**. Based on information included in analytical laboratory reports submitted by the Discharger, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life, and, therefore violates the Basin Plan's narrative toxicity objective. U.S. EPA developed National Recommended Ambient Water Quality Criteria (NRWQC) for protection of freshwater aquatic life for aluminum. The recommended four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively. The NRWQC for aluminum, Criteria Continuous Concentration, contains a footnote that states, USEPA believes that use of Water-Effects Ratios might be appropriate because: (1) aluminum is less toxic at higher pH and hardness but relationship not well quantified; (2) aluminum associated with clay particles may be less toxic than that associated with aluminum hydroxide particles; (3) many high quality waters in U.S. exceed 87 ug/L as total or dissolved. Footnote L to the National Recommended Ambient Water Quality Criteria Correction (1999) summary table for aluminum indicates that the chronic aquatic life criterion is based on studies conducted under specific receiving water conditions with a low pH (6.5 to 6.6 pH units) and low hardness (<10 mg/L as $CaCO_3$). USEPA advises that a water effects ratio may be more appropriate to better reflect the actual toxicity of aluminum to aquatic organisms. Monitoring data demonstrates that these conditions are not similar to those in Old River, which consistently has an upstream hardness concentrations ranging from 62 and 235 mg/ L as $CaCO_3$. Thus, it is unlikely that application of the chronic criterion of 87 µg/L is necessary to protect aquatic life in Old River. For similar reasons, the Utah Department of Environmental Quality (Department) only applies the 87 µg/L chronic criterion for aluminum where the pH is less than 7.0 and the hardness is less than 50 mg/L as $CaCO_3$ the receiving water after mixing. For conditions where the pH equals or exceeds 7.0 and the hardness is equal to or exceeds 50 mg/L as $CaCO_3$, the Department regulates aluminum based on the 750 µg/L acute criterion.

The City of Manteca completed an aluminum WER study (April 2007) for the San Joaquin River near its discharge point, which is located in the vicinity of the Discharger's outfall. The Manteca WER study, which was used to calculate a WER for the City of Manteca's discharge, indicated that a WER of 22.7 can be applied to the chronic criterion for aluminum. Since the characteristics of the river (e.g. hardness and pH) near Manteca are similar to those near the City of Tracy, the results of the Manteca WER study put into question the applicability of the stringent chronic aquatic life criterion recommended by the NAWQC for aluminum. Using the WER adjustment in accordance with the SIP, the applicable water quality criteria for aluminum for chronic exposure becomes 22.7 x 87 µg/L or 1975 µg/L. Based on the above information, using the

chronic criterion recommended in the NAWQC (87 µg/L), is not appropriate for the receiving water.

The MEC for aluminum was 104 µg/L, based on 16 samples collected between January 2002 and September 2005, while the maximum observed upstream receiving water aluminum concentration was 1000 µg/L, based on 12 samples collected between January 2002 and December 2002. Since the receiving water exceeds the acute and chronic toxicity criteria, no assimilative capacity for aluminum is available and a dilution credit cannot be allowed. Applying 40 CFR section 122.44(d)(1)(vi)(B), effluent limitations for aluminum are included in this Order and are based on U.S. EPA's National Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat. This Order also includes an annual average effluent limitation of 200 µg/L, based on the Secondary MCL, for protection of the MUN beneficial uses. However, as discussed further in proceeding paragraph, limits should only be as high as is justified under the state and federal antidegradation policies. Order No. R5-2007-0036 contained an interim performance-based MDEL for aluminum of 266 µg/L. The performance based limit is less than the AMEL and MDEL calculated using the acute criterion, but after upgrading the treatment plant with alum flocculation to improve areas of the treatment process the Discharger no longer can consistently meet the interim performance-based MDEL of 266 µg/L. Therefore, this order establishes the final effluent limits for aluminum based on the acute criterion, which produces an AMEL 462 µg/L and a MDEL 755 µg/L. A final annual average effluent limitation of 200 µg/L is also included based on the Secondary MCL. The Regional Water Board concludes that immediate compliance with these effluent limitations is feasible.

The revised ammonia limits are justified under the state and federal antidegradation policies because the AMEL of 462 µg/L is less than the average concentration in the upstream receiving water (R-001) of 486 µg/L, which was calculated from an average of 13 samples collected from R-001 between November 2007 and July 2010. Also, as stated above the Discharger cannot meet the interim performance-based MDEL for aluminum of 266 µg/L. With a MEC of 310 µg/L observed between July 2007 and September 2010, the Discharger has shown in aluminum antidegradation analysis provided to the Central Valley Regional Board on 18 November 2010 that the discharge will slightly dilute the aluminum concentrations in the receiving water.

Aluminum exists as aluminum silicate in suspended clay particles, which US EPA acknowledges might be less toxic than other forms of aluminum. Correspondence with US EPA indicates that U.S. EPA's Ambient Water Quality Criteria are not intended to apply to aluminum silicate particles. Therefore, a monitoring method that excludes clay particles would satisfy compliance with the standard. In U.S. EPA's *Ambient Water Quality Criteria for Aluminum—1988* [EPA 440/5-86-008], U.S. EPA states that "*[a]cid-soluble aluminum…is probably the best measurement at the present…*" Based on U.S. EPA's discussion of aluminum analytical methods, this Order allows the use of acid

soluble methods of measurement to show compliance with the effluent limitations for aluminum.

f. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrate, and denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. The Facility's current operation partially nitrifies the wastewater, resulting in ammonia and nitrate in the discharge. Ammonia is highly toxic to aquatic life. Therefore, the effluent has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

i. **Toxicity Criteria.** To apply the Basin Plan's narrative toxicity objective, USEPA's 1999 Update of Ambient Water Quality Criteria for Ammonia provides the appropriate water quality criteria. The most stringent acute ammonia criteria are applied when salmonids are present within the water column. Old River at Tracy is a migratory path for salmonids, and they are likely to be present in the river at any time of the year. The chronic ammonia criteria are most stringent when early life stages (ELS) of aquatic species are present. A Department of Fish and Game memorandum dated February 27, 2001, states that ELS of multiple fish and invertebrates species are present in the Delta year-round. Therefore, both acute and chronic ammonia toxicity are based on the assumption that both salmonids and ELS of fishes are present in Old River near the Facility's outfall year-round.

ii. **Acute Toxicity.** The acute criterion, or criterion maximum concentrations (CMC), for ammonia is a function of pH, and is stated as a 1-hour average concentration. A worst-case scenario occurs when there is little to no dilution of the effluent by the receiving water. Therefore, for the acute criterion, water quality objectives need to be achieved in the effluent at the end-of-pipe. As allowed by the TSD, this Order calculates the CMC using critical conditions that are a combination of worst-case observations. The receiving water and effluent pH were evaluated to determine the critical pH for calculation of the acute criterion.

280 receiving water pH observations from July 1998 through November 2003 were evaluated to determine the acute design pH. The maximum pH observation during this time was 9.3 on August 15, 2003. However, due to the variability of pH sampling, using the maximum pH may be over protective. Therefore, the 90th percentile of pH readings was used to determine the acute design pH. The 90th percentile was chosen for acute toxicity since it would be protective of the short-term spikes in ammonia concentration, for which the acute criterion is designed to protect. The 90th percentile of receiving water pH was 8.5. In evaluating the effluent, the maximum allowed effluent pH is used for calculation of the acute criterion, which is also 8.5. Therefore, the acute criterion for ammonia was determined by using a pH of 8.5, resulting in a CMC of 2.14 mg/L, ammonia as nitrogen, calculated with salmonids present.

iii. **Chronic Toxicity.** The chronic criterion, or criterion continuous concentration (CCC), for ammonia is a function of both pH and temperature. For ammonia, the CCC is stated as a 30-day average concentration, with the highest 4-day average within the 30-day average not to exceed 2.5 times the CCC. As allowed by the TSD, the CCC is calculated using critical conditions that are a combination of worst-case observations. A worst-case scenario occurs when there is little to no dilution of the effluent by the receiving water. The receiving water and effluent pH and temperature were evaluated to determine the critical pH for calculation of the chronic criterion.

280 receiving water pH observations from July 1998 through November 2003 were evaluated to determine the chronic design pH. For the chronic criterion, the median pH observations were used. The median was chosen for chronic toxicity, because over a period of time receptors would be exposed to a more or less average ammonia concentration. Using this approach, the chronic design pH was calculated as 7.8. This exceeds the median effluent pH, which was calculated as 7.4, based on 2,372 measurements from July 1, 1998 to December 31, 2004. Therefore, the critical pH for calculation of the chronic criterion is 7.8.

The chronic criterion decreases as temperature increases. Since the effluent and receiving water temperatures vary seasonally, a chronic criterion was calculated for both winter (Nov 1 – May 31) and summer (June 1 – Oct 31). The effluent temperature exceeds the receiving water temperature. Therefore, the 30-day average effluent temperature was used in the calculation of the chronic criterion. Based on 1,335 effluent temperature measurements, the maximum winter 30-day average effluent temperature was 23.3°C and based on 1,012 temperature measurements the maximum summer 30-day average effluent temperature was 26.5°C. Using the chronic design pH of 7.8, this results in a summer chronic criterion of 1.47 mg/L, ammonia as nitrogen, and a winter chronic criterion of 1.81 mg/L, ammonia as nitrogen, calculated with ELS present.

iv. **Effluent Limitations.** Applying 40 CFR section 122.44(d)(1)(vi)(B), effluent limitations for ammonia are included in this Order and are based on U.S. EPA's Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat. This Order contains final AMEL and MDEL for ammonia of 1.3 mg/L and 2.1 mg/L, respectively (See Attachment F, Table F-8 for WQBEL calculations). The use of seasonal effluent limitations was considered due to the seasonal variation of temperature of the effluent. However, the acute criterion, which is not dependent on temperature, controls the effluent limitation derivation. Therefore, for the application of the acute condition (1-hr duration), the ammonia effluent limitations apply year-round. Furthermore, due to periods of no flow in the receiving water, a dilution credit cannot be granted.

The development of fixed WQBELs for ammonia can be complex due to the variable ammonia criteria. In State Water Board WQ 2009-0003 for the City

of Tracy, the State Water Board determined that the permit lacked an adequate rationale for development of the fixed WQBELs for ammonia using the median receiving water pH and remanded the permit to the Regional Water Board to either provide sufficient justification for the effluent limits or modify the limits. In the above approach for determining the appropriate chronic criterion, an assumption is made that the compliant discharge (i.e., meets ammonia criteria) causes a non-compliant situation in the receiving water due to changes in pH and/or temperature that result in a more stringent chronic criterion. In this approach, the ammonia concentrations in the effluent are assumed to remain the same downstream of the discharge, whereas the pH and temperature change. This is a conservative approach and is used when there is insufficient ammonia receiving water data to determine the actual ambient ammonia concentrations. For the City of Tracy, there is weekly ammonia monitoring in the receiving water, along with pH and temperature monitoring.

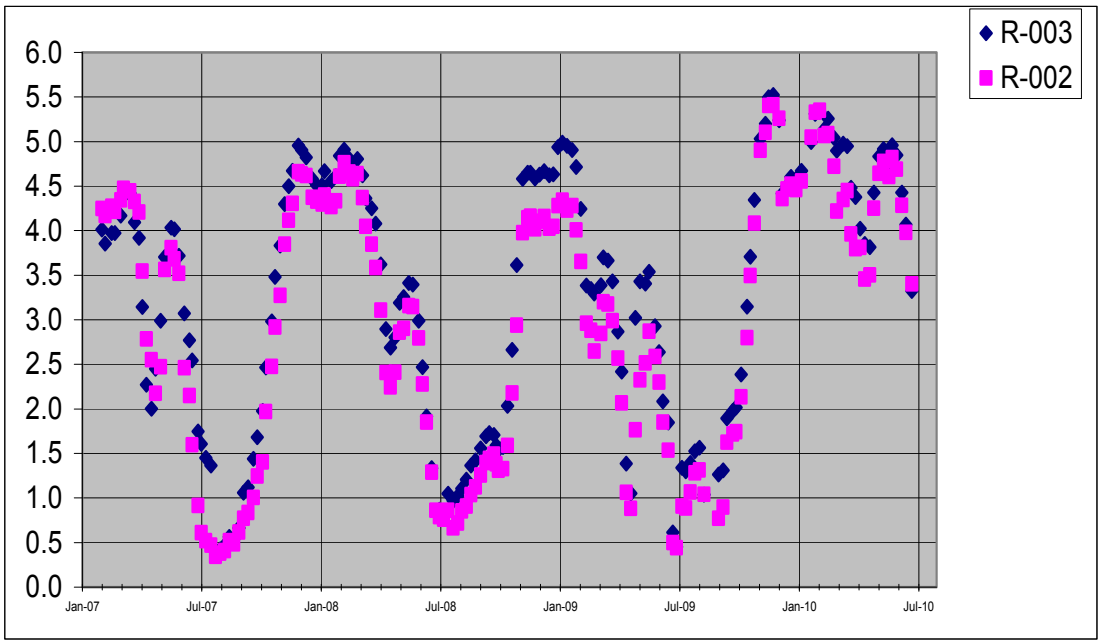
In a similar situation for the City of Stockton, receiving water ammonia concentrations were compared to paired 30-day average chronic ammonia criteria to determine if the discharge caused the receiving water criterion to be exceeded in the receiving water. Based on the receiving water data, the ammonia criteria was never exceeded and it was determined that the current ammonia effluent limits were adequately protective. In the case of Stockton where this evaluation was used to justify current effluent limits, the permit was petitioned and the State Water Board agreed with this approach[1].

This same evaluation was conducted for the City of Tracy. Receiving water ammonia, pH, and temperature data were evaluated since implementation of the current ammonia effluent limits. Figure F-3, below, shows the calculated 30-day average chronic criteria from March 2007 to July 2010 at R-002 and R-003, which are located 500 feet upstream and downstream of the discharge, respectively. This period includes the critically dry years of 2007 and 2008[2]. As demonstrated in the figure, the criteria fluctuate based on season due to fluctuations in pH and temperature. The most stringent criteria occur during the summer when the highest pH and temperature values occur. All ammonia receiving water data has been non-detect (<1 mg/L) during this period (Tracy conducts weekly receiving water monitoring for ammonia, pH, and temperature).

