

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

1685 E Street Fresno, California 93706
Phone (559) 445-5116 • FAX (559) 445-5910
<http://www.waterboards.ca.gov/centralvalley>

**ORDER NO. R5-2008-0027
NPDES NO. CA0079219**

**WASTE DISCHARGE REQUIREMENTS FOR THE
CITY OF MERCED
MERCED WASTEWATER TREATMENT FACILITY
MERCED COUNTY**

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

Table 1. Discharger Information

Discharger	City of Merced
Name of Facility	Merced Wastewater Treatment Facility
Facility Address	1776 Grogan Avenue
	Merced, CA 95340
	Merced County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a major discharge.	

The discharge by the City of Merced from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Secondary effluent	37 °, 14', 38" N	120 °, 32',30" W	Hartley Slough
002	Tertiary effluent	37 °, 15', 12" N	120 °, 31',46" W	Hartley Slough
003	Secondary effluent	37 °, 14', 13" N	120 °, 31',24" W	Merced Wildlife Management Area
004	Secondary effluent	37 °, 14', 41" N	120 °, 31', 22" W	Land Application Area

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	14 March 2008
This Order shall become effective on:	5 May 2008
This Order shall expire on:	13 March 2013
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:	13 September 2012

IT IS HEREBY ORDERED, that Order No. 5-00-246 and Order No. 97-034 are rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water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 (CWC)(commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act (CWA) and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 14 March 2008.

PAMELA C. CREEDON, Executive Officer

Table of Contents

I.	Facility Information	4
II.	Findings.....	4
III.	Discharge Prohibitions.....	11
IV.	Effluent Limitations and Discharge Specifications	12
	A. Effluent Limitations – Discharge Points 001 and 002.....	12
	1. Final Effluent Limitations.....	12
	2. Interim Effluent Limitations CTR Constituents Discharge Points 001 and 002	14
	3. Interim Effluent Limitations Non-CTR Constituents Discharge Points 001 and 002.....	14
	B. Discharge Specifications WMA Discharge Point 003.....	15
	1. Final Discharge Specifications:.....	15
	2. Interim Discharge Specifications WMA Discharge Point 003.....	16
	C. Recycled Water Specifications LAA Discharge Point 004.....	17
	D. Biosolids Discharge Specifications LAA Discharge Point 004.....	19
V.	Receiving Water Limitations	20
	A. Surface Water Limitations.....	20
	B. Interim Groundwater Limitations	22
VI.	Provisions.....	23
	A. Standard Provisions.....	23
	B. Monitoring and Reporting Program (MRP) Requirements	27
	C. Special Provisions.....	28
	1. Reopener Provisions	28
	2. Special Studies, Technical Reports and Additional Monitoring Requirements.....	29
	3. Best Management Practices and Pollution Prevention	36
	4. Construction, Operation and Maintenance Specifications	37
	5. Special Provisions for Municipal Facilities (POTWs Only)	37
	6. Other Special Provisions	39
	7. Compliance Schedules	40
VII.	Compliance Determination	43

List of Tables

Table 1.	Discharger Information	Cover
Table 2.	Discharge Location	Cover
Table 3.	Administrative Information	Cover
Table 4.	Facility Information.....	4
Table 5.	Basin Plan Beneficial Uses.....	7
Table 6.	Effluent Limitations – Discharge Points 001 and 002.....	12
Table 7.	Interim Effluent Limitations CTR Constituents	14
Table 8.	Interim Effluent Limitations	14
Table 9.	Discharge Specifications WMA:.....	15
Table 10.	Interim Discharge Specifications WMA:.....	16
Table 11.	Interim Discharge Specifications WMA:.....	17
Table 12.	Recycled Water Specifications:	17

List of Attachments

Attachment A – Definitions	A-1
Attachment B – Map	B-1
Attachment C – Flow Schematic.....	C-1
Attachment D – Standard Provisions.....	D-1
Attachment E – Monitoring and Reporting Program (MRP).....	E-1
Attachment F – Fact Sheet.....	F-1
Attachment G – RPA Summary	G-1
Attachment H – International Symbol for Nonpotable Water	H-1

I. FACILITY INFORMATION

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

Table 4. Facility Information

Discharger	City of Merced
Name of Facility	Merced Wastewater Treatment Facility
Facility Address	1776 Grogan Avenue
	Merced, CA 95340
	Merced County
Facility Contact, Title, and Phone	Humberto Molina, Public Works Manager, 209-385-6892
Mailing Address	SAME
Type of Facility	POTW
Facility Design Flow	11.5 mgd (initial secondary), 12 mgd (first tertiary expansion), 16 mgd (second tertiary expansion), 20 mgd (third tertiary expansion)

II. FINDINGS

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

A. Background. The City of Merced (hereinafter Discharger) is currently discharging pursuant to Waste Discharge Requirements (WDRs) Order No. 5-00-246 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0079219. The Discharger submitted a Report of Waste Discharge, dated April 2005. The RWD applied for a NPDES permit renewal and upgrades and expansion in phases of the Merced Wastewater Treatment Facility (hereinafter WWTF or Facility) from a discharge of 10 mgd of secondary effluent to 20 mgd of tertiary effluent. The application was deemed complete in May 2005.

The City used to discharge industrial food processing wastewater and biosolids to its 580-acre industrial wastewater treatment facility under WDRs Order No. 97-034. The City now proposes to recycle effluent and biosolids on the same land for the production of fiber, fodder, and seed crops. The land will be referred to herein as called the land application area.

The Discharger developed a pretreatment program in conformance with 40 CFR 403 that the Regional Water Board approved on 28 March 1983.

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 the WWTF that provides sewerage service to the City of Merced. The WWTF consists of headworks, a septage

receiving area, two primary clarifiers, three activated sludge basins with three internal separate anoxic denitrification basins, three secondary clarifiers, and chlorination and dechlorination units and the Land Application Area and Wildlife Management Area, which are described in more detail below. Sludge is thickened, anaerobically digested, and then dried in six unlined sludge-drying beds. Due to recent aeration improvements and incorporation of the Symbio™ process (nitrification/denitrification), the Facility now can process a dry weather monthly average flow of 11.5 mgd.

The RWD proposes expansion of and improvements to the WWTF in three phases.

- A. In Phase 1, the City will construct a tertiary pump station, a flocculation basin with coagulant feed, filters, a UV disinfection unit, and an effluent reaeration unit. The City will also install lined solar driers. These improvements will result in a monthly average dry weather tertiary treatment capacity of 12 mgd.
- B. In Phase 2, the City will construct new headworks and influent pump station with fine screens and grit removal, a storm water retention basin with overflow to the WWTF emergency storage basins, a third primary clarifier, a fourth activated sludge basin, a third sludge digester, a solids holding tank, and additional active solar driers. These improvements will result in a monthly average dry weather tertiary treatment capacity of 16 mgd.
- C. In Phase 3, the City will construct a fourth primary clarifier, a fifth activated sludge basin, and a fifth secondary clarifier. These improvements will result in a monthly average dry weather tertiary treatment capacity of 20 mgd.

The City routes effluent from the WWTF into a 1.6 mile unlined ditch before discharge at Discharge Point 001 (see table on cover page) to Hartley Slough, a water of the United States and a tributary to San Joaquin River. The Discharger proposes to construct a new pipeline directly to Hartley Slough and discharge at Discharge Point 002. The City also discharges at Discharge Point 003 to its Merced Wildlife Management Area (WMA) which is managed by California Department of Fish and Game and where effluent is recycled to provide wetland and water fowl habitat, and the City recycles effluent at Discharge Point 004 to its land application area (LAA).

Attachment B is a map of the Facility area. A WWTF diagrammatic layout of all phases is depicted in Attachment C.

- 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)(commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this Facility to surface waters. This Order also serves as WDRs pursuant to Article 4, Chapter 4, Division 7 of the CWC (commencing with section 13260).

D. Background and Rationale for Requirements. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E, G, and H are also incorporated into this Order.

E. California Environmental Quality Act (CEQA).

The City of Merced has approved an Environmental Impact Report (EIR) for this project in accordance with the California Environmental Quality Act (Public Resources Code Section 21000, et seq.). The Regional Water Board has considered the EIR and finds the following.

Surface Water Discharge. Under CWC Section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code Sections 21100-21177.

Discharge to Land. The project as approved by the City of Merced will not have a significant environmental impact on water quality.

F. Technology-based Effluent Limitations. Section 301(b) of the CWA and implementing USEPA permit regulations at Title 40, Code of Federal Regulations, Part 122.44 (40 CFR 122.44) require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. This Order includes technology-based effluent limitations based on tertiary treatment or equivalent requirements that meet both the technology-based secondary treatment standards for POTWs and protect the beneficial uses of the receiving waters. The Regional Water Board has considered the factors listed in CWC Section 13241 in establishing these requirements. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

G. Water Quality-based Effluent Limitations. Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. 40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, water quality-based effluent limitations (WQBELs) must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or

(3) a calculated numeric water quality criterion, such as a proposed State criterion or policy interpreting the State's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

H. Water Quality Control Plans. The Regional Water Board adopted *The Water Quality Control Plan (Basin Plan), For The California Regional Water Quality Control Board, Central Valley Region, Fourth Edition, Revised October 2007 (with Approved Amendments), The Sacramento River Basin and the San Joaquin River Basin*, (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. The Basin Plan at page II-2.00 states that the "...beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for Hartley Slough, but does identify present and potential uses for the San Joaquin River, to which Hartley Slough, via Owens Creek and a network of natural and artificial channels, is tributary. These beneficial uses are as follows: Municipal and domestic supply (MUN); agricultural supply (AGR); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); migration of aquatic organisms (warm and cold) (MIGR); spawning, reproduction, and/or early development (warm and cold); and wildlife habitat (WILD).

The WMA is managed by the California Department of Fish and Game for REC-2, WARM, and WILD beneficial uses.

The Basin Plan designates the beneficial uses of groundwater as MUN, AGR, PRO, and industrial service supply (IND).

Thus, as discussed in detail in the Fact Sheet, beneficial uses applicable to the waters regulated by this Order are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001 and 002	Hartley Slough	MUN, AGR, PRO, REC-1, WARM, MIGR, SPWN, WILD
003	WMA	REC-2, WARM, WILD
004	Groundwater	MUN, AGR, IND, and PRO

The Basin Plan includes a Control Program for Salt and Boron Discharges into the Lower San Joaquin River. This Order addresses requirements of the Control Program.

I. National Toxics Rule (NTR) and California Toxics Rule (CTR). USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About forty criteria in the NTR applied in California. On 18 May 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in

addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain water quality criteria for priority pollutants.