[1] State Board WQ 2009-0012 for the City of Stockton Regional Wastewater Control Facility

[2] Water Year Hydrologic Classification Indices (http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST)

Figure F-3
30-day Average Ammonia Criteria



This demonstrates that the discharge is not causing exceedances of the ammonia criteria in the receiving water. However, since there are periods when the chronic criteria are below 1 mg/L, there is some uncertainty whether the criteria have been exceeded during these critical periods. But, at the same time, the effluent data during this period was also non-detect at <1 mg/L, so it is very unlikely that the ammonia criteria have been exceeded in the receiving water. Therefore, based on this information, it is justified to maintain the final effluent limits for ammonia. During each permit renewal, the ammonia effluent limitations will be re-evaluated to ensure they are adequately protective of the aquatic life beneficial uses.

v. **Time Schedule.** Based on sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. The Basin Plan for the Sacramento and San Joaquin Rivers includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives adopted after September 25, 1995. The water quality-based effluent limitations for ammonia are based on new interpretation of the narrative standard for protection of receiving water beneficial uses. Therefore, a compliance schedule for compliance with the ammonia effluent limitations is established in the Order.

g. **Bis(2-ethylhexyl)phthalate.** Bis (2-ethyl-hexyl) phthalate is used primarily as one of several plasticizers in polyvinyl chloride (PVC) resins for fabricating flexible vinyl products. According to the Consumer Product Safety Commission, USEPA, and the Food and Drug Administration, these PVC resins

are used to manufacture many products, including soft squeeze toys, balls, raincoats, adhesives, polymeric coatings, components of paper and paperboard, defoaming agents, animal glue, surface lubricants, and other products that must stay flexible and noninjurious for the lifetime of their use. The State MCL for bis(2-ethylhexyl)phthalate is 4 µg/l and the USEPA MCL is 6 µg/l. The CTR criterion for Human health protection for consumption of water and aquatic organisms is 1.8 µg/l and for consumption of aquatic organisms only is 5.9 µg/l.

Based on 4 monitoring samples performed by the Discharger from January 2002 through December 2002, bis(2-ethylhexyl)phthalate was detected, but not quantified in all four samples. The concentration was estimated in each case, with a maximum estimated concentration of 2 µg/L. Without quantifiable detections, it is unclear if the discharge has a reasonable potential to cause or contribute to an in-stream excursion of the CTR criterion. This Order requires monthly monitoring of bis(2-ethylhexyl)phthalate for one-year using improved sample collection and handling techniques and a method detection level below the CTR criterion. If there are no detectable concentrations above the CTR criterion during the first year of monitoring, the frequency of monitoring will be reduced to annually, which can be accomplished through the requirement to monitor all priority pollutants annually. If detectable concentrations of bis(2-ethylhexyl)phthalate exceeding the CTR criterion occur during the first year of monitoring, this Order shall be reopened to include an effluent limitation for bis(2-ethylhexyl)phthalate.

h. **BOD and TSS.** The Discharger is currently constructing tertiary treatment facilities, which are expected to be in operation by July 31, 2008. In the interim, this Order maintains the water quality-based effluent limitations for BOD and TSS required in the Discharger's previous NPDES permit, Order 96-104. Order 96-104, included average monthly, average weekly, and maximum daily effluent limitations for BOD and TSS of 20 mg/L, 40 mg/L, and 50 mg/L, respectively. The Information Sheet of Order 96-104 states, "The permit establishes monthly average effluent limits for both BOD_5 and suspended solids at 20 mg/l each. These limits are set to protect against potential adverse impacts from the discharge on the dissolved oxygen in Old River." This Order maintains the effluent limitations for BOD and TSS as interim effluent limitations, in accordance with anti-backsliding requirements contained in the Code of Federal Regulations. Effective August 1, 2008, the Facility is required to comply with final technology-based effluent limitations for BOD and TSS, based on a tertiary level of treatment (see Attachment F, Section IV.B.2.).

i. **Chloride.** (see Subsection x. Salinity)

j. **Chlorine Residual**. The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. The Discharger uses a sulfur dioxide process to dechlorinate the effluent prior to discharge to Old River. Due to the existing chlorine use and the potential for chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

The USEPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] contains statistical methods for converting chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average one-hour limitation is considered more appropriate than an average daily limitation. Average one-hour and four-day limitations for chlorine, based on these criteria, are included in this Order. The Discharger can immediately comply with the new effluent limitations for chlorine residual.

The Facility discharges through a diffuser to Old River. The chlorine residual limitations required in this Order are protective of aquatic organisms in the undiluted discharge. If compliance is maintained, the Regional Water Board does not anticipate residual chlorine impacts to benthic organisms.

k. **Chlorodibromomethane.** Based on 12 monitoring samples performed by the Discharger from January 2002 through December 2002, the observed MEC for chlorodibromomethane was 0.6 µg/L. The background ambient chlorodibromomethane was not detected (<0.5 µg/L) in 12 samples collected from January 2002 through December 2002. The Discharger collected an additional 21 samples of the background receiving water using a lower method detection limit in February and March 2006, with all samples also non-detect (<0.25 µg/L). The CTR human health criterion is 0.41 µg/L. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion of a water quality objective and effluent limitations are necessary. The ambient monitoring demonstrates the receiving water has assimilative capacity for chlorodibromomethane. A dilution credit for chlorodibromomethane of up to 20:1 can be granted, based on the available human health dilution (see Attachment F, Section IV.C.2.b.viii.). This Order contains final AMEL and MDEL for chlorodibromomethane of 3.6 µg/L and 7.6 µg/L, respectively (See Attachment F, Table F-12 for WQBEL calculations). Based on current Facility performance, it appears that the Discharger can comply with these effluent limitations.

l. **Chloroform**. (see Subsection cc. Total Trihalomethanes)

m. **Copper.** The observed MEC for copper was 14 µg/L, as total recoverable metal, based on 16 samples collected between January 2002 and September 2005. For copper, water quality objectives exist from both the CTR and the Basin Plan. The CTR criteria for copper are hardness dependent, with aquatic toxicity increasing at lower hardness. The CTR criteria were calculated as 9.6 µg/L, as a 4-day average, and 14.6 µg/L, as a 1-hour average (dissolved), based on a minimum observed receiving water hardness of 109 mg/L as $CaCO_3$ and using a default water effects ratio of 1.0. The numeric site-specific copper Basin Plan objective is 10 µg/L (dissolved) and is independent of hardness. There have been no approved studies to evaluate discharge-specific metal translators for copper; therefore the default USEPA conversion factor of

0.96 was used to convert the criteria from dissolved to total recoverable. The dissolved CTR criteria translate to 10 µg/L and 15.2 µg/L, for the chronic and acute conditions, respectively. The dissolved Basin Plan objective translates to a total recoverable concentration of 10.4 µg/L. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR aquatic life criteria for copper and the Basin Plan site-specific objective for the Delta.

The Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California (a.k.a., State Implementation Policy or SIP) in the fourth footnote on Page 1 states,"*If a water quality objective and a CTR criterion are in effect for the same priority pollutant, the more stringent of the two applies.*"

One cannot directly compare the CTR criteria with the Basin Plan site-specific objective, because the CTR includes separate criteria for acute and chronic aquatic toxicity, whereas, the site-specific objective is expressed as a single maximum concentration. For a meaningful comparison, average monthly effluent limitations (AMEL) and maximum daily effluent limitations (MDEL) were first developed based on each criterion and then compared. Water quality-based effluent limitations (WQBELs) were calculated without an allowance for dilution, due to periods of no flow in Old River. For the CTR criteria, WQBELs calculated using section 1.4 of the SIP result in an AMEL of 9.1 µg/L and a MDEL of 14 µg/L (total recoverable) (See Attachment F, Table F-9 for WQBEL calculations). For implementing the Basin Plan's numeric site-specific objective for copper, the Regional Water Board's practice has been to only require a MDEL, which would result in a MDEL of 10.4 µg/L (total recoverable), and would not include an AMEL.

The MDEL based on the CTR criteria (14 µg/L) exceeds the MDEL based on the Basin Plan site-specific objective for copper (10.4 µg/L). Therefore, it is necessary to set the MDEL at 10.4 µg/L to implement the Basin Plan site-specific objective for copper. However, an MDEL of 10.4 µg/L exceeds the AMEL based on the CTR criteria (9.1 µg/L). Therefore, to protect against chronic aquatic toxicity in the receiving stream, it is also necessary to include an AMEL of 9.1 µg/L. This Order contains a final AMEL and MDEL for total recoverable copper of 9.1 µg/L and 10.4 µg/L, respectively, which apply the more stringent of the CTR criteria and the Basin Plan site-specific objective for copper.

The Discharger is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the statistical methods for calculating interim effluent limitations described in Attachment F, Section IV.D.1., an interim performance-based maximum daily limitation of 19 µg/L was calculated.

Section 2.1 of the SIP 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 measures and/or pollution minimization measures 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*." The Discharger provided this information on November 15, 2005. The new water quality-based effluent limitations for copper become effective on **May 18, 2010**.

This Order requires the Discharger to submit a corrective action plan and implementation schedule to assure compliance with the final copper effluent limitations. The interim effluent limitations were in effect through **May 17, 2010**. As part of the compliance schedule for copper, the Discharger shall develop a pollution prevention program in compliance with CWC section 13263.3(d)(3) and submit an engineering treatment feasibility study.

n. **Dichlorobromomethane.** Based on 12 monitoring samples performed by the Discharger from January 2002 through December 2002, the observed MEC for dichlorobromomethane was 2.0 µg/L. The background ambient dichlorobromomethane was not detected (<0.5 µg/L) in 12 samples collected from January 2002 through December 2002. The Discharger collected an additional 21 samples of the background receiving water using a lower method detection limit in February and March 2006, with all samples also non-detect (<0.25 µg/L). The CTR human health criterion for consumption of water and aquatic organisms is 0.56 µg/L and municipal and domestic supply is a beneficial use of the receiving water. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion of a water quality objective and effluent limitations are necessary. The ambient monitoring demonstrates the receiving water has assimilative capacity for dichlorobromomethane. A dilution credit for dichlorobromomethane of up to 20:1 can be granted, based on the available human health dilution (Attachment F, Section IV.C.2.b.viii.). This Order contains final AMEL and MDEL for dichlorobromomethane of 6.8 µg/L and 9.5 µg/L, respectively (See Attachment F, Table F-11 for WQBEL calculations). Based on current Facility performance, it appears that the Discharger can comply with these effluent limitations.

o. **Dissolved Oxygen (DO).** The Basin Plan contains a numeric site-specific water quality objective for the Delta, in the vicinity of the discharge, that requires that dissolved oxygen concentrations shall not be reduced below 5 mg/L. Old River from the San Joaquin River to the Delta Mendota Canal is listed on the CWA Section 303(d) list for low dissolved oxygen.

Based on 556 receiving water samples measured in the vicinity of the discharge from 1998 through 2003, the average DO concentration was 8.8 mg/L, with a maximum and minimum of 14.3 mg/L and 4.6 mg/L, respectively. Effluent DO concentration data is not available. However, the discharge contains constituents that cause an oxygen demand on the receiving water (e.g. BOD, TSS, ammonia, and nitrogen). Since, at times the receiving water does not comply with the Basin Plan's water quality objective for DO, the discharge has a reasonable potential to cause, or contribute, to an in-stream excursion of the DO water quality objective. Water quality-based effluent limitations for DO have been included in this Order based on the Basin Plan's water quality objective for DO.

p. **Electrical Conductivity.** (see Subsection x. Salinity)

q. **Iron.** The MEC for iron is 74 µg/L based on 14 samples collected between January 2002 and September 2005. The maximum observed constituent concentration in the background receiving water for iron was 5000 µg/L in 12 samples collected from December 2003 to November 2004. The Basin Plan contains a site-specific numeric objective for the Delta of 300 µg/L for iron, expressed as dissolved metal. The secondary MCL is also 300 µg/L, but is expressed as total recoverable metal. The receiving water has exceeded the numeric site-specific Basin Plan objective and the secondary MCL for iron. Therefore, no assimilative capacity is available in the receiving water for iron and the effluent has reasonable potential to cause or contribute to an in-stream excursion above water quality objectives.

The numeric site-specific objective is applied as a maximum daily limitation, whereas the secondary MCL is applied as a monthly average limitation. For permit effluent limitation derivation, the more stringent site-specific numeric objective applies to the discharge. The limitation must be expressed as total recoverable metal. There have been no approved studies to evaluate discharge-specific metal translators for iron; therefore, the dissolved Basin Plan objective translates to a total recoverable concentration of 300 µg/L (using a factor of 1.0). A MDEL of 300 µg/L for iron, expressed as total recoverable metal, is included in this Order. Based on the sample results in the effluent, it appears the Discharger can meet this new limitation.

r. **Mercury.** Effluent samples collected from August 2004 to July 2005 contained mercury concentrations ranging from 2.1 ng/L to 18.6 ng/L. Receiving water monitoring over the same period contained mercury water column concentrations ranging from 2.67 ng/L to 18.1 ng/L. In addition, fish tissue monitoring has been conducted in Old River[3]. Based on 8 fish tissue monitoring samples of legally catchable largemouth bass collected from 1998-1999 in Old River near Paradise Cut, fish tissue concentrations ranged from 0.20 mg/kg to 0.58 mg/kg, with an average of 0.39 mg/kg. These fish tissue

[3] Sampling performed by San Francisco Estuary Institute. This data only represents fish tissue sampling of trophic level 4 largemouth bass that are of size to be consumed by humans (length greater than legal size limit).

monitoring data include exceedances of the USEPA recommended criterion for the protection of human health, 0.3 mg/kg in fish tissue, thus demonstrating a lack of assimilative capacity for mercury in Old River. Since mercury is contained in the discharge, there is reasonable potential for the discharge to cause, or contribute to an in-stream excursion of the Basin Plan's narrative toxicity objective, based on the USEPA's recommended fish tissue criterion for the protection of human health.

The CTR contains criteria for mercury. However, the bioaccumulation rates in fish tissue used to calculate the CTR water quality criteria are based only on a laboratory-derived bioconcentration factor that considers organism uptake from water only and does not consider the contribution from the organism's food source. Therefore, the CTR criteria are not protective of actual bioaccumulation conditions in the receiving water.

The Delta waterways are listed in accordance with CWA section 303(d) as impaired for mercury, based on bioaccumulation of this pollutant in fish tissue. Furthermore, health advisories by the Cal/EPA Office of Environmental Health Hazard Assessment remain in effect for human consumption of fish in the Delta, including Old River at Tracy, due to excessive concentrations of mercury in fish tissue. Regional Water Board staff are developing a draft Methylmercury TMDL for the Delta that proposes methylmercury load reductions for facilities discharging to the South Delta, including Old River. The Delta Methylmercury TMDL is scheduled for adoption by the Regional Water Board in December 2006.

The SIP recommends the Regional Water Board consider whether the mass loading of bioaccumulative pollutants should be limited in the interim to "*representative current levels*" pending development of applicable water quality standards or TMDL allocation. The intent is, at a minimum, to prevent further impairment while a TMDL for a particular bioaccumulative constituent is being developed. Any increase in loading of mercury to an already impaired water body would further degrade water quality. An interim effluent mass limitation for mercury of 0.042 pounds/month (as total recoverable) has been included in this Order. The interim effluent limitation was determined using the current Facility design flow of 9.0 mgd and the maximum observed concentration of 18.6 ng/L.

In addition to the numeric interim mass-based limitation for mercury, this Order requires the Discharger to prepare a pollutant prevention plan for mercury in accordance with CWC 13263.3(d)(3). The final effluent limitations (mass load allocations) for mercury in the Facility effluent will come from the TMDL. If the Regional Water Board determines that a mercury offset program is feasible for Dischargers subject to a NPDES permit, this Order may be reopened to reevaluate the interim mercury mass loading limitation(s) and the need for a mercury offset program.

s. **Nitrate and Nitrite.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan's chemical constituents water quality objective prohibits chemical constituents in concentrations that exceed drinking water MCLs published in Title 22, CCR, or that adversely affect beneficial uses. MUN is a beneficial use of Old River. The California DHS has adopted primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22, CCR, Table 64431-A, also includes a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen. The discharge from the Facility has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for nitrite and nitrate because of the nitrification and denitrification processes (i.e. inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream). Effluent limits for nitrite and nitrate are based on the MCLs. To ensure the treatment process adequately denitrifies the waste stream to protect the beneficial uses of municipal and domestic supply, this Order contains average monthly effluent limitations for nitrite and nitrate of 1 mg/L and 10 mg/L, respectively (measured as nitrogen).

Based on sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for nitrate and nitrite are new regulatory requirements within this permit, which become applicable to the waste discharge with the adoption of this Order, which was adopted after July 1, 2000. Therefore, a compliance time schedule for compliance with the nitrate and nitrite effluent limits is established in TSO No. R5-2007-0037 in accordance with Water Code section 13300.

t. **Oil and Grease.** The Basin Plan includes water quality objectives for oil and grease and floating material in surface waters, which state: "*Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses*" and that: "[w]*ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses*". The antidegradation provisions of the State Water Resources Control Board, Resolution No. 68-16 state that: " *Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be*

maintained."

Based on information included in self-monitoring reports submitted by the Discharger, the effluent oil and grease was non-detectable (<1.0 mg/L) in 47 of 50 samples in 2006. The maximum effluent concentration was 2.4 mg/L on July 11, 2006. Therefore, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative objectives for oil and grease and floating material and State Water Board Resolution No. 68-16 (antidegradation policy). The previous permit, Order 96-104, included monthly average and daily maximum effluent limitations for oil and grease of 10 mg/L and 15 mg/L, respectively. This Order removes the effluent limitations for oil and grease based on new information consistent with anti-backsliding requirements of 40 CFR 122.44(l)(2)(i)(B)(*1*). The Regional Water Board finds removing the effluent limitations for oil and grease is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Any impact on existing water quality will be insignificant.

u. **Organo-Chlorine Pesticides.** Organo-chlorine pesticides, including lindane, endrin aldehyde, and DDT, are on the 303(d) listing. The Basin Plan sets forth a water quality objective that requires that organo-chlorine pesticides not be present in the water column in detectable concentrations. The SIP designates acceptable minimum laboratory quantitation levels for lindane, endrin aldehyde, and DDT at 0.02 µg/L, 0.01 µg/L, and 0.01 µg/L, respectively. The effluent and receiving water was monitored for organo chlorine pesticides and PCBs on four occasions during 2002. Dioxin (2,3,7,8-TCDD) was monitored twice during 2002. These constituents were not detected in the effluent or receiving water samples. However, detection limits for DDT, PCB, and the 2,3,7,8-TCDD were not adequate to determine compliance with the water quality criteria; therefore continued monitoring is required in this Order.

v. **Pathogens**. The beneficial uses of Old River include municipal and domestic supply, water contact recreation, and agricultural supply, and there is, at times, less than 20:1 dilution. To protect these beneficial uses, the Regional Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered), or equivalent, to protect contact recreational and food crop irrigation uses.

The California Department of Health Services (DHS) has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater

be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 m/ as a 7-day median. As coliform organisms are living and mobile, it is impracticable to quantify an exact number of coliform organisms and to establish weekly average limitations. Instead, coliform organisms are measured as a most probable number and regulated based on a 7-day median limitation.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as "*…an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.*" Title 22 is not directly applicable to surface waters; however, the Regional Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by DHS's reclamation criteria because the receiving water is used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

In addition to coliform testing, a turbidity operational requirement has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations.

This Order contains effluent limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. In accordance with CWC section 13241, the Regional Water Board has considered the following:

i. The past, present and probable future beneficial uses of the receiving stream include municipal and domestic supply, agricultural supply, agricultural stock watering, industrial process water supply, industrial service supply, body contact water recreation, other non-body contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning

habitat, wildlife habitat, and navigation.

ii. The environmental characteristics of the hydrographic unit, including the quality of the available water, will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities that would otherwise be unsafe according to recommendations from the California Department of Health Services (DHS).

iii. Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors that affect water quality in the area.

iv. The economic impact of requiring an increased level of treatment has been considered. The Discharger has estimated that the increased level of treatment will cost approximately $14.4 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, which includes prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment specific for those pollutants.

v. The requirement to provide tertiary treatment for this discharge will not adversely impact the need for housing in the area. The potential for developing housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DHS recommends that, in order to protect the public health, relatively undiluted wastewater effluent must be treated to a tertiary level for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.

vi. It is the Regional Water Board's policy, (Basin Plan, page IV-12.00, Policy 2) to encourage the reuse of wastewater. The Regional Water Board requires dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of wastewater treatment that will allow for a greater variety of uses in accordance with CCR, Title 22.

vii. The Regional Water Board has considered the factors specified in CWC section 13263, including considering the provisions in CWC section 13241, in adopting the disinfection and filtration requirements under Title 22 criteria. The Regional Water Board finds, on balance, that these requirements are necessary to protect the beneficial uses of Old River, including water contact recreation and irrigation uses.

The establishment of tertiary limitations has not been previously required for this discharge; therefore, a schedule for compliance with the tertiary treatment requirements is included in Special Provisions VI.C.4.a. of this Order. This Order provides interim effluent limitations for BOD, TSS, and total coliform, which the Discharger is currently capable of meeting. Full compliance with the final effluent limitations for BOD, TSS, and total coliform, and the operational requirements for turbidity are not required by this Order until **August 1, 2008,** or upon compliance with Special Provisions VI.C.4.b., whichever is sooner. The Discharger is already in the process of upgrading the Facility to a tertiary treatment level. The Discharger began construction of its Phase 1 Improvements in August 2004, which includes construction of two tertiary treatment modules. The compliance schedule for tertiary treatment has been developed in accordance with the Discharger's implementation schedule.

w. **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 receiving water is designated as having both COLD and WARM beneficial uses. Effluent limitations for pH are included in this Order and are based on the Basin Plan water quality objective for pH. This Order requires continuous monitoring for pH, and includes instantaneous maximum and minimum pH effluent limitations of 8.5 and 6.5, respectively, which are applied to ensure compliance with the Basin Plan objective.

x. **Salinity.** The discharge contains total dissolved solids (TDS), chloride, sulfate, and electrical conductivity (EC). These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain agricultural crops and can affect the taste of water for human consumption. There are no USEPA water quality criteria for the protection of aquatic organisms for these constituents. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for EC, TDS, Sulfate, and Chloride (See Table F-4).

Table F-4
Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal[1]	Secondary MCL[3]	Basin Plan (Bay-Delta Plan)[4]	Effluent	
				Avg	Max
EC (µmhos/cm)	Varies[2]	900, 1600, 2200	700 (1 Apr – 31 Aug) 1000 (1 Sep – 31 Mar)	1753	2410
TDS (mg/L)	Varies[2]	500, 1000, 1500	N/A	1019	2060
Sulfate (mg/L)	N/A	250, 500, 600	N/A	246	350
Chloride (mg/L)	Varies[2]	250, 500, 600	N/A	286	340

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

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

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

4 Compliance with the Bay-Delta Plan water quality objectives are determined at three monitoring locations in the South Delta.

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

The average TDS effluent concentration was 1019 mg/L and a ranged from 765 mg/L to 2060 mg/L for 218 samples collected by the Discharger from July 1998 through December 2004. These concentrations exceed the applicable water quality objectives. The background receiving water TDS ranged from 280 mg/L to 650 mg/L, with an average of 473 mg/L in 12 sampling events performed by the Discharger from January 2002 through December 2002. These data indicate the receiving water frequently exceeds water quality objectives and lacks assimilative capacity for TDS.

ii. **Chloride**. The secondary MCL for chloride is 250 mg/L, as recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The recommended agricultural water quality goal for chloride, that would apply the narrative chemical constituent objective, is 106 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 106 mg/L water quality goal is intended to protect against adverse effects on sensitive crops when irrigated via sprinklers.

Chloride concentrations in the effluent ranged from 230-340 mg/L, with an average of 286 mg/L based on 21 samples collected by the Discharger between December 1996 and May 2003. Background concentrations in Old River ranged from 57-160 mg/L, with an average of 119 mg/L based on results from 12 samples collected by the Discharger between January 2002

and December 2002. Both the receiving water and the effluent exceed the agricultural water quality goal of 106 mg/L.

iii. **Sulfate**. The secondary MCL for sulfate is 250 mg/L as recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. Sulfate concentrations in the effluent ranged from 160-350 mg/L, with an average of 246 mg/L based on 21 samples collected by the Discharger between December 1996 and May 2003. Background concentrations in Old River ranged from 76-160 mg/L, with an average of 106 mg/L based on results from 12 samples collected by the Discharger between January 2002 and December 2002. The effluent exceeded the secondary MCL recommended level of 250 mg/L on 8 of 21 occasions.

iv. **Electrical Conductivity (EC)**. The Basin Plan contains site-specific water quality objectives for electrical conductivity for the South Delta established by D-1641. The water quality objectives have been established at 700 µmhos/cm (from April 1st to August 31st) and 1000 µmhos/cm (from September 1st to March 31st) based on a 30-day running average for protection of agricultural beneficial uses. The nearest monitoring station at which D-1641 compliance is monitored is station P-12 (Old River at Tracy Blvd Bridge), approximately 4 miles west (downstream) of the discharge. The recommended secondary California MCL for EC is 900 µmhos/cm and the agricultural water quality goal, that would apply the narrative chemical constituents objective, is 700 µmhos/cm as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 700 µmhos/cm agricultural water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. These crops are either currently grown in the South Delta or may be grown in the future. Most other crops can tolerate higher EC concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the EC, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

A review of the Discharger's monitoring reports from July 1998 through December 2004 shows an average effluent EC of 1753 µmhos/cm, with a range from
1008 µmhos/cm to 2410 µmhos/cm for 305 samples. These levels exceed the applicable objectives. The background receiving water EC averaged 640 µmhos/cm in 277 sampling events collected by the Discharger from July 1998 through November 2003. These data show that the receiving water frequently has no assimilative capacity for EC.

v. **Salinity Issues in the South Delta**. The *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (Bay-Delta Plan) was adopted in May 1995 by the State Water Board and was revised in December 2006. The Bay-Delta Plan identifies the beneficial uses of the

estuary and includes objectives for flow, salinity, and endangered species protection. In December 1999 and March 2000, the State Water Board adopted and revised D-1641 as part of the State Water Board's implementation of the Bay-Delta Plan. The Bay-Delta Plan contains salinity water quality objectives (see Table F-4) to protect the agricultural beneficial uses. These salinity objectives must be met by DWR and USBR as a requirement of Water Rights permits and licenses issued by the State Water Board for operation of the State Water Project (SWP) and Central Valley Project (CVP).

In D-1641, the State Water Board states, "*Salinity problems in the southern Delta result from low flows in the San Joaquin River and discharges of saline drainage water to the river. The actions of the CVP are the principal causes of the salinity concentrations exceeding the objectives at Vernalis. Downstream of Vernalis, salinity is influenced by San Joaquin River inflow, tidal action, diversions of water by the SWP, CVP, and local water users, agricultural return flows, and channel capacity. Measures that affect circulation in the Delta, such as barriers, can help improve the salinity concentrations.*" D-1641 makes DWR and USBR responsible for meeting the salinity water quality objectives and finds that the installation of permanent south Delta barriers would assist in achieving the objectives. "*The DWR and the USBR are partially responsible for salinity problems in the southern Delta because of hydrologic changes that are caused by export pumping. Therefore, this order amends the export permits of the DWR and of the USBR to require the projects to take actions that will achieve the benefits of the permanent barriers in the southern Delta to help meet the 1995 Bay-Delta Plan's interior Delta salinity objectives by April 1, 2005.*"

vi. **Salinity Sources**. The Discharger's effluent is high in salt, especially for municipal wastewater. The high salinity is partly due to its municipal water supply and from significant salt loading from an industrial source, Leprino Foods Company, a local cheese manufacturer. The municipal water supply for the City of Tracy is primarily from groundwater sources, with additional water provided from the Delta-Mendota Canal and some Sierra water. Based on four samples collected from 2001-2004, the municipal water supply had an average TDS concentration of 460 mg/L, with a maximum of 520 mg/L. The high TDS is due to the groundwater supply, which is high in TDS. The surface water supplies have lower salinity.