- J. State Implementation Policy.** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.
- K. Compliance Schedules and Interim Requirements.** In general, an NPDES permit must include final effluent limitations that are consistent with CWA 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 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 USEPA 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 CWC Section 13300 or a Cease and Desist Order pursuant to CWC 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 possible 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 18 May 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation that exceeds one 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.

- L. Alaska Rule.** On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes. (40 CFR 131.21; 65 Fed. Reg. 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by 30 May 2000 may be used for CWA purposes, whether or not approved by USEPA.
- M. Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based and water quality-based effluent limitations for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD₅ and TSS. The water quality-based effluent limitations consist of restrictions on salinity, CTR constituents, turbidity, and 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, turbidity 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 CWC 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 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 1 May 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 30 May 2000. Any water quality objectives and beneficial

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

- N. Antidegradation Policy.** 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California’s antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 is consistent with the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Regional Water Board’s Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.
- O. Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Except for effluent limitations for oil and grease and ammonia, all effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order. Exceptions to federal antibacksliding requirements are discussed in Section IV.D.4. of the Fact Sheet.
- P. Monitoring and Reporting.** 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. CWC Sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.
- Q. Standard and Special Provisions.** Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet.
- R. Provisions and Requirements Implementing State Law.** The provisions/requirements in subsections IV.B, IV.C, and V.B of this Order are included to implement State law only. These provisions/requirements are not required or

authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

- 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 to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.
- T. Consideration of Public Comment.** The Regional Water Board, in a public hearing, heard and considered all comments pertaining to the discharge. Details of the public hearing are provided in the Fact Sheet of this Order.

III. DISCHARGE PROHIBITIONS

- A. Discharge of pollutants or wastes at locations or in a manner substantially different from that described in the Findings is prohibited.
- B. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by federal Standard Provisions I.G. and I.H. (Attachment D).
- C. Creation of a nuisance or pollution as defined in Section 13050 of the CWC is prohibited.
- D. Discharge of waste classified as “hazardous,” as defined in Section 2521(a) of Title 23, CCR, Section 2510 et seq., or of waste classified as “designated,” as defined in CWC Section 13173, is prohibited.
- E. Discharge of wastes, tailwater, or field runoff water from the Land Application Area to surface waters or surface water drainage courses is prohibited, except if caused in association with the flooding described in Fact Sheet Section II and at least 30 days after the most recent application and incorporation of biosolids.
- F. Discharge of oil or residuary products of petroleum is prohibited except as specifically authorized herein.
- G. Discharge of biosolids to the Land Application Area that do not meet Class A or Class B criteria as defined in 40 CFR 503 is prohibited.
- H. Discharge of biosolids to the Land Application Area with concentrations greater than the following is prohibited:

<u>Pollutant</u>	<u>Concentration (mg/kg¹)</u>
Arsenic	75
Cadmium	85
Copper	4300 ²
Lead	840

<u>Pollutant</u>	<u>Concentration (mg/kg¹)</u>
Mercury	57 ²
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7500 ²

¹ Dry weight basis

² Due to different methods of reporting constituents (dry weight vs. wet weight), biosolids meeting these metals concentration limits could exceed hazardous waste limits specified in the California Code of Regulations, §66261.24. Discharge of such biosolids for this project is prohibited by Prohibition III.D.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Points 001 and 002

1. Final Effluent Limitations

Except for interim periods, when any of the following parameters have an interim effluent limitation in effect (see Subsections 2 and 3 below), or as otherwise specified below, the Discharger shall maintain compliance with the following effluent limitations at Discharge Points 001 and 002, with compliance measured at Monitoring Location M-001, as described in the attached MRP (Attachment D):

a. Effluent limitations specified in Table 6:

Table 6. Effluent Limitations – Discharge Points 001 and 002

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	10	15	20
	lbs/day ¹	1001	1501	2002
	lbs/day ²	1334	2002	2669
	lbs/day ³	1668	2502	3336
Total Suspended Solids	mg/L	10	15	20
	lbs/day ¹	1001	1501	2002
	lbs/day ²	1334	2002	2669
	lbs/day ³	1668	2502	3336
Settleable Solids	mL/L	0.1	--	0.2
Aluminum	ug/L	--	--	750
Cyanide	ug/L	3.8	--	9.5
Dibromochloromethane	ug/L	0.41	--	0.89
Dichlorobromomethane	ug/L	0.56	--	1.0
Nitrite + Nitrate (as N)	mg/L	10	--	--

* See footnotes next page

1. Based on a design monthly average dry weather flow of 12.0 MGD (see Provision VI.C.2.a).
 2. Based on a design monthly average dry weather flow of 16.0 MGD (see Provision VI.C.2.a).
 3. Based on a design monthly average dry weather flow of 20.0 MGD (see Provision VI.C.2.a).
- b. **Average Dry Weather Flow:** The monthly average dry weather discharge flow shall not exceed 11.5 million gallons per day, 12.0 million gallons per day, 16.0 million gallons per day, or 20.0 million gallons per day, depending on certification (see Provision VI.C.2.a.).
- c. **Electrical Conductivity.** The annual average effluent EC shall not exceed 500 umhos/cm plus that of the source water, or 1000 umhos/cm, which ever is less.
- d. **pH.** The effluent shall not exhibit a pH of less than 6.5 standard units or greater than 8.5 standard units.
- e. **Aluminum.** The annual average effluent total aluminum concentration shall not exceed 200 ug/L.
- f. **Iron.** The annual average effluent iron concentration shall not exceed 300 ug/L.
- g. **Turbidity:** Effective upon the completion of the expansion to 12 mgd (see Provision VI.C.2.a), effluent turbidity shall not exceed the following:
- i. 2 NTU as a daily average;
 - ii. 5 NTU more than 5 percent of the time within a 24-hour period; and
 - iii. 10 NTU at any time.
- h. **Total Coliform Organisms:** Effluent total coliform organism concentrations shall not exceed the following:
- i. 2.2 MPN/100 mL as a seven-day median
 - ii. 23 MPN/100 mL more than once in any 30-day period; and
 - iii. 240 MPN/100 mL at any time.
- i. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 90 percent.
- j. **Acute Whole Effluent Toxicity:** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
- i. 70% for any one bioassay; and
 - ii. 90% for the median of any three consecutive bioassays.
- k. **Total Residual Chlorine:** Effluent total residual chlorine shall not exceed:
- i. 0.01 mg/L, as a 4-day average; and
 - ii. 0.02 mg/L, as a 1-hour average.

2. Interim Effluent Limitations CTR Constituents Discharge Points 001 and 002

From **5 May 2008** to **17 May 2010**, the Discharger shall maintain compliance with the following limitations at Discharge Points 001 and 002, with compliance measured at Monitoring Location M-001 as described in the attached MRP, in lieu of the corresponding final effluent limitations specified for the same parameters in Subsection 1, above.

Table 7. Interim Effluent Limitations CTR Constituents

Parameter	Units	Maximum Daily
Cyanide	ug/L	67
Dibromochloromethane	ug/L	6.5
Dichlorobromomethane	ug/L	22.5

3. Interim Effluent Limitations Non-CTR Constituents Discharge Points 001 and 002

From **5 May 2008** and ending on the dates included below, the Discharger shall maintain compliance with the following limitations at Discharge 001 and 002, with compliance measured at Monitoring Location M-001, as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters in Subsection 1 above.

- a. Interim Effluent Limitations specified in Table 8.

Table 8. Interim Effluent Limitations

Parameter	Units	Effluent Limitations			<u>End Date</u>
		Average Monthly	Average Weekly	Maximum Daily	
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	30	45	90	17 May 2010
	lbs/day	2877	4316	8632	
Total Suspended Solids	mg/L	30	45	90	17 May 2010
	lbs/day	2877	4316	8632	
Settleable Solids	mL/L	0.2	--	1.0	17 May 2010
Aluminum	ug/L			2986	30 Nov 2011
Iron	ug/L			3420	
Nitrite + Nitrate (as N)	mg/L			54	13 March 2013

- 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 (**Ending 17 May 2010**).

- c. **Total Coliform Organisms:** Effluent total coliform organisms concentrations shall not exceed the following:
 - i. 23 MPN/100 mL as a seven-day median; and
 - ii. 240 MPN/100 mL as a daily maximum (**Ending 17 May 2010**).

B. Discharge Specifications WMA Discharge Point 003

1. Final Discharge Specifications:

The discharge to the WMA shall consist of at least a Title 22, Disinfected Secondary-23 recycled water. Except for interim periods, when any of the following parameters have an interim effluent limitation in effect (see Subsection 2 below), the Discharger shall comply with the following effluent limitations at Discharge Point 003, with effluent compliance measured at Monitoring Locations M-001, as described in the attached MRP (Attachment E):

- a. Discharge Specifications specified in Table 9.

Table 9. Discharge Specifications WMA:

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	30	45	60
Total Suspended Solids	mg/L	30	45	60
Settleable Solids	mL/L	0.1	--	0.2
Aluminum	ug/L	--	--	750
Cyanide	ug/L	3.8	--	9.5
Nitrite + Nitrate (as N)	mg/L	10	--	--

- b. **Electrical Conductivity.** The annual average effluent EC shall not exceed 500 umhos/cm plus that of the source water, or 1000 umhos/cm, whichever is less.
- c. **pH.** The effluent shall not exhibit a pH of less than 6.5 standard units or greater than 8.5 standard units.
- d. **Total Residual Chlorine:** Effluent total residual chlorine shall not exceed the following:
 - i. 0.01 mg/L as a four-day average; and
 - ii. 0.02 mg/L as a one-hour average.

- e. **Total Coliform Organisms:** Effluent total coliform organisms concentrations shall not exceed the following:
 - i. 23 MPN/100 mL, as a monthly median, and
 - ii. 500 MPN/100 mL at any time.
- f. **Acute Toxicity:** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
 - i. 70% for any one bioassay, and
 - ii. 90% for the median of any three or more consecutive bioassays.
- g. WMA ponds shall be managed to maintain the integrity of pond embankments.
- h. Recycled water shall be contained within the WMA area at all times.
- i. Objectionable odors related to recycled water applications shall not be perceivable beyond the limits of the WMA.
- j. Public contact with recycled water shall be precluded through such means as fences and signs, or other acceptable alternatives.
- k. The WMA shall be managed to prevent breeding of mosquitoes.

2. Interim Discharge Specifications WMA Discharge Point 003

- a. From **5 May 2008** to **17 May 2010**, the effluent from Discharge Point 003 shall comply with the following Table 10 Interim Discharge Specification WMA, with compliance measured at Monitoring Location M-001, as described in the attached MRP (Attachment E). These interim Specifications shall apply in lieu of the corresponding final Specifications specified for the same parameters specified in Subsection 1, above.