Leprino discharges an additional salt load to the Facility. Leprino provides preliminary treatment of its wastewater to reduce the high organic loading typical of food processing waste. However, no specific treatment is provided to reduce the high salt loading. Leprino's pretreated industrial wastewater is discharged to the Discharger's industrial treatment facility, which includes 52 acres of unlined industrial ponds, and is returned to the main treatment facility at the primary sedimentation tanks. The industrial ponds provide significant residence time. While in the industrial ponds, salts

are concentrated through the evaporation of the wastewater. In addition, high TDS process water from the main treatment facility is discharged to the industrial ponds (e.g. digester supernatant, pump seal water, boiler cooling water, etc.) and groundwater from construction de-watering activities with high salinity is also discharged to the ponds. The TDS of Leprino's pre-treated industrial wastewater discharged to the ponds is primarily in the range of 1500 to 2300 mg/L. Leprino's pre-treated industrial wastewater is then commingled with Discharger's water in the 52 acres of ponds and discharged to the main treatment facility at a TDS of over 3,000 mg/L. This results in a significant salt load to the main treatment facility, and ultimately to Old River.

vii. **Effluent Salinity Controls**. Final effluent limitations based on the MCL, Bay-Delta Plan, or the agricultural water quality goal would likely require construction and operation of a reverse osmosis treatment plant. The State Water Board, in Water Quality Order 2005-005 (for the City of Manteca), states, *"…the State Board takes official notice [pursuant to Title 23 of California Code of Regulations, Section 648.2] of the fact that operation of a large-scale reverse osmosis treatment plant would result in production of highly saline brine for which an acceptable method of disposal would have to be developed. Consequently, any decision that would require use of reverse osmosis to treat the City's municipal wastewater effluent on a large scale should involve thorough consideration of the expected environmental effects."* The State Water Board states in that Order, "*Although the ultimate solutions to southern Delta salinity problems have not yet been determined, previous actions establish that the State Board intended for permit limitations to play a limited role with respect to achieving compliance with the EC water quality objectives in the southern Delta.*" The State Water Board goes on to say, "*Construction and operation of reverse osmosis facilities to treat discharges…prior to implementation of other measures to reduce the salt load in the southern Delta, would not be a reasonable approach.*"

The Regional Water Board, with cooperation of the State Water Board, has begun the process to develop a new policy for the regulation of salinity in the Central Valley. In a statement issued at the March 16, 2006, Regional Water Board meeting, board member Dr. Karl Longley recommended that the Board continue to exercise its authority to regulate discharges of salt to minimize salinity increases within the Central Valley. Dr. Longley stated, "*The process of developing new salinity control policies does not, therefore, mean that we should stop regulating salt discharges until a salinity Policy is developed. In the meantime, the Board should consider all possible interim approaches to continue controlling and regulating salts in a reasonable manner, and encourage all stakeholder groups that may be affected by the Regional Board's policy to actively participate in policy development.*"

Considering the actions by the Regional Water Board to develop a new salinity policy for the Central Valley and based on the fact that the

Discharger could not reasonably be expected to achieve compliance with final salinity water quality-based effluent limits (WQBELs) within the five year life of this Order, on August 4, 2006, Regional Water Board staff recommended for adoption a permit that did not include final WQBELs for salinity. Instead, the proposed Order included an interim performance-based effluent limitation for EC and required the Discharger to implement measures to reduce the salinity in its discharge to Old River. The proposed Order required the Discharger develop and implement a pollution prevention plan for salinity, required the submittal of annual reports demonstrating its efforts to reduce salinity, and established an intermediate salinity goal of 1350 µmhos/cm as EC to be achieved during the permit term. In addition, the proposed Order included a requirement to study the affects of the saline discharge in the South Delta and a reopener provision to allow modification of the permit requirements, if necessary.

The Regional Water Board held a lengthy hearing on this permit at the August 2006 Board meeting, with salinity issues being the major topic of testimony and Board discussion. The hearing was continued pending a better assessment of the impacts of the discharge on Delta salinity and development of alternative means of regulating salinity for Board consideration. The Regional Water Board was concerned with the possible impacts of the discharge without requiring final WQBELs, especially considering the impaired nature of the southern Delta, and directed staff to work with the Discharger, the Department of Water Resources (DWR), and other stakeholders to model the affects of the discharge in the southern Delta. It was suggested that DWR's Delta Simulation Model II (DSM2), which has been used extensively for the SDIP, could be used for this purpose. A stakeholder group that included representatives from the City of Tracy, Mountain House Community Services District, South Delta Water Agency, California Sportfishing Protection Alliance, DWR, and the Regional Water Board was formed to develop appropriate scenarios for running the DSM2 model. The model was run under reasonable worst-case conditions, with temporary barrier operations to evaluate current conditions and with permanent gates to evaluate future conditions. See Attachment H for a detailed description of the modeling scenarios.

The DSM2 modeling demonstrated that even under reasonable worst-case conditions the Tracy discharge has limited impacts on the salinity problem in the southern Delta (see Figure F-4). Furthermore, this Order includes an interim performance-based effluent limitation for TDS that limits the annual mass loading of TDS to current levels. This mass loading limitation will require the EC concentration to decrease as the discharge increases. The DSM2 modeling output predicts reduced EC impacts in the southern Delta as the Tracy discharge increases, due to the reduction in the concentration of EC (see Table F-5).

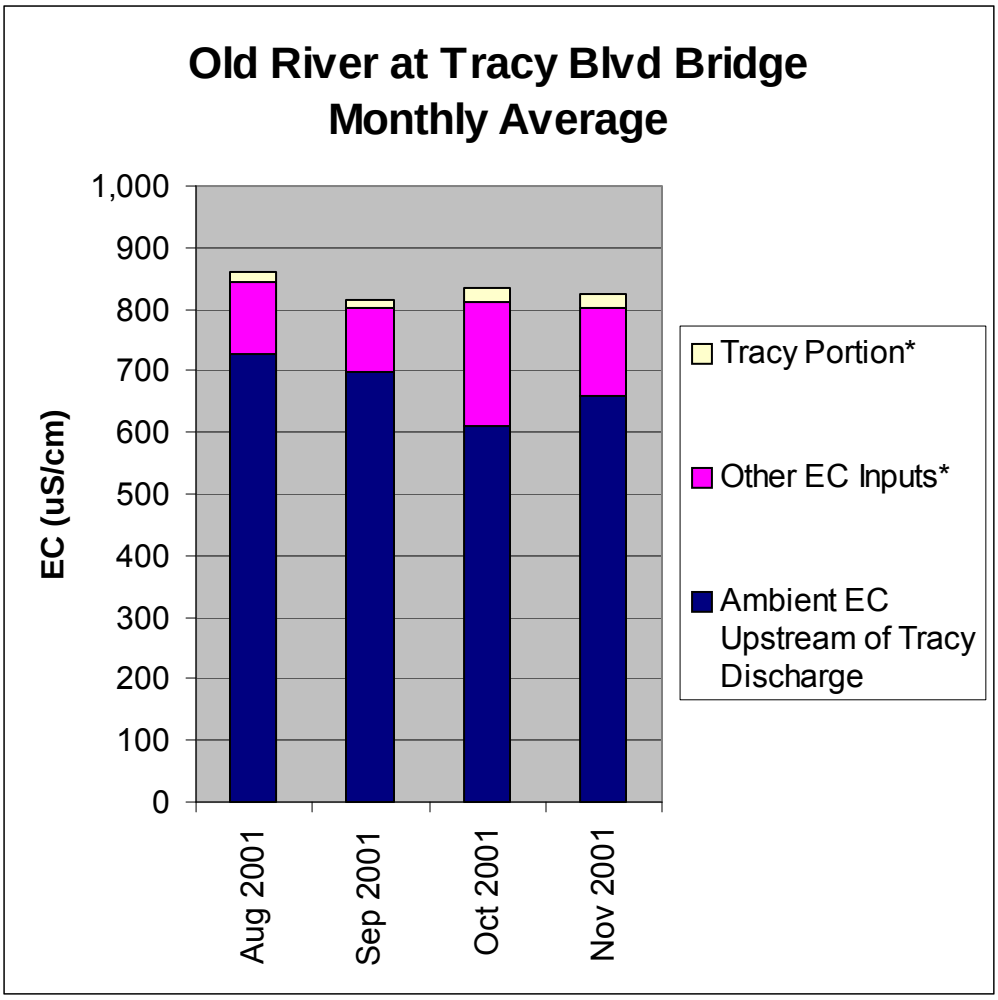
Table F-5
Predicted EC Changes as Tracy Discharge Rate Increases

Tracy Discharge		Predicted EC Changes Caused by Tracy Discharge Old River at Tracy Blvd Bridge (µS/cm)			
		High Exports		Low Exports	
Flow (mgd)	EC (µS/cm)	August[1]	October[2]	August[1]	October[2]
9	1700	**+24**	**+22**	**+6**	**+8**
10.8	1416	**+20**	**+16**	**+6**	**+6**
12	1274	**+18**	**+11**	**+5**	**+4**
14	1092	**+14**	**+4**	**+4**	**+2**
16	956	**+11**	**-2**	**+3**	**-1**

[1] Assumes ambient EC of 700 µS/cm
[2] Assumes ambient EC of 1000 µS/cm

Using actual measured ambient EC data the relative impact of the Tracy discharge in the southern Delta can be evaluated. Figure F-4 shows actual Old River EC data measured upstream of the discharge at Union Island and downstream at the Tracy Blvd Bridge, which is one of the D-1641 salinity compliance locations. DSM2 modeling output was used to predict a reasonable worst-case EC increment caused by the Tracy discharge at the Tracy Blvd Bridge. As shown in Figure F-4, the reasonable worst-case Tracy impact is relatively small compared to other salinity sources in the area. The other sources of salinity are unknown, but likely include the ambient salinity entering from the San Joaquin River, agricultural activities in the area, and possibly groundwater accretions.

Figure F-4
Modeled Salinity Impacts



* The Tracy Portion is DSM2 model predictions using a reasonable worst-case scenario as described in Attachment H. The Other EC Inputs were calculated based on the measured EC at Tracy Blvd Bridge – Tracy Portion – measured ambient EC upstream of Tracy discharge.

The Regional Water Board finds that imposing salinity WQBELs that require the construction and operation of reverse osmosis facilities to treat discharges prior to implementation of other measures to reduce the salt loading in the southern Delta is not a reasonable approach. The Tracy discharge is one of many contributors to the salinity problems in the southern Delta. However, even if the Tracy discharge were removed it would not substantially affect or solve the salinity problems in the area. This Order provides reasonable salinity controls, as described below, that put the Discharger on the path to reducing its salt loading to the Delta.

This Order includes an interim annual mass loading effluent limitation for TDS and requires the Discharger to implement measures to reduce the salinity in its discharge to Old River. The interim effluent limitation is based

on current treatment plant performance and will ensure that the mass loading of salinity does not increase as the effluent flow rate increases. This Order also includes final WQBELs, as modified as a late revision at the May 4, 2007, Regional Water Board hearing, which state that the electrical conductivity in the discharge shall not exceed a monthly average of 700 µmhos/cm (April 1 to August 31) and a monthly average of 1000 µmhos/cm (September 1 to March 31). The effluent limitations for electrical conductivity will become effective immediately if (1) the Discharger fails to submit a Salinity Plan to reduce its salinity impacts to the Southern Delta, including a schedule, to comply with conditions (1) – (3) below to the Regional Water Board within six months of the effective date of this permit, or (2) the Discharger fails to timely implement the Salinity Plan upon the Regional Water Board's approval;

(1) The Discharger implements all reasonable steps as agreed to by the Executive Officer to obtain alternative, lower salinity water supply sources;

(2) The Discharger develops and implements a salinity source control program that will identify and implement measures to reduce salinity in discharges from residential, commercial, industrial and infiltration sources in an effort to meet an interim salinity goal of a maximum 500 µmhos/cm electrical conductivity increase over the weighted average conductivity of the City of Tracy's water supply; and

(3) The Discharger participates financially in the development of the Central Valley Salinity Management Plan at a level commensurate with its contributions of salinity to the Southern Delta.

Upon determination by the Regional Water Board that the Discharger has materially failed to comply with the approved Salinity Plan due to circumstances within its control, the final effluent limitations for electrical conductivity shall become effective immediately. Furthermore, this Order requires that the Discharger implement best practicable treatment or control (BPTC) of its discharge and requires the development and implementation of pollution prevention plan for salinity in accordance with CWC section 13263.3(d)(1)(D).

y. Settleable Solids. For inland surface waters, the Basin Plan states that "[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses." The previous permit, Order 96-104, contained an AMEL and MDEL for settleable solids of 0.1 mL/L and 0.2 mL/L, respectively. Based on information included in self-monitoring reports submitted by the Discharger, the effluent settleable solids was non-detectable (<0.1 mL/L) in all 363 samples in 2006. Therefore, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative objective for solids deposition. Moreover, the Facility will be utilizing tertiary treatment that further reduces the likelihood for excursion above the Basin Plan objective. Therefore, this Order removes the effluent limitations for settleable solids

based on new information consistent with anti-backsliding requirements of 40 CFR 122.44(l)(2)(i)(B)(1). The Regional Water Board finds removing these effluent limitations is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Any impact on existing water quality will be insignificant.

z. **Sulfate.** (see Subsection x. Salinity)

aa. **Temperature.** The Thermal Plan requires that**, "***The maximum temperature shall not exceed the natural receiving water temperature by more than 20°F."* Therefore, to ensure compliance with the Thermal Plan an effluent limitation for temperature is included in this Order.

bb. **Total Dissolved Solids.** (see Subsection x. Salinity)

cc. **Total Trihalomethanes (THMs).** Information submitted by the Discharger indicates that the effluent contains THMs, including chloroform. The Basin Plan contains the narrative "chemical constituent" objective that requires, at a minimum, that waters with a designated MUN use not exceed California MCLs. In addition, the chemical constituent objective prohibits chemical constituents in concentrations that adversely affect beneficial uses. The California primary MCL for total THMs is 100 µg/L. The USEPA primary MCL for total THMs is 80 µg/L, which was effective on January 1, 2002 for surface water systems that serve more than 10,000 people. Pursuant to the Safe Drinking Water Act, DHS must revise the current total THMs MCL in Title 22, CCR to be as low or lower than the USEPA MCL. Total THMs include bromoform, dichlorobromomethane, chloroform, and chlorodibromomethane. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the regional boards, departments, and offices within Cal/EPA. This cancer potency factor is equivalent to a chloroform concentration in drinking water of 1.1 µg/L (ppb) at the 1-in-a-million cancer risk level with an average daily consumption of two liters of drinking water over a 70-year lifetime. This risk level is consistent with that used by the DHS to set de minimis risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels, and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters.