Table 10. Interim Discharge Specifications WMA:

Parameter	Units	Maximum Daily
Cyanide	ug/L	67

- b. From **5 May 2008** and ending on the dates specified below, the Discharger shall maintain compliance with the following limitations at Discharge Point 003, with compliance measured at Monitoring Location M-001, as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters in Subsection 1, above.

Table 11. Interim Discharge Specifications WMA:

Parameter	Units	Maximum Daily	End Date
Aluminum	ug/L	2986	30 November 2011
Nitrate+Nitrite (as N)	mg/L	54	13 March 2013

C. Recycled Water Specifications LAA Discharge Point 004

1. The discharge from Discharge Point 004 shall be at least a Disinfected Secondary-23 recycled water and shall comply with the following Recycled Water Specifications, with effluent compliance measured at Monitoring Location M-001, as described in the attached MRP (Attachment E):
 - a. Recycled Water Specifications specified in Table 12

Table 12. Recycled Water Specifications:

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	30	45	60
Total Suspended Solids	mg/L	30	45	60
Settleable Solids	mL/L	0.1	--	0.2
Nitrite + Nitrate (as N)	mg/L	10 ¹	--	--

1. From 5 May 2008 until 13 March 2013, the monthly average limit shall be stayed and the daily maximum limit shall be 54 mg/L.

- b. **Total Coliform Organisms:** Total coliform organisms concentrations shall not exceed the following:
 - i. 23 MPN/100 mL as a monthly median, and
 - ii. 240 MPN/100 mL in more than one sample in any 30 day period.
- c. **Electrical Conductivity.** The annual average effluent EC shall not exceed 500 umhos/cm plus that of the source water or 1000 umhos/cm, which ever is less.
- d. **pH.** The pH shall not be less than 6.5 standard units or greater than 8.5 standard units.
- e. Recycled water shall be contained within the Land Application Area at all times.
- f. Recycled water shall be managed to conform with the requirements of Title 22, Division 4, Chapter 3, California Code of Regulations.

- g. Objectionable odors shall not be perceivable beyond the limits of the Land Application Area at any time.
- h. Public contact with recycled water shall be controlled using signs and/or other appropriate means. All areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording: "RECYCLED WATER – DO NOT DRINK, AGUA DE DESPERDICIO RECLAMADA – NO TOME" Each sign shall display an international symbol similar to that shown in Attachment H.
- i. The combined application of recycled water, biosolids, fertilizers and other soil amendments to the Land Application Area shall not exceed the nitrogen or hydraulic loading reasonably necessary to satisfy the nitrogen or water uptake needs of the use area considering the plant, soil, climate, and irrigation management system (*i.e.*, generally accepted agronomic rates).
- j. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitoes. More specifically:
 - i. Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation.
 - ii. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitoes, shall not be used to store recycled water.
- k. There shall be no standing water in the disposal area 24 hours after recycled water is applied.
- l. The Discharger may not discharge recycled water to the LAA during periods of precipitation, or when soils are saturated.
- m. No irrigation with recycled water shall take place within 50 feet of any domestic water supply well.
- n. No impoundment of recycled water shall occur within 100 feet of any domestic water supply well.
- o. Workers shall be educated regarding proper hygienic procedures to ensure personal and public safety.
- p. There shall be no cross-connections between potable water supply piping and piping containing recycled water. Supplementing recycled water with potable water shall not occur except through an air-gap separation or, if approved by the DPH, a reduced pressure principle backflow device.

D. Biosolids Discharge Specifications LAA Discharge Point 004.

Biosolids is defined herein as sewage sludge that has been treated and tested and shown to be capable of being beneficially and legally used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities as specified under 40 CFR Part 503.

1. Biosolids shall not be applied at rates that, in combination with other discharges, would cause excess nitrogen or metals to leach to groundwater.
2. Biosolids shall not be stored in the LAA.
3. The cumulative loading for pollutants at each biosolids application site shall not exceed the following:

<u>Pollutant</u>	Cumulative Loadings:	
	<u>kilograms per hectare</u>	<u>pounds per acre¹</u>
Arsenic	41	37
Cadmium	39	35
Copper	1500	1338
Lead	300	268
Mercury	17	15
Nickel	420	375
Selenium	100	89
<u>Zinc</u>	2800	2498

¹ Dry Weight Basis

or, alternatively, the concentration of each pollutant in the biosolids shall not exceed the following:

<u>Pollutant</u>	<u>Monthly Average Concentrations (mg/kg¹)</u>
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Nickel	420
Selenium	100
<u>Zinc</u>	2800

¹ Dry-Weight Basis

4. Biosolids shall not be staged or applied within:
 - i. 25 feet of property lines;
 - ii. 500 feet of domestic water supply wells, or occupied dwellings;
 - iii. 100 feet¹ of surface waters or surface water drainage courses;
 - iv. 50 feet of nondomestic water supply wells; and
 - v. 50 feet of public roads.

- ¹ Not less than 25 feet where berms and a tailwater return system positively assure no discharge to surface water.
5. Biosolids shall not be applied to soils with a pH of less than 6.5.
6. Biosolids shall not be applied to land subject to erosion during flooding; to flooded, frozen, or water saturated ground; or during periods of heavy rainfall.
7. Biosolids applications shall be limited to nonirrigation periods between crop planting.
8. The source of applied biosolids is limited to the City of Merced WWTF.
9. After the last application of biosolids in each field, the Discharger shall ensure the following:
 - a. For at least 30 days:
 - i. Public access is restricted;
 - ii. Feed and fiber crops are not harvested; and
 - iii. Animals are not grazed.
 - b. For at least 60 days after application of biosolids in areas with average daily (daytime) air temperatures exceeding 50°F or for at least 90 days after land application where such conditions are not met:
 - i. Domesticated Animals are not grazed.
 - c. For at least 12 months:
 - i. Turf is not harvested if harvested turf is placed on land with a high degree of public exposure; and
 - ii. If the field is used as pasture, grazing by milking animals is prevented
10. Biosolids shall comply with one of the vector attraction reduction standards listed in 40 CFR 503.33.
11. Biosolids shall be land spread and incorporated into the soil within 24 hours of arrival at the Land Application Area.

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

The discharge shall not cause the following in Hartley Slough:

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

2. **Biostimulatory Substances.** Water to contain biostimulatory substances that promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.
3. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.
4. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.
5. **Dissolved Oxygen:**
 - a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;
 - b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor
 - c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.
6. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.
7. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.
8. **pH.** The pH to be depressed below 6.5 or raised above 8.5
9. **Pesticides:**
 - a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;
 - b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;
 - c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer.
 - d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR §131.12.).
 - e. Pesticide concentrations to exceed the lowest levels technically and economically achievable.
 - f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15.
 - g. Thiobencarb to be present in excess of 1.0 µg/L.

10. Radioactivity:

- a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
- b. Radionuclides to be present in excess of the maximum contaminant levels specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

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

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

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

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

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

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

17. **Turbidity.** The turbidity to increase as follows:

- a. More than 1 Nephelometric Turbidity Unit (NTU) 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 NTU where natural turbidity is between 50 and 100 NTUs.
- d. More than 10 percent where natural turbidity is greater than 100 NTUs.

B. Interim Groundwater Limitations

Release of waste constituents from any storage, treatment, recycling, or disposal component associated with the WWTF shall not, in combination with other sources of the waste constituents, cause groundwater within influence of the WWTF and discharge area(s) to contain waste constituents in concentrations equal to or greater than that listed below:

- a. Total coliform organisms of 2.2 MPN/100 mL.
- b. Chemical constituents in concentrations that adversely affect beneficial uses, such as nitrate nitrogen of 10 mg/L.
- c. Toxic constituents in concentrations that produce detrimental physiological responses in human, plant or animal life.

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions included in Attachment D of this Order.
2. The Discharger shall comply with the following provisions:
 - a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, Division 3, Chapter 26.
 - b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:
 - i. violation of any term or condition contained in this Order;
 - ii. obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;
 - iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and
 - iv. a material change in the character, location, or volume of discharge.

The causes for modification include:

- *New regulations.* New regulations have been promulgated under Section 405(d) of the 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.
- *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.
- *Change in sludge use or disposal practice.* Under 40 Code of Federal Regulations (CFR) 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

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

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

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

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

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

- e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.
- f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.
- g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under Section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.
- h. 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, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.
 - ii. Upon written request by the Regional Water Board the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 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 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 Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under Regional Water Board Standard Provision VI.A.2.m.

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.

- I. 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 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.
- n. Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Regional Water Board and USEPA.
- o. 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.
- p. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.
- q. All monitoring and analysis instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy.

- 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.
- s. The results of all monitoring required by this Order shall be reported to the Regional Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.
- t. 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.
- u. For POTWs, 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).
- v. 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)].

B. Monitoring and Reporting Program (MRP) Requirements

- 1. The Discharger shall comply with the MRP, and future revisions thereto, in Attachment E of this Order.
- 2. 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.
- 3. The Discharger shall establish an electronic system for operator notification for all continuous recording device alarms. For existing continuous monitoring systems, the electronic notification system shall be installed **within six months of adoption** of this permit. For systems installed following permit adoption, the notification system shall be installed simultaneously.

C. Special Provisions

1. Reopener Provisions

- a. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.
- b. This Order may be reopened to address conditions that necessitate a major modification of a permit. These conditions are described in 40 CFR 122.62, and include:
 - 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.
- 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 may be reopened and limitations imposed.
- d. **Aluminum.** This Order may be reopened to consider the results of a water effects ratio study to develop a site-specific objective and revised aluminum limits.
- e. **Temperature.** This Order may be reopened to consider the results of a temperature study to develop a site-specific temperature ceiling criteria for Hartley Slough.
- f. **Pollution Prevention.** This Order may be reopened based on the results of pollution prevention plans for addition and/or modification of effluent limitations and requirements for applicable constituents.
- g. **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.

- h. **Studies.** Section VI.C.2. of this Order requires the Discharger to conduct various studies and prepare various technical reports and management plans. This Order may be reopened and effluent limitations modified or removed depending on the study and plan results.
- i. **Biosolids.** This Order requires that the use and disposal of biosolids comply with existing State laws and regulations. Other including permitting requirements and technical standards are included in 40 CFR 503. If the State Water Board and the Regional Water Board are given the authority to implement regulations contained in 40 CFR 503, this Order may be reopened to incorporate appropriate time schedules and technical standards.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

- a. **WWTF Expansion.** The Discharger shall complete Phase 1 improvements **as soon as possible**, but by no later than **13 March 2013**. For authorization to discharge tertiary effluent in excess of 11.5 mgd the Discharger must: (1) submit certification from a California-registered civil engineer with experience in the design and operation of wastewater treatment facilities that the WWTF is capable of meeting discharge limitations and has adequate capacity to treat and dispose of these flows in compliance with this Order, (2) provide evidence demonstrating show that the California Environmental Quality Act requirements have been satisfied, and (3) obtain the written concurrence from the Executive Officer.

Technical reports submitted pursuant to this provision are subject to the requirements of Standard Provision VI.A.2.m. and approval by the Executive Officer.

The Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

- b. **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 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 Work Plan and includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

- i. **Toxicity Reduction Evaluation (TRE) Work Plan. Within 90 days of the effective date of this Order**, the Discharger shall submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan must be developed in accordance with EPA guidance¹ 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 $> 1 \text{ TUc}$ (where $\text{TUc} = 100/\text{NOEC}$). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE.
- 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

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

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 initiate 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:
 - i. Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including TRE WET monitoring schedule;
 - ii. Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
 - iii. A schedule for these actions.

c. **Temperature Study.** The Discharger shall comply with the following time schedule to conduct a study to determine protective temperature limitations for the discharge to Hartley Slough (Discharge Point 001 and 002).

<u>Task</u>	<u>Compliance Date</u>
i. Submit Work Plan and Time Schedule	15 September 2008
ii. Begin Study	Per approved Time Schedule
iii. Complete Study	Per approved Time Schedule
iv. Submit Study Report	As soon as practicable but no later than 31 December 2011

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 time schedule.

Technical reports submitted pursuant to this provision are subject to the requirements of Standard Provision VI.A.2.m. and approval by the Executive Officer.

The Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

- d. **Elimination of Reasonable Potential.** The Discharger shall conduct a study to assess the effluent discharged from the tertiary WWTF and UV disinfection systems for cyanide, dichlorobromomethane, chloroform, dibromochloromethane, and total residual chlorine and determine whether any has a reasonable potential to cause or contribute to an exceedance of a water quality objective. The Discharger shall comply with the following time schedule in conducting a study of these constituents in the WWTF effluent following the implementation of tertiary treatment and UV disinfection.

<u>Task</u>	<u>Compliance Date</u>
i. Submit Work Plan and Time Schedule	Within 2 months of certification of 12.0 mgd capacity.
ii. Begin Study	6-months after work plan approval.
iii. Complete Study	1-year following start of study.
iv. Submit Study Report	2-months following study completion.

Should the study demonstrate no longer reasonable potential for all the subject constituents as determined by the Executive Officer's written concurrence of the demonstration results, the Discharger may request in writing that the Regional Water Board reopen the permit to remove Effluent Limitations IV.A.1.a for cyanide, dichlorobromomethane, chloroform, and dibromochloromethane and Effluent Limitation IV.A.1.k. for total residual chlorine residual; Interim Effluent Limitations IV.A.2 and Discharge Specifications IV.B.1.a. for cyanide and Discharge Specification IV.B.1.d. for total residual chlorine.

Technical reports submitted pursuant to this provision are subject to the requirements of Standard Provision VI.A.2.m. and approval by the Executive Officer.

The Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

- e. **Land Use and Groundwater Limitations Study.** The Discharger shall submit a technical report in the form of a work plan and proposed schedule to complete studies to compile sufficient technical data to characterize the uses of groundwater that could be impacted by discharges to the WMA and LAA and to derive appropriate groundwater limitations. Studies must be designed to:
- i. Determine the spatial extent of groundwater affected by, and that could be affected by, the discharge.
 - ii. Determine the types of crops that are, and could potentially be, grown, and any other potential beneficial uses of groundwater, that could be affected by the discharge.
 - iii. Evaluate and propose for Regional Water Board evaluation and consideration, with supporting documentation, appropriate numeric groundwater quality objectives for groundwater that could be affected by the WWTF discharge.

Study results must be compiled into a final technical report. The final technical report shall propose for Regional Water Board consideration specific numeric groundwater limitations for each waste constituent that comply with the most stringent applicable water quality objectives for that waste constituent. The most stringent applicable water quality objective shall be interpreted based on the Regional Water Board policy entitled "Application of Water Quality Objectives" on pages IV-21 through IV-23 of the Basin Plan. If the Discharger wishes the Regional Water Board to consider a proposed water quality limitation that is less stringent than the most stringent water quality objective necessary to protect the most sensitive beneficial use, it must provide documentation necessary to support the proposed limitation. For example, where the stringency of a proposed water quality objective can vary according to land use and other factors, the Discharger must provide documentation that a less stringent but attainable water quality objective is protective of all existing and probable beneficial uses. This documentation must be from public agencies and organizations with appropriate expertise and authority relative to the uses potentially affected by the less stringent objective, or the water quality necessary to sustain the uses. The Discharger should submit results of a validated groundwater model or other hydrogeologic information to support its proposal.

The Discharger shall comply with the following schedule in implementing the work required by this Provision:

<u>Task</u>	<u>Compliance Date</u>
i. Submit technical report: work plan and schedule	13 June 2008
ii. Commence studies	30 days following Executive Officer approval of Task i.
iii. Complete studies	As established by Task i or 2 years following completion of Task i, whichever is sooner.
iv. Submit technical report summarizing results of studies and proposing for Regional Water Board consideration appropriate numeric groundwater limitations	60 days following completion of Task iii, or 2.5 years following completion of Task i, whichever is sooner.
v. Include in its annual report (described in the MRP) a description of the overall status of the studies	Annually on 1 February following completion of Task ii.

Technical reports submitted pursuant to this Provision shall be prepared in accordance with Standard Provision VI.A.2.m and are subject to Executive Officer approval as to adequacy.

- f. **Land Application Area Use Study. By 13 June 2008**, the Discharger shall submit a technical report updating its LAA management plan to ensure wastewater, biosolids and commercial fertilizers and other soil amendments will be applied to the LAA as defined herein in accordance with this Order’s Recycled Water Specifications and Biosolids Discharge Specifications and at reasonable agronomic rates considering the crop, soil, climate, and irrigation management system. The technical report shall (a) describe what measures the Discharger has implemented or proposes to implement to ensure consistent compliance with Recycled Water Specification IV.C.1.i. and Biosolids Discharge Specification IV.D.1.; (b) describe the types of crops to be grown and harvested annually, crop water use, nitrogen uptake, and supporting data and calculations for monthly water and yearly nutrient balances; (c) describe the wastewater constituent concentration effect resulting from irrigation; (d) include a map showing locations of all domestic and irrigation wells that are within and near the Use Area, areas of public access, location and wording of public warning signs and setback distances from irrigation/domestic wells, property boundaries, and roads; (e) shall be subject to the requirements of Standard Provision VI.A.2.m.; and (f) subject to Executive Officer written approval.

- g. **TMDL Compliance Study:** By **14 September 2012**, the Discharger shall submit a work plan with proposed time schedule, that will be subject to Executive Officer approval, to study alternatives and identify measures the Discharger will implement to reduce salinity in the discharge from Discharge Points 001 and 002 to meet the requirements of the Basin Plan *Control Program for Salt and Boron Discharges into the Lower San Joaquin River (LSJR)*.
- h. **Use Attainability Analysis (UAA) Study.** By **14 July 2008**, the Discharger shall submit written certification of its decision to provide the information/support necessary for the Regional Water Board to conduct a UAA for the MUN and/or the Cold SPAWN beneficial use designations for Hartley Slough. If the Discharger chooses to provide the UAA information/support, it shall comply with the following schedule and further action by the Regional Water Board:

<u>Task</u>	<u>Compliance Date</u>
<ul style="list-style-type: none"> i. Submit a technical report in the form of a work plan and proposed time schedule to provide the information/support necessary to conduct a UAA for the MUN and Cold SPAWN beneficial use designations for Hartley Slough. The work plan must describe in detail the information/support the Discharger intends to provide the Regional Water Board and how this information/support will address the requirements of 40 CFR 131.3(g) and 131.10(g) and the criteria in State Water Board Resolution No. 88-63. 	3 months following decision to pursue UAA
<ul style="list-style-type: none"> ii. Implement approved work plan and time schedule 	Within 30 days of approval of the technical report by the Executive Officer
<ul style="list-style-type: none"> iii. Provide the results of Task ii. 	By the deadline approved by the Executive Officer but no later than 27 months following Task ii. compliance date

Technical reports submitted pursuant to this provision are subject to the requirements of Standard Provision VI.A.2.m. and approval by the Executive Officer.

- i. **Aluminum Study.** By **3 August 2008**, the Discharger shall submit work plan and proposed time schedule to determine appropriate chronic aluminum criteria to protect the beneficial uses of Hartley Slough.

<u>Task</u>	<u>Compliance Date</u>
i. Implement approved work plan and time schedule	Within 30 days of approval of the technical report by the Executive Officer
ii. Provide the results of Task i.	By the deadline approved by the Executive Officer but no later than 27 months following Task i.

Technical reports submitted pursuant to this provision are subject to the requirements of Standard Provision VI.A.2.m. and approval by the Executive Officer.

3. Best Management Practices and Pollution Prevention

- a. **Pollutant Minimization Program.** The Discharger shall develop and conduct a Pollutant Minimization Program (PMP), as further described below when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either: 1) A sample result is reported as DNQ and the effluent limitation is less than the RL; or 2) A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP Section X.

The PMP shall include, but not be limited to, the following actions and submittals acceptable to the Regional Water Board:

- i. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling;
- ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system;
- iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;

- iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and
- v. An annual status report that shall be sent to the Regional Water Board including:
 - (1) All PMP monitoring results for the previous year;
 - (2) A list of potential sources of the reportable priority pollutant(s);
 - (3) A summary of all actions undertaken pursuant to the control strategy; and
 - (4) A description of actions to be taken in the following year.

4. Construction, Operation and Maintenance Specifications

- a. The WWTF shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
- b. Public contact with wastewater shall be precluded through such means as fences and signs, or other acceptable alternatives.

5. 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. Biosolids/Sludge Provisions

- i. The treatment of sludge generated at the Facility shall be confined to the Facility property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations V.B. In addition, the storage of residual sludge, solid waste, and biosolids on Facility property shall be temporary and controlled, and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations V.B.
 - ii. Collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, section 20005, et seq. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, composting sites, soil amendment sites) that are operated in accordance with valid waste discharge requirements issued by a regional water quality control board will satisfy these specifications.
 - iii. Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure proper plant performance.
 - iv. Any proposed change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least **90 days** in advance of the change.
 - v. Facilities for the storage of biosolids/sludges/solid wastes shall be located, designed and maintained to restrict public access.
- c. **Collection System Provisions.** Requirements of this Order do not apply to the Discharger's collection system.
- d. The discharge of pollutant-free wastewater into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order is prohibited. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

6. Other Special Provisions

- a. Following the satisfaction of Provisions VI.C.2.a and VI.C.7.d. (12 mgd expansion), wastewater shall be oxidized, coagulated, filtered, and adequately disinfected as described in California Code of Regulations, Title 22, Division 4, Chapter 3, (Title 22), or equivalent.