MUN is a designated beneficial use of the receiving water. However, there are no known drinking water intakes in Old River for several miles downstream of the discharge, and chloroform is a non-conservative pollutant. Therefore, to protect the MUN use of the receiving waters, the Regional Water Board finds that, in this specific circumstance, application of the USEPA MCL for total THMs for the effluent is appropriate, as long as the receiving water does not exceed the OEHHA cancer potency factor's equivalent receiving water

concentration at a reasonable distance from the outfall. Effluent samples collected from August 1996 through December 2002 indicate that THMs were present with a maximum concentration of 6.9 µg/L and an average concentration of 4.8 µg/L. Chloroform samples collected over the same period contained a maximum concentration of 4.3 µg/L and an average concentration of 3 µg/L. The discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the chemical constituents objective for MUN use by causing an exceedance of the USEPA primary MCL for total THMs. However, additional receiving water monitoring is required to determine whether the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the chloroform OEHHA cancer potency factor's equivalent receiving water concentration. Therefore, effluent and receiving water monitoring for individual THMs are included in this Order.

dd. **Toxicity.** See Section IV.C.5. of the Fact Sheet regarding whole effluent toxicity.

ee. **Turbidity.** (see Subsection v. Pathogens)

Table F-6
Statistics for Effluent Constituents with Detectable Results[1, 2]

Constituent	MEC	Mean	Std. Dev.	CV	# of Samples
1,4-Dichlorobenzene	0.3			0.60	12
2,4-D	0.19	0.19		0.60	4
Aluminum	140	63	23	0.37	16
Antimony	0.40	0.40	0.28	0.70	16
Arsenic	3.2	2.2	0.41	0.19	16
Barium	28	23	2.7	0.12	15
Cadmium	0.05	0.04	0.01	0.60	16
Chloride (mg/l)	340	287	36	0.12	15
Chlorodibromomethane	0.60	0.33	0.19	0.58	12
Chloroform	4.3	2.8	0.83	0.29	12
Chromium (total)	3.0	1.2	0.76	0.64	16
Copper	14	9.3	2.8	0.31	16
Di(2-ethylhexyl)adipate	0.90			0.60	4
Dichlorobromomethane	1.9	1.4	0.36	0.26	12
Fluoride	220	172	25	0.15	15
Foaming Agents (MBAS)	253	183	37	0.20	12
Iron	74	60	11	0.18	14
Lead	0.30	0.22	0.05	0.22	16
Manganese	34	18	9.0	0.49	14
Mercury	0.01	0.01	0.00	0.14	12
Methyl-tert-butyl ether (MTBE)	1.4	0.42	0.42	0.99	12
Nickel	4.4	3.6	0.55	0.15	16
Nitrate (as N) (mg/L)	7.6	2.8	2.0	0.72	16
Nitrite (as N) (mg/L)	2.0	1.6	0.50	0.30	16

Phosphorus, Total (as P) (mg/l)	4.0	3.1	0.43	0.14	15
Selenium	2.0	1.5	0.52	0.34	15
Silver	0.40	0.14	0.09	0.66	16
Sulfate (mg/l)	350	257	49	0.19	16
Thallium	0.20	0.09	0.06	0.67	16
Zinc	34	24	4.3	0.18	16

1 Effluent data from 2002 – 2005.
2 Unless otherwise stated, all constituent concentrations in µg/L.

Table F-7
Summary of Reasonable Potential Analysis [8]

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
1,4-Dichlorobenzene	ug/L	0.3 J	< 0.12	5	--	--	400	2,600	--	5	No
2,3,7,8-TCDD	pg/L	< 2.90	< 2.90	0.013	--	--	0.013	0.014	--	--	Inconclusive
2,4-D	ug/L	0.20 J	0.38 J	--	--	--	--	--	--	--	No
2-Chloroethyl vinyl ether	ug/L	4.30	< 0.31	--	--	--	--	--	--	--	No
4,4'-DDT	ug/L	< 0.001	< 0.001	0.00059	1.1	0.001	0.00059	0.00059	--	ND	Inconclusive
Aluminum	ug/L	140	1000	87	750 [1]	87 [1]	--	--	--	200	**Yes, MEC>C & B > C**
Ammonia (as N)	mg/L	42.3	2.6	1.96	2.14 [1][5]	1.47 [1][6]	--	--	--	--	**Yes, MEC>C & B > C**
Antimony	ug/L	0.4	0.2 J	6	--	--	14	4300	--	6	No
Arsenic	ug/L	3.2	4.1	10	340	150	--	--	--	10	No
Barium	ug/L	28	94	100	--	--	--	--	100	1000	No
Bis(2-ethylhexyl)phthalate	ug/L	2J	1J	1.8	--	--	1.8	5.9	--	--	Inconclusive
Bromoform	ug/L	0.2 J	< 0.10	4.30	--	--	4.3	360	--	--	No
Cadmium	ug/L	0.05	0.04 J	2.40	4.7 [2]	2.4 [2]	--	--	--	--	No
Chloride	mg/L	340	160	106	860 [1]	230 [1]	--	--	--	106 [7]	**Yes, MEC > C & B > C**
Chlorobenzene	ug/L	1.0 J	< 0.19	680	--	--	680	21000	--	--	No
Chloroform	ug/L	4.3	0.4 J	80	--	--	--	--	--	80	No
Chromium (total)	ug/L	3	13	50	--	--	--	--	--	50	No
Chlorpyrifos	ug/L	< 0.05	< 0.05	0.014	0.02 [3]	0.014 [3]	--	--	--	--	Inconclusive
Copper	ug/L	14	6.9	9.6	14.6 [2]	9.6 [2]	1300	--	10.4	1300	**Yes, MEC > C**
Diazinon	ug/L	< 0.10	< 0.10	0.05	0.08 [3]	0.05 [3]	--	--	--	--	Inconclusive
Chlorodibromomethane	ug/L	0.60	< 0.18	0.41	--	--	0.41	34	--	--	**Yes, MEC > C**
Dichlorobromomethane	ug/L	2.00	< 0.46	0.56	--	--	0.56	46	--	--	**Yes, MEC > C**
Diethyl phthalate	ug/L	1.4 J	< 0.40	23000	--	--	23000	120000	--	--	No
Endrin Aldehyde	ug/L	< 0.002	< 0.002	0.036	0.086 [4]	0.036 [4]	0.76	0.81	--	2	No
Fluoride	ug/L	220	140	2000	--	--	--	--	--	2000	No
Foaming Agents (MBAS)	ug/L	253	< 50.00	500	--	--	--	--	--	500	No
Iron	ug/L	74	5000	300	--	--	--	--	300	300	**Yes, B > C**
Lead	ug/L	0.3	0.74	2.8	70.9 [2]	2.8 [2]	--	--	--	15	No
Lindane	ug/L	< 0.001	< 0.001	0.019	0.95	--	0.019	0.063	--	0.2	No
Manganese	ug/L	34	200	50	--	--	--	--	50	50	No
Mercury	ug/L	0.0081	0.013	0.05	reserved	reserved	0.05	0.051	--	2	Yes
MTBE	ug/L	1.4	1.3 J	5	--	--	--	--	--	5	No
Nickel	ug/L	4.4	5.2	55.9	504 [2]	55.9 [2]	--	--	--	100	No
Nitrate (as N)	mg/L	7.6	7.61	10	--	--	--	--	--	10	**Yes**
Nitrite (as N)	mg/L	2	< 0.20	1	--	--	--	--	--	1	**Yes, MEC > C**
PCBs	ug/L	< 0.08	< 0.08	0.00017	--	0.014	0.00017	0.00017	--	0.5	Inconclusive
Phosphorous	mg/L	4	0.39	--	--	--	--	--	--	--	No
Selenium	ug/L	3.2 J	3.0 J	50	--	--	--	--		50	No
Silver	ug/L	0.43 J	0.05 J	4	4 [2]	--	--	--	10	100	No
Specific Conductace (EC)	uS/cm	2010	1420	700	--	--	--	--	--	700 [7]	**Yes, MEC>C & B > C**
Sulfate	ug/L	490	160	250	--	--	--	--	--	250	**Yes, MEC > C**
Thallium	ug/L	0.52 J	0.20 J	2	--	--	--	--	--	2	No
Toluene	ug/L	0.4 J	< 0.25	6800	--	--	6800	200000	--	--	No
Total Dissolved Solids (TDS)	mg/L	1330	650	450	--	--	--	--	--	450 [7]	**Yes, MEC>C & B > C**
Total Trihalomethane	ug/L	9.1	ND	80	--	--	--	--	--	80	No
Zinc	ug/L	34	6.0 J	100	126 [2]	127 [2]	--	--	100	5000	No

General Note: All inorganic concentrations are given as total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR criterion unless otherwise noted)
CCC = Criterion Continuous Concentration (CTR criterion unless otherwise noted)
J = Detected but not quantified (estimated concentration)
MCL = Drinking Water Standards Maximum Contaminant Levels
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective

Footnotes:
(1) USEPA National Recommended Ambient Water Quality Criteria
(2) Calculated using a receiving water hardness of 109 mg/L as $CaCO_3$.
(3) Department of Fish and Game Criteria, March 2000
(4) as Endrin
(5) Salmonids present and acute design pH of 8.5
(6) ELS present, chronic design pH of 7.8, and temperature of 26.5C
(7) Agricultural water quality goal
(8) Based on data from 2002 - 2005.

4. WQBEL Calculations

a. Effluent limitations for water quality-based limitations were calculated in accordance with section 1.4 of the SIP and the TSD. The following paragraphs describe the methodology used for calculating effluent limitations.

b. **Mass-based Effluent Limitations.** Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g. CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

   Mass-based effluent limitations were calculated based upon the permitted average daily discharge flow allowed in Section VI.A.3.b. of the Limitations and Discharge Requirements.

c. **Averaging Periods for Effluent Limitations**. Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the US EPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed." (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, aluminum, chlorine residual[1], copper, iron, dichlorobromomethane, chlorodibromomethane, and dissolved oxygen as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD, TSS, pH, and coliform, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in Attachment F, Section IV.C.3., above.

d. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the effluent concentration allowances were set equal to the criteria/standards/objectives.

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[1] This Order applies the USEPA National Ambient Water Quality Criteria for chlorine directly as effluent limitations (1 hour average, acute, and 4-day average, chronic). See Section IV.C.3.k., above, for rational regarding the chlorine residual effluent limitations.

$$ECA_{acute} = CMC \qquad ECA_{chronic} = CCC$$

For the human health, agriculture, or other long-term criterion/objective, a dilution credit can be applied. The ECA is calculated as follows:

$$ECA_{HH} = HH + D(HH - B)$$

where:

ECA_{acute} = effluent concentration allowance for acute (one-hour average) toxicity criterion

$ECA_{chronic}$ = effluent concentration allowance for chronic (four-day average) toxicity criterion

ECA_{HH} = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective

CMC = criteria maximum concentration (one-hour average)

CCC = criteria continuous concentration (four-day average, unless otherwise noted)

HH = human health, agriculture, or other long-term criterion/objective

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL).

Human health ECAs are set equal to the AMEL and a statistical multiplier is used to calculate the MDEL.

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

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

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where: $mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting CMC to LTA
M_C = statistical multiplier converting CCC to LTA

Water quality-based effluent limitations were calculated for aluminum, ammonia, copper, dichlorobromomethane, and chlorodibromomethane as follows in Tables F-8 through F-12, below.

Table F-8
WQBEL Calculations for Aluminium

	Acute	Chronic
Criteria (µg/L) [1]	750	750
Dilution Credit	No Dilution	No Dilution
ECA	750	750
ECA Multiplier	0.46	0.66
LTA	348	498
AMEL Multiplier (95th%)	1.33	(2)
AMEL (µg/L)	**462**	(2)
MDEL Multiplier (99th%)	2.17	(2)
MDEL (µg/L)	**755**	(2)

(1) USEPA Ambient Water Quality Criteria
(2) Limitations based on acute LTA (Chronic LTA > Acute LTA)

Table F-9
WQBEL Calculations for Ammonia

	June 1 to October 31		November 1 to May 31	
	Acute	Chronic	Acute	Chronic
pH [1]	8.5	7.8	8.5	7.8
Temperature °C [2]	N/A	26.5	N/A	23.3
Criteria (mg/L) [3]	2.14	1.42	2.14	1.81
Dilution Credit	No Dilution	No Dilution	No Dilution	No Dilution
ECA	2.14	1.42	2.14	1.81
ECA Multiplier	0.54	0.89	0.54	0.89
LTA [4]	1.2	1.3	1.2	1.6
AMEL Multiplier (95th%)	1.13	[5]	1.13	[5]
AMEL (mg/L)	**1.3**	[5]	**1.3**	[5]
MDEL Multiplier (99th%)	1.84	[5]	1.84	[5]
MDEL (mg/L)	**2.1**	[5]	**2.1**	[5]

(1) Acute design pH = 8.5 (max. allowed effluent pH), Chronic design pH = median receiving stream pH
(2) Temperature = Maximum 30-day average seasonal effluent temperature
(3) USEPA Ambient Water Quality Criteria
(4) LTA developed based on Acute and Chronic ECA Multipliers calculated at 99th percentile level per sections 5.4.1 and 5.5.4 of TSD.
(5) Limitations based on acute LTA ($LTA_{acute} < LTA_{chronic}$)

Table F-10
WQBEL Calculations for Copper

	Acute	Chronic
Criteria, dissolved (µg/L) [1]	14.6	9.6
Dilution Credit	No Dilution	No Dilution
Translator [2]	0.96	0.96
ECA, total recoverable [3]	15.2	10
ECA Multiplier [4]	0.52	0.71
LTA	7.9	7.1
AMEL Multiplier (95th%) [5][6]	[8]	1.3
AMEL (µg/L)	[8]	**9.1**
MDEL Multiplier (99th%) [7]	[8]	1.9
MDEL (µg/L)	[8]	**14** [9]

(1) CTR aquatic life criteria, based on a hardness of 109 mg/L as $CaCO_3$.
(2) EPA Translator used as default.
(3) ECA calculated per section 1.4.B, Step 2 of SIP. This allows for the consideration of dilution.
(4) Acute and Chronic ECA Multiplier calculated at 99th percentile per section 1.4.B, Step 3 of SIP or per sections 5.4.1 and 5.5.4 of the TSD.
(5) Assumes sampling frequency n=>4.
(6) The probability basis for AMEL is 95th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
(7) The probability basis for MDEL is 99th percentile per section 1.4.B, Step 5 of SIP or section 5.5.4 of the TSD.
(8) Limitations based on chronic LTA (Chronic LTA < Acute LTA)
(9) MDEL exceeds Basin Plan site-specific objective for copper (10.4 µg//), final effluent limitations implement the Basin Plan site-specific objective.

Table F-11
WQBEL Calculations for Dichlorobromomethane

	Human Health
Criteria (mg/L)	0.56
Dilution Credit	20:1
Background[1]	0.25
ECA	6.8
AMEL (mg/L) [2]	**6.8**
MDEL/AMEL Multiplier[3]	1.4
MDEL (mg/L)	**9.5**

(1) Arithmetic Mean per section 1.4 of SIP
(2) AMEL = ECA per section 1.4.B, Step 6 of SIP
(3) Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

Table F-12
WQBEL Calculations for Chlorodibromomethane

	Human Health
Criteria (mg/L)	0.41
Dilution Credit	20:1
Background[1]	0.25
ECA	3.6
AMEL (mg/L) [1]	**3.6**
MDEL/AMEL Multiplier[2]	2.0
MDEL (mg/L)	**7.1**

(1) Arithmetic Mean per section 1.4 of SIP
(2) AMEL = ECA per section 1.4.B, Step 6 of SIP
(3) Assumes sampling frequency n<=4. Uses MDEL/AMEL multiplier from Table 2 of SIP.

5. Whole Effluent Toxicity (WET)

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

a. **Acute Aquatic Toxicity.** The Basin Plan states that "*…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…*". Effluent limitations for acute toxicity have been included in this Order. WDR Order No. 96-104 required compliance with the testing procedures contained in EPA/600/4-90/027F. In October 2002, the USEPA promulgated EPA-821-R-02-012, revising the previous edition. This Order requires that the Discharger comply with the new USEPA procedure, but allows the Discharger to remove ammonia-related toxicity prior to conducting acute toxicity tests until **July 31, 2008**, or until completion of Phase 1 Improvements, at which time the Discharger must fully nitrify and denitrify the wastewater and must implement the test without modifications to eliminate ammonia toxicity. The time schedule is authorized to be included in the Monitoring and Reporting Program based on 40 CFR section 122.47.

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) Based on quarterly whole effluent chronic toxicity testing performed by the Discharger from March 2, 2001 through October 15, 2004, the discharge has reasonable potential to cause or contribute to an to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

No dilution has been granted for the chronic condition. Therefore, chronic toxicity testing results exceeding 1 chronic toxic unit (TUc[2]) demonstrates the discharge has a reasonable potential to cause or contribute to an in-stream excursion of the Basin Plan's narrative toxicity objective. As shown in Table F-13, below, the discharge regularly exceeds 1 TUc with all three test species.

[2] TUc – Chronic toxic unit. The reciprocal of the effluent concentration that causes no observable effect on the test organism in a chronic toxicity test (TUc = 100/NOEC).

Table F-13
Whole Effluent Chronic Toxicity Testing Results

	Fathead Minnow *Pimephales promelas*		**Water Flea** *Ceriodaphnia dubia*		**Green Alga** *Selenastrum capricornutum*
Date	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
03/02/2001	3	3	3	9	3
05/25/2001	3	3	1	1	3
08/24/2001	1	3	1	1	3
11/30/2001	1	3	1	1	3
02/27/2002	3	3	3	3	3
05/30/2002	1	3	3	> 83	3
08/28/2002	3	28	3	3	3
11/21/2002	1	3	1	3	3
02/25/2003	9	9	3	> 83	1
05/22/2003	3	3	3	9	3
08/29/2003	1	3	1	28	1
10/29/2003	3	3	3	3	1
02/17/2004			3	9	3
05/14/2004	3	3	3	9	3
08/24/2004	3	3	1	3	3
10/15/2004	3	9	1	3	28

Numeric chronic WET effluent limitations have not been included in this order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[3] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.*" The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are

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

under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). Furthermore, Special Provisions VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE work plan. The numeric toxicity monitoring trigger is not an effluent limitation. It is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if a pattern of effluent toxicity has been demonstrated.

D. Interim Effluent Limitations

1. **Copper and Ammonia.** The SIP contains guidance on implementation of the NTR and CTR. The SIP, section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Water Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent. The State Water Board has held that the SIP may be used as guidance for non-CTR constituents. Therefore, the SIP requirement for interim effluent limitations has been applied to both CTR and non-CTR constituents in this Order.

The interim effluent limitations for copper and ammonia established in this Order are based on the current treatment plant performance. In developing the interim limitation, where there are ten sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row*). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. In situations where the observed maximum effluent concentration (MEC) exceeds the 99.9%, the MEC is used as the interim limit.

When there are less than ten sampling data points available, the *Technical Support Document for Water Quality- Based Toxics Control* ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term

average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than ten sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2).

The Regional Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with effluent limitations cannot be achieved by the existing discharge. 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. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

Table F-14 summarizes the calculations of the interim effluent limitations for copper and ammonia:

Table F-14
Interim Effluent Limitation Calculation Summary

Parameter	MEC	Mean	Std. Dev.	CV	# of Samples	**Interim Limitation**
Copper (µg/L)	14	9.3	2.9	0.31	16	**19**
Ammonia (as N) (mg/L)	42	16.6	4.1	0.25	1093	**42**

2. **BOD, TSS, and Total Coliform Organisms.** The establishment of tertiary limitations has not been previously required for this discharge; therefore, a schedule for compliance with the tertiary treatment requirements is included as a Provision in this Order. This Order provides interim effluent limitations for BOD, TSS, and total coliform based on the existing effluent limitations required by Order No. 96-104, which the Discharger is currently capable of meeting. Full compliance with the final effluent limitations for BOD, TSS, total coliform, and operational requirements for turbidity are not required by this Order until August 1, 2008, or upon compliance with Special Provisions VI.C.4.b., whichever is sooner. The Discharger is already in the process of upgrading the Facility to a tertiary treatment level. The Discharger began construction of their Phase 1 Improvements in August 2004, which includes construction of two tertiary treatment modules. The compliance schedule for tertiary treatment has been developed in accordance with the Discharger's implementation schedule.

3. **Mercury.** See Section IV.C.3.r. for the rationale for the interim effluent limitations for mercury.

4. **Total Dissolved Solids (TDS).** The interim limitation for TDS in this Order is based on current treatment plant performance. The total mass loading limitation ensures that the total annual mass loading of TDS to Old River does not increase as the Discharger increases its discharge rate. The Discharger is in the process of

changing its water supply to lower salinity sources. Therefore, as its effluent discharge increases the TDS concentration will decrease resulting in no net increase in the annual mass loading of TDS to Old River. The interim effluent limitation for TDS shall remain in effect until final effluent limitations for salinity are adopted.

E. Land Discharge Specifications (see Order No. R5-2007-0038)

F. Reclamation Specifications (Not Applicable)

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

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

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "*[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses*." The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains Receiving Surface Water Limitations based on the Basin Plan numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, and electrical conductivity.

   Numeric Basin Plan objectives for bacteria, dissolved oxygen, pH, temperature, and turbidity are applicable to this discharge and have been incorporated as Receiving Surface Water Limitations. Rational for these numeric receiving surface

water limitations are as follows:

a. **Bacteria.** The Basin Plan includes a water quality objective that "*[I]n water designated for contact recreation (REC-1), 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*." Numeric Receiving Water Limitations for bacteria are included in this Order and are based on the Basin Plan objective.

b. **Dissolved Oxygen.** The Basin Plan includes a water quality objective that "*[W]ithin the legal boundaries of the Delta, the dissolved oxygen concentrations shall not be reduced below: 7.0 mg/L in the Sacramento River (below the I Street Bridge) and in all Delta waters west of the Antioch Bridge; 6.0 mg/L in the San Joaquin River (between Turner Cut and Stockton, 1 September through 30 November); and 5.0 mg/L in all other Delta waters except those bodies of water which are constructed for special purposes and from which fish have been excluded or where the fishery is not important as a beneficial use*." Numeric Receiving Water Limitations for dissolved oxygen are included in this Order and are based on the Basin Plan objective.

c. **pH.** The Basin Plan includes 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. The change in pH of 0.5 (standard pH units) is not included as necessary to protect aquatic life in U.S. EPA's Ambient Criteria for the Protection of Freshwater Aquatic Life as long as pH does not fall below 6.5 or exceed 8.5 units. Therefore, an averaging period of 30 days has been applied to the Basin Plan receiving water objective for changes in pH. Numeric Receiving Water Limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

d. **Temperature.** Receiving surface water limitations are included in this Order and are based on the water quality objectives contained in the Thermal Plan (see Section III.A.2., above, for Thermal Plan requirements). The temperature receiving water limitations are not new limitations; they were contained in the previous Order. The Discharger is able to comply with Receiving Water Limitations V.A.4.a., at the current discharge flow rate. However, modeling performed by the Discharger indicates that the 1 °F limitation of Objective 5.A.(1)b of the Thermal Plan may be exceeded 3 months of the year at the expanded daily average discharge flow rate of 16 mgd. Prior to increasing the discharge, the Discharger shall demonstrate compliance with all effluent and receiving water limitations, including those for temperature, prior to expanding its permitted average daily flow to 10.8 mgd, which is proposed upon completion of the Discharger's Phase 1 improvements. The Discharger requests in its Report of Waste Discharge an increase of the permitted average daily flow to 16 mgd upon completion of the Phase 2-4 improvements. Prior to

increasing the permitted average daily flow to 16 mgd, the Discharger shall be in compliance with Receiving Water Limitations V.A.4.a. or shall have obtained an exception to the Thermal Plan. This Order may be reopened to modify limitations for Thermal Plan compliance.

e. **Turbidity.** The Basin Plan includes a water quality objective that "*[I]ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.*
- *Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.*
- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent*."

A numeric Receiving Surface Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity.

B. Groundwater. (Set forth in Order No. R5-2007-0038)

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 122.48 of 40 CFR requires all NPDES permits to specify recording and reporting of monitoring results. Sections 13267 and 13383 of the CWC authorize the Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program, Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for this facility.

A. Influent Monitoring

Domestic influent monitoring for the main treatment facility and industrial influent monitoring for the industrial treatment facility is required in this Order. The Monitoring and Reporting Requirements (Attachment E) includes influent monitoring requirements in Attachment E, Section III.A.

B. Effluent Monitoring

Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. The Monitoring and Reporting Requirements include effluent monitoring requirements in Attachment E, Section IV.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Weekly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity (Effluent Limitations IV.A.1.c.).

2. **Chronic Toxicity.** Quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

3. **Ammonia-related Toxicity.** The Discharger is currently constructing nitrification facilities to remove ammonia. This Order allows the Discharger to modify the acute and chronic toxicity testing to eliminate ammonia-related toxicity pending completion of those facilities. The Discharger is required to implement the tests without modifications to eliminate ammonia toxicity effective **August 1, 2008** or upon compliance with Special Provisions VI.C.4.b., whichever is sooner.

D. Receiving Water Monitoring

1. **Surface Water.** Receiving water monitoring is required to demonstrate compliance with the Receiving Water Limitations.

2. **Groundwater.** (Set forth in Order No. R5-2007-0038)

E. Other Monitoring Requirements

1. **Biosolids Monitoring.** (Set forth in Order No. R5-2007-0038)

2. **Municipal Water Supply Monitoring.** The Discharger is required to monitor the municipal water supply annually.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

1. **Federal Standard Provisions.** In accordance with 40 CFR section 122.41and 122.42, the Federal Standard Provisions provided in Attachment D of this Order apply to this discharge.

2. **Regional Water Board Standard Provisions.** In addition to the Federal Standard Provisions (Attachment D), the Discharger must comply with the Regional Water Board Standard Provisions provided in Standard Provisions VI.A.2.

   40 CFR Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR Section 123.25(a)(12) allows the State to omit or modify conditions to impose more stringent requirements. In accordance with Section 123.35, this Order omits federal conditions that address enforcement authority specified in 40CFR Sections

122.41(j)(5) and (k)(2) because the enforcement authority under the CWC is more stringent. In lieu of these conditions, this Order incorporates by reference CWC section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Special Provisions VI.C.1.a.** Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, which include the following:

   i. When standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision. Therefore, if more or less stringent applicable water quality standards are promulgated or approved pursuant to section 303 of the Federal Water Pollution Control Act or amendments thereto, the Regional Water Board will revise and modify this Order in accordance with such more or less stringent standards.

   ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

b. **Dissolved Oxygen (DO) TMDL (Special Provisions VI.C.1.b.).** This provision allows the Regional Water Board to reopen this Order in the event the DO TMDL requires load allocations for the Facility's discharge.

c. **Mercury (Special Provisions VI.C.1.c.).** This provision allows the Regional Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Regional Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.

d. **Pollution Prevention (Special Provisions VI.C.1.d.).** This Order requires the Discharger prepare pollution prevention plans following CWC section 13263.3(d)(3) for copper, salinity, and mercury. This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for these constituents based on a review of the pollution prevention plans.

e. **Whole Effluent Toxicity (Special Provisions VI.C.1.e.).** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be

reopened to include a numeric chronic toxicity limitation based on that objective.

f. **Dilution Credits (Special Provisions VI.C.1.f.**). As discussed in the Fact Sheet, Section IV.C.2.b., the Discharger has provided adequate information for the allowance of some dilution credits.. A 20:1 dilution credit based on the DMS2 Flow monitoring has been granted for effluent limitations developed for human carcinogens and for agricultural objectives.

g. **Water Effects Ratio (WER) and Metal Translators (Special Provisions VI.C.1.g.).** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority pollutant inorganic constituents, except for aluminum, where Manteca's calculated WER was utilized. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing effluent limitations for copper, iron, manganese, and aluminum. If the Discharger performs additional studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

h. **Human Health and Agricultural Dilution Credits (Special Provisions VI.C.1.h.)**. The effluent limitation calculation procedures in Section 1.4 of the SIP allow for the granting of a human health dilution credit based on the estimated harmonic mean flow of Old River and the arithmetic mean flow. In this Order, the maximum allowable human health dilution credit is 20:1 based on the DMS2 modeling conducted by DWR. However, the Regional Water Board finds that granting of this dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity for human health water quality objectives and could violate the Antidegradation Policy. In previous NPDES permits, the Regional Water Board has developed effluent limitations based on the amount of dilution that would be required, such that water quality objectives in the receiving water would be met when effluent concentrations are at estimated maximum concentrations.