- b. 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.

- c. The Facility shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
- d. The Discharger shall for each fiscal year (July-June) pay the required annual filing fee in accordance with the current fee schedule established by the State Water Board by the due date specified in the annual invoice (typically issued during October of each fiscal year). The fee is for privilege of discharge authorized by this Order.
- e. Except as expressly identified and authorized in this Order, the Discharger shall not use surface or groundwater as dilution to achieve compliance with effluent limitations in this Order.
- f. Physical facilities shall be designed and constructed according to accepted engineering practice and shall be capable of full and consistent compliance with this Order when properly operated and maintained. Proper operation and maintenance shall be described in an operation and maintenance ("O&M") manual prepared by the design engineer. The O&M manual shall be reviewed at least every time a significant change, alteration, or expansion is made to the Facility. The Discharger shall certify in every annual report whether the O&M manual is complete and reflective of the Facility and whether operation, maintenance, and staffing for the year being reported was as prescribed in the O&M manual.

7. Compliance Schedules

- a. Compliance Schedules for Final Effluent Limitations for Cyanide, Dibromochloromethane, and Dichlorobromomethane and Discharge Specifications for Cyanide.

By 18 May 2010, the Discharger shall comply with the final Effluent Limitations IV.A.1.a. for cyanide, dibromochloromethane, and dichlorobromomethane, and Discharge Specifications IV.B.1.a. for cyanide. Progress reports shall be submitted in accordance with the MRP (Attachment E, Section X.D.1).

b. Compliance Schedule for Nitrate + Nitrite.

The Discharger shall comply with final Effluent Limitations IV.A.1.a. and Discharge Specifications IV.B.1.a and Recycled Water Specifications IV.C.1.a for Nitrate + Nitrite in accordance with the following compliance schedule:

<u>Task</u>	<u>Compliance Date</u>
Complete construction of proposed denitrification treatment units.	Not to exceed 14 December 2012
Full Compliance	Not to exceed 13 March 2013

Technical reports submitted pursuant to this Provision are subject to the requirements of Standard Provision VI.A.2.m and Executive Officer approval.

Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

c. Compliance Schedule for Biosolids/Sludge Handling Modifications:

The Discharger shall complete construction of proposed modifications to sludge/biosolids treatment, handling, and storage units to ensure compliance with Provision VI.C.5.b.i, above.

<u>Task</u>	<u>Compliance Date</u>
i. Complete construction/modification of proposed units.	Not to exceed 14 December 2012
ii. Full Compliance	Not to exceed 13 March 2013

Technical reports submitted pursuant to this Provision are subject to the requirements of Standard Provision VI.A.2.m and Executive Officer approval.

Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

d. Compliance Schedule for Tertiary Treatment

The Discharger shall complete construction of proposed treatment units to ensure compliance with the BOD, TSS, SS, coliform, turbidity, and removal efficiency limits in Effluent Limitations Section IV.A.1.a and IV.A.1.g., h, and i and to ensure that effluent is oxidized, coagulated, filtered, and adequately disinfected as defined by Title 22 CCR, Division 4, Chapter 3, or equivalent as follows:

<u>Task</u>	<u>Compliance Date</u>
i. Complete construction of proposed units.	18 May 2010
ii. Full Compliance	18 May 2010

Technical reports submitted pursuant to this Provision are subject to the requirements of Standard Provision VI.A.2.m. and Executive Officer approval. Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

e. Compliance Schedule for Aluminum and Iron

The Discharger shall complete measures to ensure compliance with the Aluminum and Iron Effluent Limitations Section IV.A.1.a. and IV.A.1.e. and f. and Final Discharge Specification IV.B.1.a. as follows:

<u>Task</u>	<u>Compliance Date</u>
i. Submit a work plan and time schedule to propose compliance measures.	By 2 September 2008
ii. Implement approved work plan.	Within 60 days of Executive Officer approval of work plan.
iii. Full Compliance	30 November 2011

Technical reports submitted pursuant to this Provision are subject to the requirements of Standard Provision VI.A.2.m. and Executive Officer approval.

Until final compliance, the Discharger shall submit progress reports in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

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.** Compliance with the final effluent limitations for BOD and TSS required in sections <subsection> shall be ascertained by 24-hour composite samples. Compliance with effluent limitations <subsection> 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.** 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 Coliform Organisms Effluent Limitations (Effluent Limitations Sections IV.A.1.g, IV.A.3.c, IV.B.1.e, and IV.C.1.b.).** 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.
- D. **Total Residual Chlorine Effluent Limitations.** 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.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. 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.

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ), also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

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

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

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(I). In general, an exceedance of a water quality objective in the Basin Plan constitutes “pollution”.

Bioaccumulative pollutants are those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV) is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

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

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

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

Detected, but Not Quantified (DNQ) are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA) is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in U.S. EPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Estimated Chemical Concentration is the estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Inland Surface Waters are all surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

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

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

Maximum Daily Effluent Limitation (MDEL) means the highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median is the middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order)

If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in title 40 of the Code of Federal Regulations, Part 136, Attachment B, revised as of July 3, 1999.

Minimum Level (ML) is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Monthly Average Dry Weather Discharge Flow is the total of daily discharge rates during a dry weather calendar month (May through October), divided by the number of days in the month that the WWTF was discharging.

Not Detected (ND) are those sample results less than the laboratory's MDL.

Overflow is a spill, release, discharge, or diversion of untreated or partially treated wastewater.

Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP) means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Regional Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not

include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL) is the ML (and its associated analytical method) chosen by the Discharger for reporting and compliance determination from the MLs included in this Order. The MLs included in this Order correspond to approved analytical methods for reporting a sample result that are selected by the Regional Water Board either from Appendix 4 of the SIP in accordance with section 2.4.2 of the SIP or established in accordance with section 2.4.3 of the SIP. The ML is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the ML depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied to the ML in the computation of the RL.

Standard Deviation (σ) is a measure of variability that is calculated as follows:

$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

x is the observed value;

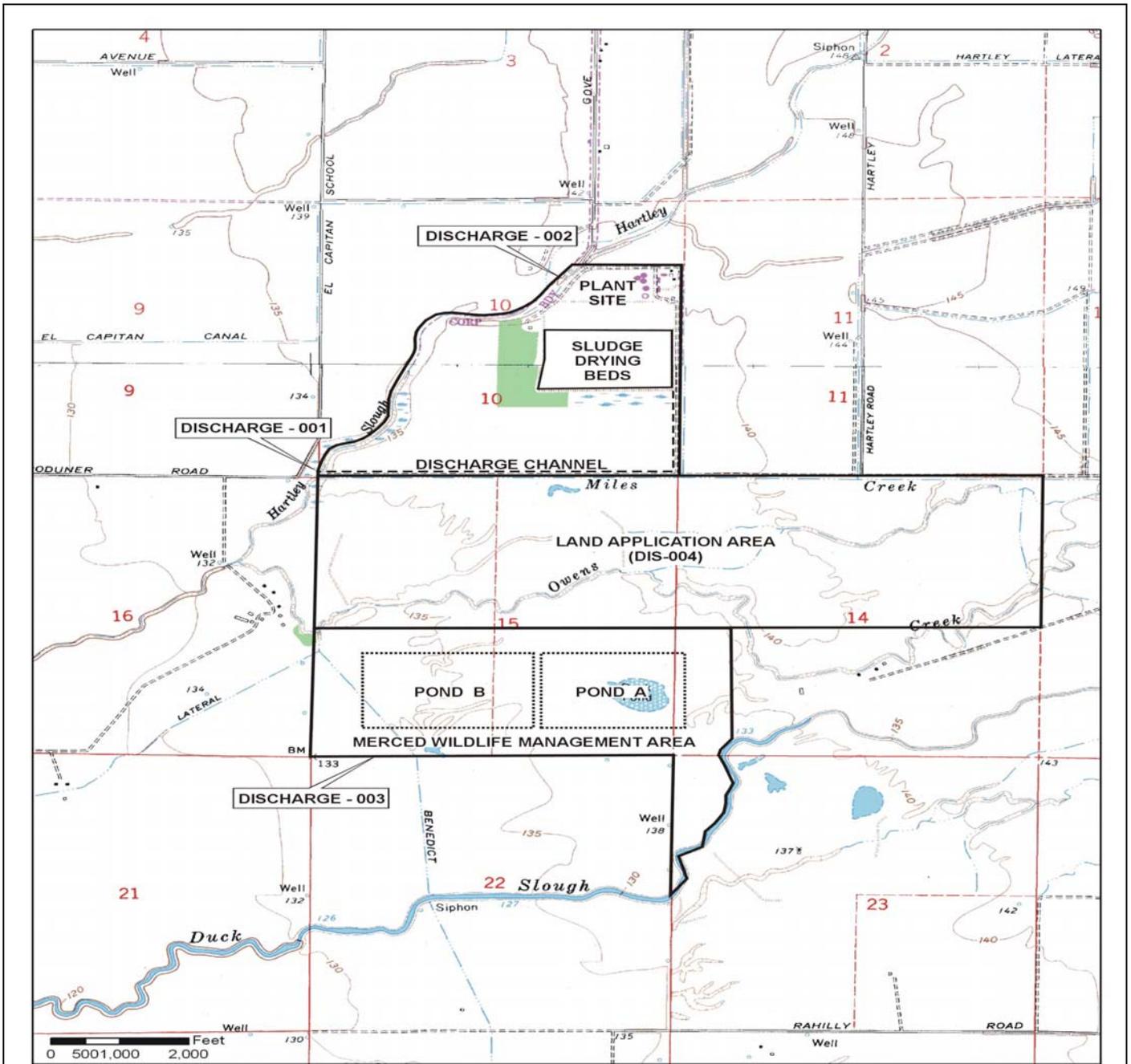
μ is the arithmetic mean of the observed values; and

n is the number of samples.

Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity.