The Discharger is constructing a phased upgrade of the Facility, as described in Attachment F, Section II.E. Phase 1 is expected to be complete by August 1, 2008, and includes construction of nitrification/denitrification facilities, which will significantly reduce ammonia in the discharge. Chlorine, when combined with ammonia, creates chloramines, which are effective and stable disinfectants. Without ammonia, organochloramines are formed during the disinfection process, which are less effective disinfectants than chloramines. Consequently, more chlorine may be required for disinfection and may increase disinfection byproducts, including chlorodibromomethane and dichlorobromomethane. Therefore, Facility performance before the Phase I improvements is not sufficient to determine the maximum dilution needed to meet the CTR human health water quality objectives. After evaluation of Facility performance with nitrification/denitrification facilities operational, this provision allows the Regional Water Board to reopen the Order to reduce the

allowable human health dilution credits to the maximum allowable dilution needed to meet CTR human health water quality objectives, based on estimated maximum effluent concentrations. The provision also allows modifications of the applicable effluent limitations.

i. **Central Valley Drinking Water Policy (Special Provisions VI.C.1.i.)**. The Regional Water Board is currently working with stakeholders to develop a Drinking Water Policy for the Central Valley. Based on the current schedule, the Basin Plan may be proposed to be amended in 2009 or 2010 to incorporate water quality objectives for the protection of drinking water supplies. A reopener has been included in the Order to allow the Regional Water Board to reopen the permit to include appropriate effluent limitations, as necessary, to require compliance with these objectives.

j. **Thermal Impacts (Special Provision VI.C.1.j).** The Discharger proposes to conduct four years of intensive monitoring of thermal impacts in the vicinity of the outfall and develop an appropriate range of mitigation measures, if necessary. Furthermore, as required by other regulations, the Discharger is required to conduct consultations with the United States Fish and Wildlife Services, National Marine Fisheries Service, and California Department of Fish and Game to develop mitigation measures for the protection of aquatic species, including rare, threatened, and endangered species protected under the Endangered Species Act. A reopener has been included to allow the Regional Water Board to reopen the permit should the thermal studies conducted by the Discharger and/or the consultations result in the need for new or revised temperature effluent limitations or requirements.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements (Special Provisions VI.C.2.a.).** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at III-8.00.) Based on quarterly whole effluent chronic toxicity testing performed by the Discharger from March 2, 2001 through October 15, 2004, the discharge has reasonable potential to cause or contribute to an to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

Special Provisions VI.C.2.a. requires the Discharger to develop a Toxicity Reduction Evaluation (TRE) work plan in accordance with EPA guidance. In addition, the provision establishes a numeric toxicity monitoring trigger, requirements for accelerated monitoring, and a protocol for requiring the Discharger to initiate a TRE if a pattern of toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not

allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits a pattern of toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests every two weeks using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991* (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required*." Therefore, four accelerated monitoring tests are required in this provision. If the monitoring trigger is not exceeded in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of a pattern of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

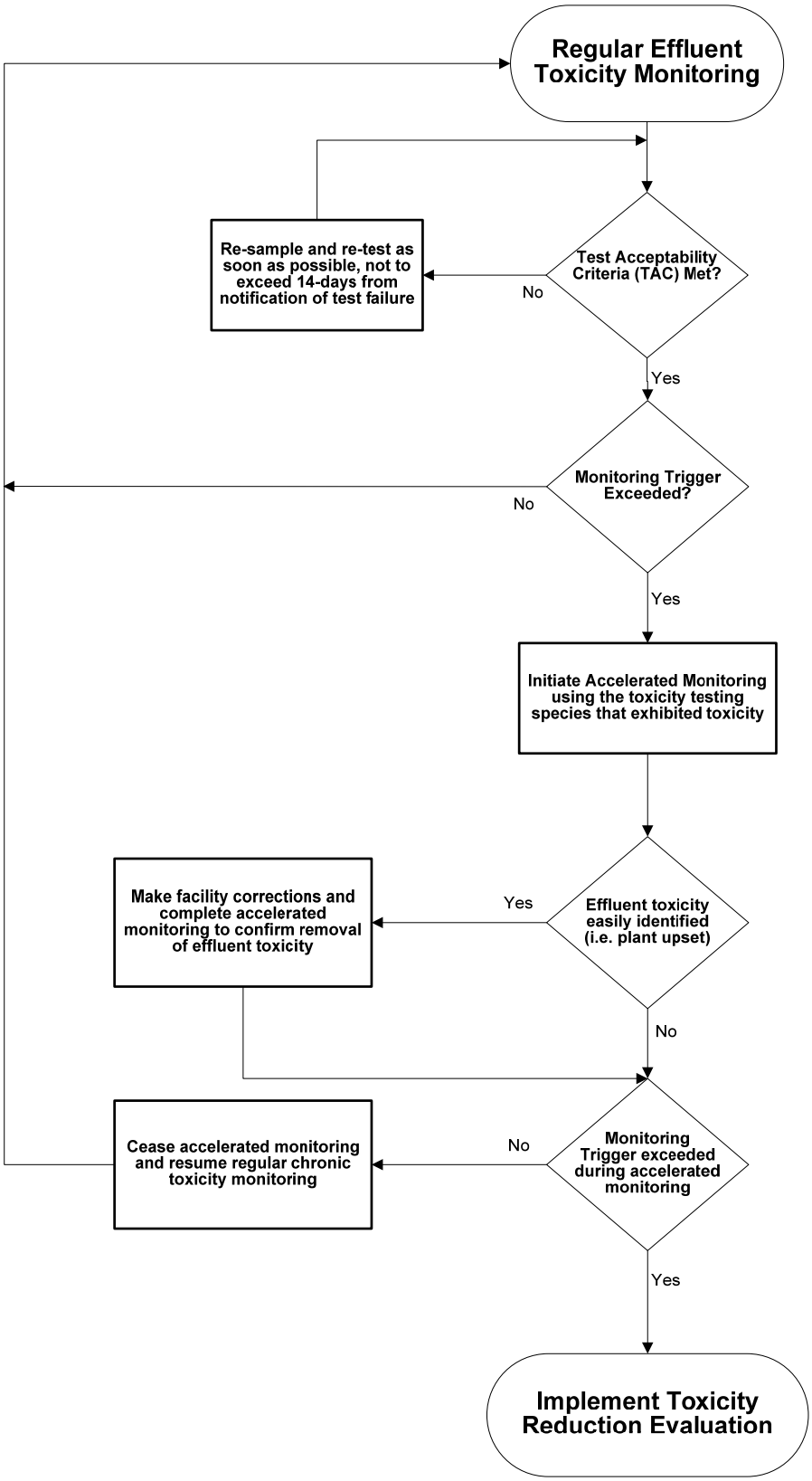
See the WET Accelerated Monitoring Flow Chart (Figure F-5), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

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

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, *(EPA/833B-99/002), August 1999.*
- Generalized Methodology for Conducting Industrial TREs*, (EPA/600/2-88/070), April 1989.*
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, *Second Edition, EPA 600/6-91/005F, February 1991.*
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I*, EPA 600/6-91/005F, May 1992.*

- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting acute and Chronic Toxicity, *Second Edition, EPA 600/R-92/080, September 1993.*
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity*, Second Edition, EPA 600/R-92/081, September 1993.*
- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition, EPA-821-R-02-012, October 2002.*
- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA-821-R-02-013, October 2002.*
- Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991

Figure F-5
WET Accelerated Monitoring Flow Chart



b. **Best Practicable Treatment or Control (BPTC) of Salinity (Special Provisions VI.C.2.b.).** The Discharger is required to meet BPTC of its discharge to assure compliance with the Antidegradation Policy (Resolution 68-16). Special Provisions VI.C.2.b. establishes schedules of tasks to evaluate the Facility's BPTC of salinity in its discharge to Old River. Resolution 68-16 requires that, "*Any activity which produces or may produce waste or increase volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.*" The Facility effluent contains salinity that may be adversely affecting water quality in Old River. The Discharger proposes to increase its discharge from a design capacity of 9 million gallons per day (mgd) to 16 mgd next permit term. The Discharger proposes an expansion of the Facility to be complete by November 1, 2016. Prior to increasing the discharge to 16 mgd, the Discharger must meet the requirements of Resolution 68-16, which requires meeting BPTC of its discharge. This provision requires the Discharger to perform an evaluation of the BPTC of salinity and to develop and implement a plan to implement measures necessary to meet BPTC of salinity in its discharge to Old River.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan (PPP) for Mercury (Special Provisions VI.C.3.a.).** A PPP for mercury is required in this Order per CWC section 13263.3(d)(1)(D) as part of the interim effluent limitation for mercury. The interim effluent limitations for mercury limits the mass loading to current levels. The Discharger has requested an expansion; therefore, it may be necessary to provide source controls to limit the mass loading of mercury entering the facility to comply with the interim effluent limitations for mercury. The PPP shall be developed in conformance with CWC section 13263.3(d)(3) as outlined in subsection d., below.

b. **Pollution Prevention Plan (PPP) for Salinity (Special Provisions VI.C.3.b.).** A PPP for salinity is required in this Order per CWC section 13263.3(d)(1)(D). Effluent limitations are not required, however, the Discharger is required to reduce the salinity of its discharge in order to contribute to attainment of water quality objectives. The PPP shall be developed in conformance with CWC section 13263.3(d)(3) as outlined in subsection d., below.

c. **Salinity Reduction Goal (Special Provisions VI.C.3.c.).** A salinity goal has been established in this Order to provide a measurable goal for effluent salinity reductions to demonstrate that the Discharger is making reasonable progress in the reduction of salinity in its discharge to Old River. A monthly average effluent salinity of 1350 µmhos/cm as electrical conductivity (EC) has been established as a reasonable goal for this permit term. In the Tulare Lake Basin Plan (Page IV-10), the Regional Water Board adopted a maximum allowable effluent limitation for publicly owned wastewater treatment works discharging to

navigable water: "*The maximum electrical conductivity (EC) of a discharge shall not exceed the quality of the source water plus 500 micromhos per centimeter….*" Although not directly applicable to the Facility's discharge to Old River, the Tulare Lake Basin Plan salinity effluent limit does indicate what constitutes a reasonable incremental increase above the Discharger's water supply (i.e. water supply EC plus 500 µmhos/cm). Based on water supply monitoring performed by the Discharger from 2001-2004, the EC of the water supply averaged 739 µmhos/cm, with a maximum of 821 µmhos/cm. Reducing the monthly average effluent salinity to 1350 µmhos/cm as EC is an achievable goal that would demonstrate a reasonable measure of progress in the reduction of salinity discharged to Old River.

d. **CWC section 13263.3(d)(3) Pollution Prevention Plans.** The pollution prevention plans required for copper, salinity, and mercury shall, at minimum, meet the requirements outlined in CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:

   i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.

   ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.

   iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.

   iv. A plan for monitoring the results of the pollution prevention program.

   v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.

   vi. A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

   vii. A description of the Discharger's existing pollution prevention programs.

   viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.

   ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

CWC section 13263.3(g) requires that the Regional Water Board make the pollution prevention plans available for public review, except to the extent that information is classified as confidential because it is a trade secret. Furthermore, CWC section 13263.3(e and f) allows the Regional Water Board to establish a schedule of actions identified in the pollution prevention plans for a discharger after the solicitation of public comments.

4. Compliance Schedules

a. **Title 22 Disinfection (Special Provisions VI.C.4.a.).** See Attachment F, Section IV.C.3.v. for the rationale for requiring that the discharge comply with the DHS Title 22 disinfection requirements and the rationale for the establishment of a compliance schedule. By **August 1, 2008**, or upon compliance with Special Provisions VI.C.4.b., whichever is sooner, wastewater discharged to Old River shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DHS reclamation criteria, Title 22 CCR, Division 4, Chapter 3, (Title 22) or equivalent. Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).The Discharger is currently constructing tertiary filtration facilities to comply with the new disinfection requirements. The final compliance date is based on the Dischargers construction schedule.

b. **Phase 1 Improvements (Special Provisions VI.C.4.b.).** In order to comply with the Antidegradation Policy, the Discharger must comply with Special Provisions VI.C.4.b. before the permitted flow may be increased to 10.8 mgd. .

c. **Phases 2-4 Improvements (Special Provisions VI.C.4.c.).** In order to comply with the Antidegradation Policy, the Discharger must comply with Special Provisions VI.C.4.c. before the permitted flow may be increased to 16 mgd.

d. **Compliance Schedule for Final Effluent Limitations for Copper** (**Special Provisions VI.C.4.d.**). On November 15, 2005, the Discharger submitted adequate justification, in accordance with Section 2.1 of the SIP, for a time schedule to comply with the final effluent limitations for copper. The compliance schedule for copper includes requirements that the Discharger prepares and submits a corrective action plan/implementation schedule, Pollution Prevention Plan, and a treatment feasibility study to assure compliance with the final effluent limitations for copper. Furthermore, when the compliance schedule exceeds one-year, the SIP requires interim numeric effluent limitations. Performance-based interim effluent limitations have been established for copper in this Order. See the Fact Sheet, Section IV.D.1. for a discussion of the rationale for the interim effluent limitations for copper.

e. **Compliance Schedules for Final Effluent Limitations for Ammonia** (**Special Provisions VI.C.4.e.**). By **August 1, 2008**, or upon compliance with Special Provisions VI.C.4.b., whichever is sooner, the Discharger shall comply with the final effluent limitations for ammonia. Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.). The Discharger is currently constructing nitrification/denitrification facilities to comply with the final effluent

limitations for ammonia. The final compliance date is based on the Dischargers construction schedule. Since the compliance schedule exceeds one-year, numeric interim effluent limitations have been required in this Order. See the Fact Sheet, Section IV.D.1. for a discussion of the rationale for the interim effluent limitations for ammonia.

5. Construction, Operation, and Maintenance Specifications

a. Turbidity. Operations specifications for turbidity are included as an indicator of the effectiveness of the treatment process and to assure compliance with effluent limitations for total coliform organisms. The tertiary treatment process is capable of reliably meeting an effluent turbidity of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the treatment system, such that virus removal is impaired, would normally result in increased particles in the effluent and, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. The operational specification requires that effluent turbidity shall not exceed 2 NTU as a daily average; 5 NTU, more than 5 percent of the time within a 24-hour period; and an instantaneous maximum of 10 NTU.

6. Special Provisions for Municipal Facilities (POTWs Only)

a. **Pretreatment Requirements (Special Provisions VI.C.6.a.).**

i. The Federal Clean Water Act, Section 307(b), and Federal Regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.

ii. The Discharger shall implement and enforce its approved pretreatment program and is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or the U.S. EPA may take enforcement actions against the Discharger as authorized by the CWA.

7. Other Special Provisions

VIII. PUBLIC PARTICIPATION

The Regional Water Board is considering the issuance of waste discharge requirements (WDRs) that will serve as a NPDES permit for the Tracy Wastewater Treatment Plant. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested parties of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations.

B. Written Comments

The staff determinations are tentative. Interested parties are invited to submit written comments concerning these tentative WDRs. Comments should be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on April 6, 2007

C. Public Hearing

The Regional Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 3/4 May 2007
Time: 8:30 am
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested parties are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our web address is http://www.waterboards.ca.gov/rwqcb5/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling Mr. Jim Marshall at (916) 464-4772.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Mr. Jim Marshall at (916) 464-4772.

Attachment G – Bibliography

1. City of Tracy, *Report of Waste Discharge and NPDES Permit Application for Tracy Wastewater Treatment Plant*, submitted February 3, 2003.

2. City of Tracy, *Tracy Wastewater Treatment Plant Expansion Draft Environmental Impact Report, SCH No. 2000012039*, October 2001

3. City of Tracy, *Tracy Wastewater Treatment Plant Expansion Final Environmental Impact Report, SCH No. 2000012039*, September 2002

4. California Department of Water Resources and United States Bureau of Reclamation, *Draft Environmental Impact Report/ Environmental Impact Statement, Interim South Delta Program, Volumes I and II*, July 1996

5. CH2M Hill, *City of Tracy Wastewater Treatment Plant Facilities Plan*, January 3, 2003.

6. Carollo Engineers, *City of Tracy Dilution Study and Water Quality Attainability Assessment*, April 1999

7. CH2M Hill, *City of Tracy Wastewater TDS Study*, December 1992

8. CH2M Hill, *Shallow Groundwater Investigation Tracy Wastewater Treatment Plant Holding Ponds*, June 1991

9. CH2M Hill, *Draft Plan – City of Tracy Wastewater Treatment Plant Holding Ponds Investigation*, July 1994

10. CH2M Hill, *City of Tracy Wastewater Treatment Plant Holding Ponds Investigation*,
June 1995

11. CH2M Hill, *Evaluation of the Tracy WWTP in Response to RWQCB Letter Dated June 15, 2004*, April 2005

12. US EPA, Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001 (TSD), March 1991

13. State Water Resources Control Board, California Environmental Protection Agency, *Policy for the Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays and Estuaries of California*, March 2, 2000 (Revised February 24, 2005)

14. State Water Resources Control Board, California Environmental Protection Agency, *Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*, September 1975

15. California Regional Water Quality Control Board, Central Valley Region, *Fourth Edition of the Water Quality Control Plan (Basin Plan) for the Sacramento River and the San Joaquin River Basins,* September 15, 1998 (Revised September 2004)

16. US EPA, *Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (California Toxics Rule)*, 40 CFR Part 131, Federal Register/Volume 65, No. 97, May 18, 2000

17. Kennedy and Neville*, Basic Statistical Methods for Engineers and Scientists, Second Edition*

18. J.A. Davis and B.K. Greenfield, San Francisco Estuary Institute and Gary Ichikawa and Mark Stephenson,Moss Landing Marine Laboratory, *Mercury In Sport Fish From The Delta Region (Task 2a)*, September 2002

19. REVISED Water Right Decision 1641, Implementation of Water Quality Objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary; Adopted on December 29, 1999 and revised in accordance with Order WR 2000-02 on March 15, 2000

20. South Delta Improvement Program – Draft Environmental Impact Statement/Environmental Impact Report, October 2005

21. Department of Water Resources, DMS2 Modeling, 2007.

Attachment H
DSM2 Modeling Scenarios for
City of Tracy and Mountain House CSD (MHCSD) Discharges
20 September 2006

This document provides the necessary information to run the Department of Water Resource's Delta Simulation Model 2 (DSM2) for evaluation of the salinity impacts in the south Delta from the City of Tracy and MHCSD discharges. The modeling input parameters and assumptions, modeling scenarios, and the requested model outputs are identified below. This modeling will not directly predict receiving water salinity. Rather, the assumed 100 µmhos/cm salinity will be used as a tracer, with the model output predicting the volume fraction effluent in the water at a given location. Predicted salinity in the receiving water is then calculated by weighting the fraction of effluent and receiving water with their respective salinities.

Table 1: Input Parameters and Assumptions

Season and Temporary Barriers/Permanent Gates Operations	**October-November** – All four barriers/gates in place **July-August** – Only the 3 agricultural barriers/gates in place, HOR open.
San Joaquin River Flow	The flow in the San Joaquin River (SJR) is to be set at 1,000 cfs for all model runs. This represents a reasonable worst-case condition.
WWTP Discharge Flow Rates and EC Concentrations	Each scenario evaluates the affect of the discharges in the near term and at project build-out by varying the discharge flow rate (see Tables 2 and 3). The WWTP effluent EC concentrations are expressed as an increment above the ambient EC. The ambient EC is set to zero and effluent EC set to 100.
SWP and CVP Pumping Operations	Two scenarios for the SWP and CVP export pumping operations to be evaluated, high pumping and low pumping, defined as follows: **High Export Pumping**: SWP = 6,680 cfs, CVP = 4,600 cfs **Low Export Pumping**: SWP = 1,500 cfs, CVP = 1,000 cfs
Tracy and MHCSD Outfall Locations	Inputs from the Tracy outfall will be added at Node 55. Inputs from the MHCSD outfall will be added at Node 67.
Head of Old River Inflow	During the October-November period the Head of Old River barrier/gate will be closed. However, some flow is allowed to enter Old River from the SJR and varies based on export pumping rates. Flow output from the Channel downstream of the HOR barrier/gate (Channel 54) will be provided to show the flow entering Old River.
Tidal Inputs	The tidal inputs from July - August and October - November 1985 will be used for the model runs. This represents a reasonable worst-case tidal pattern.

Attachment H
DSM2 Modeling Scenarios for
City of Tracy and Mountain House CSD (MHCSD) Discharges
20 September 2006

Table 2: Scenario 1

October – November SJR Flow at 1,000 cfs				
Model Run	**Barrier/Gates Operations**	**SWP and CVP Pumping Operations**	**WWTP Discharges**	
			Flow	**Increment Above Ambient EC**
1.1a	(a)	High Pumping	**TRACY: 9 MGD**	**TRACY: 100 µS/CM**
1.1b	(a)	High Pumping	**MHCSD: 1 MGD**	MHCSD: 100 µS/cm
1.2a	(a)	Low Pumping	**TRACY: 9 MGD**	**TRACY: 100 µS/CM**
1.2b	(a)	Low Pumping	**MHCSD: 1 MGD**	MHCSD: 100 µS/cm
1.3a	(b)	High Pumping	**TRACY: 16 MGD**	**TRACY: 100 µS/CM**
1.3b	(b)	High Pumping	**MHCSD: 5.4 MGD**	MHCSD: 100 µS/cm
1.4a	(b)	Low Pumping	**TRACY: 16 MGD**	**TRACY: 100 µS/CM**
1.4b	(b)	Low Pumping	**MHCSD: 5.4 MGD**	MHCSD: 100 µS/cm

(a) Temporary Barriers – Head of Old River Barrier and 3 Agricultural Barriers (w/ notched weirs)
(b) SDIP – Head of Old River gate partially closed and 3 Agricultural Gates

Table 3: Scenario 2

July – August SJR Flow at 1,000 cfs				
Model Run	**Barrier/Gates Operations**	**SWP and CVP Pumping Operations**	**WWTP Discharges**	
			Flow	**Increment Above Ambient EC**
2.1a	(c)	High Pumping	**TRACY: 9 MGD**	**TRACY: 100 µS/CM**
2.1b	(c)	High Pumping	**MHCSD: 1 MGD**	MHCSD: 100 µS/cm
2.2a	(c)	Low Pumping	**TRACY: 9 MGD**	**TRACY: 100 µS/CM**
2.2b	(c)	Low Pumping	**MHCSD: 1 MGD**	MHCSD: 100 µS/cm
2.3a	(d)	High Pumping	**TRACY: 16 MGD**	**TRACY: 100 µS/CM**
2.3b	(d)	High Pumping	**MHCSD: 5.4 MGD**	MHCSD: 100 µS/cm
2.4a	(d)	Low Pumping	**TRACY: 16 MGD**	**TRACY: 100 µS/CM**
2.4b	(d)	Low Pumping	**MHCSD: 5.4 MGD**	MHCSD: 100 µS/cm

(c) Temporary Barriers – 3 Agricultural Barriers installed
(d) SDIP – Operated with Head of Old River gate open and 3 Agricultural Gates closed

Model Output/Evaluation

- 60-day period to be modeled for each modeling run. The focus will be on the output from the second 30-days to allow the model to be populated. Modeling output includes the following at the selected locations identified in Table 4:
    - Daily average volume fraction of wastewater from Tracy and MHCSD
    - 15-minute river flow and elevation
- The volume fraction of the effluent in the receiving water at the modeled discharge flow rates is presumed to vary directly with the incremental increase of the effluent EC verses the ambient EC. Therefore, increases in ambient EC caused by the effluent discharges can be estimated for multiple effluent and ambient EC concentrations using the output from the model runs.
- Ambient EC increases caused by the Tracy and MHCSD discharges are presumed to be additive.

Table 4: DSM2 Channels to Evaluate

Channel	Location	Significance
61 (upstream end)	Old River	**UPSTREAM OF TRACY DISCHARGE**
62 (downstream end)	Old River	**DOWNSTREAM OF TRACY DISCHARGE**
71	Old River	D-1641 Salinity Compliance Location (Tracy Rd. Bridge, C-8)
77 (upstream end)	Old River	Upstream of MHCSD discharge
78 (downstream end)	Old River	Downstream of MHCSD discharge
126	Middle River	D-1641 Salinity Compliance Location (Middle River, P-12)
213 (upstream end)	Grant Line Canal	Downstream of Tracy discharge, near Clifton Court Forebay
206	Grant Line Canal	Downstream of Tracy discharge
1	Clifton Court	Clifton Court Forebay Salinity Compliance Location
216		Channel to CVP Pumps
10	San Joaquin River	Brandt Bridge D-1641 Salinity Compliance Location
80	Old River	Downstream end of Old River at Tracy barrier/gate
54 (downstream end)	Old River	Downstream of Head of Old River barrier/gate
194	Tom Paine Slough	Near large agricultural siphon in Tom Paine Slough

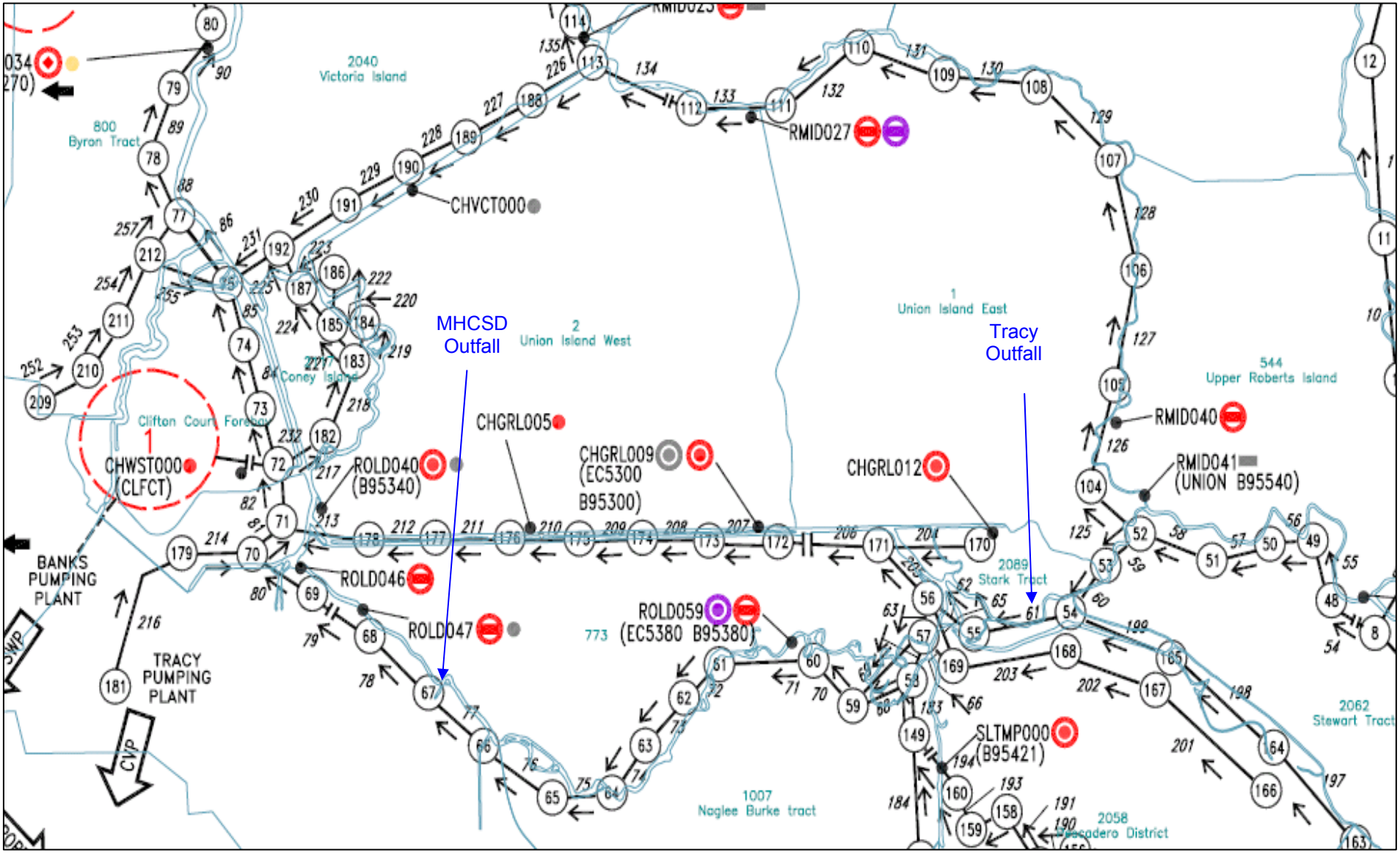



Figure 1: DSM2 Grid