The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

Attachment B – Map

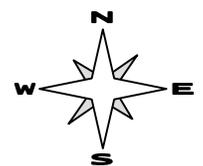


Drawing Reference:
ATWATER SANDY MUSH
 U.S.G.S TOPOGRAPHIC MAP
 7.5 MINUTE QUADRANGLE

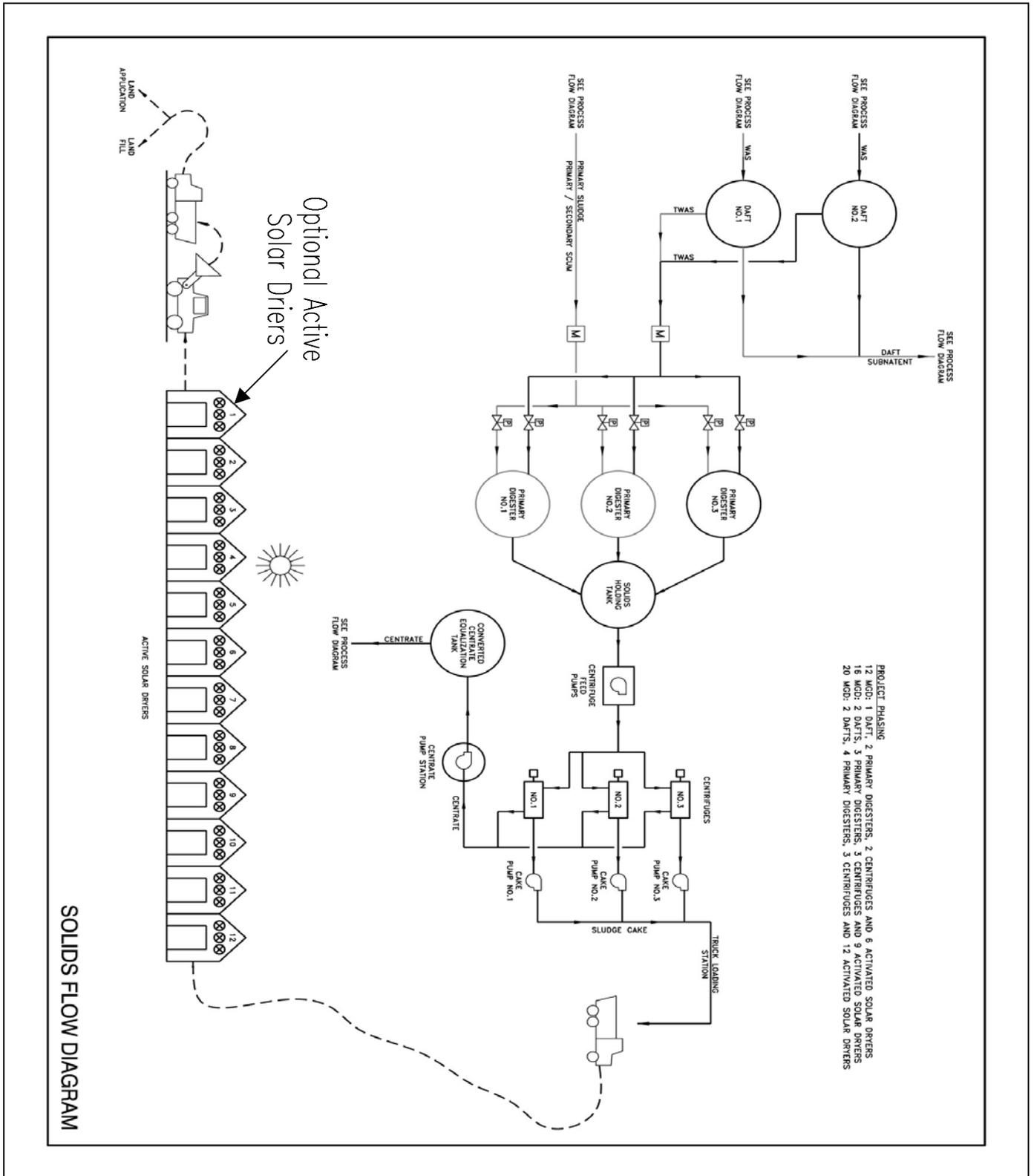
Not to scale

SITE LOCATION MAP

CITY OF MERCED
 MERCED WWTF
 MERCED COUNTY
 T8S, R13E, MDB&M



ATTACHMENT C.2 – FLOW SCHEMATIC



ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 C.F.R. § 122.41(a).)
2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 C.F.R. § 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 C.F.R. § 122.5(c).)

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 C.F.R. § 122.41(i); Wat. Code, § 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(i)(3)); and
4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(m)(1)(ii).)
2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 C.F.R. § 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 C.F.R. § 122.41(m)(4)(i)):
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 C.F.R. § 122.41(m)(4)(i)(A));
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 C.F.R. § 122.41(m)(4)(i)(B)); and
 - c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 C.F.R. § 122.41(m)(4)(i)(C).)
4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 C.F.R. § 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 C.F.R. § 122.41(m)(3)(i).)
 - b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 C.F.R. § 122.41(m)(3)(ii).)

H. Upset

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

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No

determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 C.F.R. § 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 C.F.R. § 122.41(n)(3)):
 - a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 C.F.R. § 122.41(n)(3)(i));
 - b. The permitted facility was, at the time, being properly operated (40 C.F.R. § 122.41(n)(3)(ii));
 - c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 C.F.R. § 122.41(n)(3)(iii)); and
 - d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(b).)

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and

reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 C.F.R. § 122.41(l)(3); § 122.61.)

III. STANDARD PROVISIONS – MONITORING

- A.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 C.F.R. § 122.41(j)(1).)
- B.** Monitoring results must be conducted according to test procedures under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503 unless other test procedures have been specified in this Order. (40 C.F.R. § 122.41(j)(4); § 122.44(i)(1)(iv).)

IV. STANDARD PROVISIONS – RECORDS

- A.** Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 C.F.R. § 122.41(j)(2).)
- B. Records of monitoring information shall include:**
 - 1. The date, exact place, and time of sampling or measurements (40 C.F.R. § 122.41(j)(3)(i));
 - 2. The individual(s) who performed the sampling or measurements (40 C.F.R. § 122.41(j)(3)(ii));
 - 3. The date(s) analyses were performed (40 C.F.R. § 122.41(j)(3)(iii));
 - 4. The individual(s) who performed the analyses (40 C.F.R. § 122.41(j)(3)(iv));
 - 5. The analytical techniques or methods used (40 C.F.R. § 122.41(j)(3)(v)); and
 - 6. The results of such analyses. (40 C.F.R. § 122.41(j)(3)(vi).)
- C. Claims of confidentiality for the following information will be denied (40 C.F.R. § 122.7(b)):**
 - 1. The name and address of any permit applicant or Discharger (40 C.F.R. § 122.7(b)(1)); and

2. Permit applications and attachments, permits and effluent data. (40 C.F.R. § 122.7(b)(2).)

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 C.F.R. § 122.41(h); Wat. Code, § 13267.)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 C.F.R. § 122.41(k).)
2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 C.F.R. § 122.22(a)(3).)
3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 C.F.R. § 122.22(b)(1));
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 C.F.R. § 122.22(b)(2)); and
 - c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 C.F.R. § 122.22(b)(3).)

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 C.F.R. § 122.22(c).)
5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

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

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR 122.22(l)(4).)
2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR 122.41(l)(4)(i).)
3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under Part 136 or, in the case of sludge use or disposal, approved under Part 136 unless otherwise specified in Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 122.41(l)(6)(i).)
2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 C.F.R. § 122.41(l)(6)(ii)):
 - a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(A).)
 - b. Any upset that exceeds any effluent limitation in this Order. (40 C.F.R. § 122.41(l)(6)(ii)(B).)
3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 C.F.R. § 122.41(l)(6)(iii).)

F. Planned Changes

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

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in section 122.29(b) (40 CFR 122.41(l)(1)(i)); or
2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are not subject to effluent limitations in this Order. (40 C.F.R. § 122.41(l)(1)(ii).)
1. 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 C.F.R. § 122.41(l)(1)(iii).)

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 C.F.R. § 122.41(l)(2).)

H. Other Noncompliance

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

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 C.F.R. § 122.41(l)(8).)

VI. STANDARD PROVISIONS – ENFORCEMENT

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

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following (40 C.F.R. § 122.42(b)):

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to sections 301 or 306 of the CWA if it were directly discharging those pollutants (40 C.F.R. § 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 C.F.R. § 122.42(b)(2).)
3. Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW. (40 C.F.R. § 122.42(b)(3).)

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Table of Contents

Attachment E – Monitoring and Reporting Program (MRP).....	1
I. General Monitoring Provisions.....	1
II. Monitoring Locations	2
III. Influent Monitoring Requirements.....	2
A. Monitoring Location M-INF	2
IV. Effluent Monitoring Requirements	3
A. Monitoring Location M-001	3
V. Whole Effluent Toxicity Testing Requirements	5
VI. Land Discharge Monitoring Requirements wma-003.....	8
A. Monitoring Location WMA-003.....	8
VII. Reclamation Monitoring Requirements LAA-004.....	8
A. Monitoring Location LAA-004.....	8
VIII. Receiving Water Monitoring Requirements – Surface Water.....	10
A. Monitoring Location R-001U1, R-001U2, R-001D1, R-001D2, and R-002U1	10
IX. Other Monitoring Requirements.....	10
A. Water Supply Monitoring—Monitoring Location S-001	10
B. Biosolids/Sludge Monitoring BIO-001	11
X. Reporting Requirements.....	12
A. General Monitoring and Reporting Requirements.....	12
B. Self Monitoring Reports (SMRs)	13
C. Discharge Monitoring Reports (DMRs)	15
D. Other Reports	16

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

Title 40, Code of Federal Regulations, Part 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (CWC) Sections 13267 and 13383 also authorize the Regional Water 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 Public Health (DPH). 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.
- C. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services. Laboratories that perform sample analyses shall be identified in all monitoring reports.
- D. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.
- E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

II. MONITORING LOCATIONS

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

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
--	M-INF	Influent Pump Station
	M-001	After disinfection
Discharge Point 001	R-001	Discharge point into Hartley Slough at its confluence with the Effluent Channel
--	R-001U1	Consistent with R1A in WDRs Order No. 5-00-246, not to exceed ¼ mile upstream from the confluence with Miles Creek
--	R-001U2	Consistent with R1B in WDRs WDRs Order No. 5-00-246, upstream of the backwater condition in Miles Creek
--	R-001D1	Consistent with R2B in WDRs Order No. 5-00-246, not to exceed 1000 feet downstream from the confluence of Hartley Slough with Miles Creek
--	R-001D2	Not to exceed 1000 feet downstream from the confluence of Hartley Slough with Owens Creek
Discharge Point 002	R-002	Proposed discharge point to Hartley Slough
	R-002U1	Not to exceed ¼ mile upstream from R-002
Merced Wildlife Management Area	WMA-003	Discharge to the Merced Wildlife Management Area
Land Application Area	LAA-004	Land Application Area;
--	B-001	Biosolids
--	S-001	Water Supply
--	T-001	Pretreatment

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-INF

1. The Discharger shall monitor influent at M-INF as follows:

Table E-2. Influent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow	mgd	Meter	Continuous
Settleable Solids	ml/L	Grab	Daily
Electrical	umhos/cm	Grab	Daily

Parameter	Units	Sample Type	Minimum Sampling Frequency
Conductivity			
pH	standard units	Grab	Daily
5-Day BOD ₅ ¹	mg/L, lbs/day	24-hr. Composite ²	3/Week ³
Total Suspended Solids	mg/L, lbs/day	24-hr. Composite ²	3/Week ³
Oil and Grease	mg/L	Grab	Weekly
Ammonia	mg-N/L	Grab	Daily
Priority Pollutants	ug/L	As appropriate ⁴	2/year ⁵

¹ Five-day biochemical oxygen demand at 20°C.

² The 24-hour composite samples shall be flow proportional. Composite samples may consist of flow-proportioned grab samples.

³ Non consecutive days.

⁴ Volatile samples shall be grab samples, the remainder shall be 24-hour composite samples.

⁵ Winter and summer quarters in even calendar years, and spring and fall quarters in odd calendar years.

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location M-001

1. Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall, following the last unit process. Effluent samples shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. The Discharger shall monitor Discharge 001, 002, 003, and 004 at M-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency
Flow to Hartley Slough	mgd	Meter	Continuous
Flow to LAA	mgd	Meter	Continuous
Flow to WMA	mgd	Meter	Continuous
Settleable Solids	mL/L	Grab	Daily
pH	standard units	Grab	Daily
Total Residual Chlorine	mg/L	Grab	Daily
Electrical Conductivity ¹	µmhos/cm	Grab	Daily
Turbidity ²	NTU	Meter	Continuous

Parameter	Units	Sample Type	Minimum Sampling Frequency
Temperature	°C (°F)	Grab	Daily
Ammonia, Total (as N) ^{3,4}	mg-N/L	Grab	Daily
Total nitrogen	mg-N/L	24-hour composite ⁵	3/week ⁶
Nitrate-nitrogen	mg-N/L	24-hour composite ⁵	3/week ⁶
Total Coliform Organisms	MPN ⁷ /100 mL	Grab	Daily
Standard Minerals ⁸	mg/L	Grab	Quarterly ⁹
Acute Toxicity ¹⁰	% Survival	Grab	2/month ¹⁰
20°C BOD ₅	mg/L, lbs/day	24-hour composite ⁵	3/week ⁶
Total Suspended Solids	mg/L, lbs/day	24-hour composite ⁵	3/week ⁶
Oil and Grease	mg/L	Grab	Weekly
Aluminum	µg/L	Grab	Monthly
Chloroform	µg/L	Grab	Monthly
Dibromochloromethane	µg/L	Grab	Monthly
Dichlorobromomethane	µg/L	Grab	Monthly
Cyanide	µg/L	Grab	Monthly
Priority Pollutants ¹¹	ug/L	As Appropriate ¹²	2/year ¹³

1. Conductivity at 25°C.
2. Monitoring to be initiated upon approval of 12 mgd expansion (See Special Provision VI.C.2.a.).
3. Report as both total and un-ionized ammonia (record temperature and pH at time of sample collection.)
4. Concurrent with biotoxicity monitoring.
5. Composite samples may consist of flow-proportioned grab samples.
6. One day between sample days
7. MPN = most probable number
8. Standard minerals consist of alkalinity, total dissolved solids, bicarbonate, calcium, carbonate, chloride, fluoride, hardness, iron, magnesium, potassium, sodium, sulfate, and total phosphorous. The reporting for standard minerals shall include a verification that the analysis is complete (i.e., anion/cation balance).
9. January, April, July, and October.
10. Details are provided in Section V of this Monitoring and Reporting Program.
11. Reporting shall conform with *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* reporting requirements, Section 2.4 et seq.
12. Volatile samples shall be grab samples, the remainder shall be 24-hour composite samples.
13. Winter and summer quarters in even calendar years, and spring and fall quarters in odd calendar years.

2. 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 of the constituents listed above, except for 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.

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 2/month acute toxicity testing, concurrent with effluent ammonia sampling.
 2. Sample Types – For static non-renewal and static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location M001.
 3. Test Species – Test species shall be fathead minnows (*Pimephales promelas*).
 4. Methods – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.
 5. Test Failure – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.
- B. **Chronic Toxicity Testing.** The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:
1. Monitoring Frequency – the Discharger shall perform quarterly three species chronic toxicity testing.
 2. Sample Types – Effluent samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at the effluent monitoring location specified in the Monitoring and Reporting Program. The receiving water control shall be a grab sample obtained from the RSW-001U sampling location, as identified in the Monitoring and Reporting Program.
 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-5, 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 after receiving notification of a test failure. A test failure is defined as follows:
 - a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA/821-R-02-013, October 2002 (Method Manual),* and its subsequent amendments or revisions; or
 - b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in Special Provisions VI.C. 2.b.iii.)

Table E-5. 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 after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.
- D. **WET Testing Reporting Requirements.** All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:
1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Regional Water Board within 30 days following completion of the test, and shall contain, at minimum:
 - a. The results expressed in TUC, measured as 100/NOEC, and also measured as 100/LC₅₀, 100/EC₂₅, 100/IC₂₅, and 100/IC₅₀, as appropriate.
 - b. The statistical methods used to calculate endpoints;
 - c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);
 - d. The dates of sample collection and initiation of each toxicity test; and
 - e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the 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. (Note: items a through c, above, are only required when testing is performed using the full dilution series.)
 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 (If applicable):
 - 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 WMA-003

A. Monitoring Location WMA-003

- 1. The Discharger shall monitor WMA-003 as follows:

Table E-7. WMA Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Reporting Frequency
Dissolved Oxygen	mg/L	Grab	Weekly	Monthly
pH	pH units	Grab	Weekly	Monthly
Electrical Conductivity	ug/L	Grab	Weekly	Monthly
Berm Seepage	NA	Observation	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Freeboard	0.1 feet	Observation	Weekly	Monthly

VII. RECLAMATION MONITORING REQUIREMENTS LAA-004

A. Monitoring Location LAA-004

- 1. Monitoring of the LAA sites shall be conducted daily and the results shall be included in the monthly monitoring report. Evidence of erosion, saturation, irrigation runoff, or the presence of nuisance conditions shall be noted in the report. Effluent monitoring results shall be used in calculations to ascertain loading rates at the application areas. The Discharger shall monitor all LAA sites as follows:

Table E-8. LAA Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Reporting Frequency
Effluent Flow	mgd	Continuous	Daily	Monthly
Rainfall	Inches	Observation	Daily	Monthly
Application Rate	gal/acre/day	Calculated	Daily	Monthly
Total Nitrogen Loading Rate	lbs/acre/month	Calculated	Monthly	Monthly
Total Dissolved Solids Loading Rate	lbs/acre/month	Calculated	Monthly	Monthly

2. LAA BIOSOLIDS POST-APPLICATION REPORT

The Discharger shall submit a post-application report after each application of sludge to a LAA field. The report shall include:

- a. Identification of the application area(s), including a map clearly showing each field or site covered by the post-application report.
- b. Total volume (cubic yards) and weight (dry tons) of biosolids applied.
- c. Metric tons of wet sludge per hectare and metric tons of dry sludge per hectare applied.
- d. Kilograms per hectare of metals and nitrogen applied (nitrogen from both municipal wastewater effluent shall be included in the reported total nitrogen applied).
- e. Cumulative application of heavy metals at the site, reported in kg/ha. This shall be the sum of metals from newly applied sludge and from all previously applied sludge. Show calculations used to obtain results.

3. LAA ANNUAL REPORT

The Discharger shall submit an LAA Annual Report that contains the following information:

- a. The Discharger shall provide the following informatin for the LAA.

Parameter	Units
Quantity of Biosolids Applied	dry tons
Maximum Biosolids Application Rate	kg/acre/year
Volume of Wastewater Applied	acre-feet
Maximum Recycled Water Application Rate	acre-feet/year
Total Nitrogen Loading ¹	lbs/acre/year
Plant Available Nitrogen	lbs/acre/year
Residual Nitrogen	lbs/acre
Crop(s) planted	name
Crop(yield)	tons/acre
Results of plant tissue testing for Molybdenum	mg/kg
Results of plant tissue testing for Copper	mg/kg
Results of plant tissue testing for Selenium	mg/kg

- b. The Discharger shall provide the following pollutant loading rate information for arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc.
 - i. Cumulative Loadings from Previous Years(kg/ha)
 - ii. Loadings this Year (kg/ha)
 - iii. Background Soils Concentration (kg/ha) (6 inch depth)
 - iv. Cummulative Metal Load to Date (kg/ha)
 - v. Percent Cumulative Limit to Date (%)

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. Monitoring Location R-001U1, R-001U2, R-001D1, R-001D2, and R-002U1

1. The Discharger shall monitor Miles Creek and Hartley Slough at R-001U1, R-001U2, R-001D1, R-001D2, and R-002U1, as follows¹:

Table E-8a. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency ¹
Dissolved Oxygen	mg/L	Grab	Weekly
	% saturation	Grab	Weekly
pH	Standard units	Grab	Weekly
Temperature	°F	Grab	Weekly
Electrical Conductivity	□mhos/cm	Grab	Weekly
Fecal Coliform Organisms	MPN/100 mL	Grab	Weekly
Ammonia ²	mg/L	Grab	Weekly
Un-ionized Ammonia as N (calculated)	mg/L	Calculated	Weekly
Chlorine Residual ³	mg/L	Grab	Weekly
Radionuclides	pCi/L	Grab	Quarterly ⁴
Hardness (as CaCO ₃)	mg/L	Grab	Monthly

1. If a discharge is intermittent rather than continuous, the Discharger shall monitor and record data for all of the constituents listed above on the first day of each intermittent discharge and thereafter the frequencies in the schedule shall apply. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the table.
2. Temperature and pH shall be determined at the time of sample collection for the calculation of un-ionized ammonia.
3. Minimum detection limit shall be no greater than 0.01 mg/L.
4. January, April, July, and October.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reaches bounded by Stations R-001U1 and R-001U2 and R-001D1 and R-001D2 and Stations R-002U1 and R-001U1. Attention shall be given to the presence or absence of:

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

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

IX. OTHER MONITORING REQUIREMENTS

A. Water Supply Monitoring—Monitoring Location S-001

The Discharger shall utilize its computerized database of the production from the municipal wells supplying the City of Merced. The chemical analysis shall be the most recent analysis in accordance with the requirements of Title 22. For each constituent listed in the following table, the flow weighted average concentration shall be calculated and reported.

Parameter ¹	Units	Sample Type	Minimum Reporting Frequency ²
Electrical Conductivity	umhos/cm	Grab	Quarterly ³
Standard Minerals	mg/L	Grab	Quarterly ³

¹. Constituents shall be reported as a flow weighted average of all wells during the quarter.

². Moving average shall include the most recent analysis for each well.

³. January, April, July, and October.

B. Biosolids/Sludge Monitoring BIO-001

1. A composite sample of biosolids shall be collected annually at Monitoring Location BIO-001 in accordance with USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for priority pollutants listed in 40 CFR section 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of biosolids are provided in USEPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for biosolids samples should reflect those specified in 40 CFR 136.6.3(e).
2. Sampling records shall be retained for a minimum of **five years**. A log shall be kept of sludge quantities generated and of handling and disposal activities. The frequency of entries is discretionary; however, the log should be complete enough to serve as a basis for part of the annual report.
3. By **1 February** of each year, the Discharger shall submit an annual report covering the previous monitoring year. The reporting period ends 31 December.

This report shall contain:

- a. Annual sludge production in dry tons and percent solids.
- b. A schematic diagram showing sludge handling facilities and solids flow diagram.
- c. Depth of application and drying time for sludge drying beds.

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. 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).
2. **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.
3. 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.
4. **Reporting Protocols.** The Discharger shall report with each sample result the applicable Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (\pm a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

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

- d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.

5 Multiple Sample Data. When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of “Detected, but Not Quantified” (DNQ) or “Not Detected” (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

- a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.
- b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit Self-Monitoring Reports (SMRs) using the State Water Board’s California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS Web site will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.
2. In reporting 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.
3. 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.

4. 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.
5. 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.
6. In addition to the signatory requirements of Standard Provisions (Attachment D), all monitoring reports shall be signed by the chief operator of the Facility and, if the chief operator of the Facility is not in the direct line of supervision of the laboratory function for a discharger conducting its own analyses, also by the chief of the laboratory.
7. In addition to the signatory requirements of Standard Provisions (Attachment D), all monitoring reports shall be signed: by the chief operator of the Facility and, if the chief operator of the Facility is not in direct line of supervision of the laboratory function for a discharger conducting any of its own analyses, also by the chief of the laboratory.
8. 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
 1685 "E" Street
 Fresno, CA 93706

9. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-10. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Continuous	<Permit effective date>	All	First day of the second month following sample collection month.

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Hourly	<Permit effective date>	Hourly	First day of the second month following sample collection month.
Daily	<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 the second month following sample collection month.
Weekly	<Sunday following permit effective date or on permit effective date if on a Sunday>	Sunday through Saturday	First day of the second month following sample collection month.
Monthly	<First day of calendar month following permit effective date or on permit effective date if that date is first day of the month>	1 st day of calendar month through last day of calendar month	First day of the second month following sample collection month.
Quarterly	<Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date>	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	1 May 1 August 1 November 1 February
Semiannually	<Closest of January 1 or July 1 following (or on) permit effective date>	January 1 through June 30 July 1 through December 31	1 August 1 February
Annually	<January 1 following (or on) permit effective date>	January 1 through December 31	1 February

C. Discharge Monitoring Reports (DMRs)

- 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 SMRs that will satisfy federal requirements for submittal of Discharge Monitoring Reports (DMRs). Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.
- 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, 15 th 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 time schedules 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.

Table E-11. Reporting Requirements for Special Provisions Progress Reports

Special Provision	Reporting Requirements
WWTF Expansion (VI.C.2.a.)	1 February, annually
Temperature Study (VI.C.2.c.)	1 February, annually
Elimination of Reasonable Potential Study (VI.C.2.d.)	1 February, annually
Land Use and Groundwater Limitation Study (VI.C.2.e.)	1 February, annually
Use Attainability Analysis Study (VI.C.2.h.)	1 February, annually
Aluminum Study (VI.C.2.i)	1 February, annually
Compliance Schedules for Final Effluent Limitations for Cyanide, Dibromochloromethane, and Dichlorobromomethane, and Discharge Specification for Cyanide (VI.C.7.a.)	1 February, annually
Compliance Schedules for Nitrate + Nitrite (VI.C.7.b.)	1 February, annually
Compliance Schedule for Biosolids/Sludge Handling Modifications (VI.C.7.c.)	1 February, 1 August, semi-annually
Compliance Schedule for Tertiary Treatment (VI.C.7.d)	1 February, annually
Compliance Schedule for Aluminum and Iron (VI.C.7.e).	1 February, annually.

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

- a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.
 - b. The names and telephone numbers of persons to contact regarding the Facility 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.
4. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Regional Water Board, with copies to USEPA 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 Facility, 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.
 - viii. A summary of public participation activities to involve and inform the public.
 - ix. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.
 - 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

Table of Contents

Attachment F – Fact Sheet	3
I. Permit Information	3
II. Facility Description	4
A. Description of Wastewater and Solids Treatment or Controls.....	4
B. Discharge Points and Receiving Waters.....	5
C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data	5
D. Compliance Summary.....	6
E. Planned Changes	7
III. Applicable Plans, Policies, and Regulations.....	8
A. Legal Authority	8
B. California Environmental Quality Act (CEQA)	8
C. State and Federal Regulations, Policies, and Plans	9
D. Impaired Water Bodies on CWA 303(d) List	12
E. Other Plans, Policies and Regulations.....	13
IV. Rationale For Effluent Limitations and Discharge Specifications.....	13
A. Discharge Prohibitions	14
B. Technology-Based Effluent Limitations (Discharge 001 and 002)	15
1. Scope and Authority	15
2. Applicable Technology-Based Effluent Limitations	15
C. Water Quality-Based Effluent Limitations (WQBELs) (Discharge 001 and 002)	16
1. Scope and Authority	16
2. Applicable Beneficial Uses and Water Quality Criteria and Objectives.....	16
3. Determining the Need for WQBELs	17
4. WQBEL Calculations	25
5. Whole Effluent Toxicity (WET)	28
D. Final Effluent Limitations.....	28
1. Final Limitations.....	28
2. Mass-based Effluent Limitations.....	28
3. Averaging Periods for Effluent Limitations.....	29
4. Satisfaction of Anti-Backsliding Requirements.....	29
E. Interim Effluent Limitations.....	30
F. Land Discharge Specifications WMA Discharge 003.....	32
G. Reclamation Specifications LAA Discharge 004	32
H. Satisfaction of Antidegradation Policy.....	34
V. Rationale for Receiving Water Limitations	36
A. Surface Water	36
B. Groundwater	38
VI. Rationale for Monitoring and Reporting Requirements.....	39
A. Influent Monitoring	39
B. Effluent Monitoring.....	39
C. Whole Effluent Toxicity Testing Requirements	39
D. Receiving Water Monitoring.....	39
1. Surface Water.....	39
2. Groundwater	40

- E. Other Monitoring Requirements 40
- VII. Rationale for Provisions 40
 - A. Standard Provisions 40
 - B. Special Provisions 41
 - 1. Reopener Provisions 41
 - 2. Special Studies and Additional Monitoring Requirements 42
 - 3. Best Management Practices and Pollution Prevention 46
 - 4. Construction, Operation, and Maintenance Specifications 47
 - 5. Special Provisions for Municipal Facilities (POTWs Only) 47
 - 6. Other Special Provisions 48
 - 7. Compliance Schedules 49
- VIII. Public Participation 51
 - A. Notification of Interested Parties 51
 - B. Written Comments 51
 - C. Public Hearing 52
 - D. Waste Discharge Requirements Petitions 52
 - E. Information and Copying 52
 - F. Register of Interested Persons 52
 - G. Additional Information 53

List of Tables

- Table F-1. Facility Information 3
- Table F-2. Order 5-00-246 Effluent Limitations and Monitoring Data 5
- Table F-3. Order 5-00-246 Effluent Limitations and Monitoring Data 6
- Table F-4. Interim Effluent Limitation Calculation Summary 31

ATTACHMENT F – FACT SHEET

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

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for Dischargers in California. Only those sections or subsections of this Order that are specifically identified as “not applicable” have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as “not applicable” are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	5C240108001
Discharger	City of Merced
Name of Facility	City of Merced Wastewater Treatment Facility
Facility Address	10260 Gove Road
	Merced, CA 95340
	Merced County
Facility Contact, Title and Phone	Humberto Molina, Public Works Manager, 209-385-6892
Authorized Person to Sign and Submit Reports	Humberto Molina, Public Works Manager, 209-385-6892
Mailing Address	1776 Grogan Avenue, Merced, CA 95340
Billing Address	1776 Grogan Avenue, Merced, CA 95340
Type of Facility	POTW
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Y
Reclamation Requirements	Producer and User
Facility Permitted Flow	11.5 mgd secondary and 20 mgd tertiary
Facility Design Flow	11.5 mgd (initial secondary), 12 mgd (first tertiary expansion), 16 mgd (second tertiary expansion), 20 mgd (third tertiary expansion)
Watershed	Owens Creek Watershed
Receiving Water	Hartley Slough, Land Application Area, Wildlife Mitigation Area
Receiving Water Type	Slough, Groundwater

- A. The City of Merced (Discharger) owns and operates the Merced Wastewater Treatment Facility (hereinafter Facility or WWTF), a publicly owned treatment works (POTW). The City of Merced owns the property at 10260 Grove Road, Merced, CA on which the Facility is located.

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

- B. The Facility discharges to the following locations regulated by Waste Discharge Requirements (WDRs) Order No. 5-00-246, which was adopted on 27 October 2000:
1. Hartley Slough, a water of the United
 2. The Merced Wildlife Management Area (WMA), and
 3. A 580 acre Land Application Area (LAA).

The terms of Order No. 5-00-246 were administratively extended until revised WDRs and modified National Pollutant Discharge Elimination System (NPDES) permit could be adopted.

- C. The Discharger filed in April 2005 a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit and expansion of the Facility. The application was deemed complete in May 2005.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service for the City of Merced and serves a population of approximately 70,500. The WWTF design average dry weather flow capacity is 11.5 mgd of secondary treated wastewater. As described in Section II.D., in more detail, the Discharger proposes to upgrade the WWTF in three phases to tertiary treatment and a capacity of 20 mgd.

The City used to land apply under WDRs Order No. 97-034 industrial food processing wastewater and biosolids to its industrial wastewater treatment facility, which consists of 580 acres of farmland. The discharge of food processing wastewater has ceased and the 580 acre site is hereafter referred to as the Land Application Area (LAA). The City now proposes to recycle effluent and biosolids on the LAA for the production of fiber, fodder, and seed crops. Order No. 5-00-246 indicates the LAA was designed to allow floodwaters from Owens Creek to enter the site and then drain back to Owens Creek downstream. The LAA received floodwaters in 1992, 1997, 1998, 2005 and 2006.

A. Description of Wastewater and Solids Treatment or Controls

The WWTF consists of headworks, a septage receiving area, two primary clarifiers, three activated sludge basins with three separate anoxic denitrification basins, three secondary clarifiers, and chlorination and dechlorination units. Sludge is thickened, anaerobically digested, and then dried in six unlined sludge-drying beds. Biosolids are land applied to the LAA.

The Discharger proposes to upgrade and expand the facility in three phases that are discussed in more detail below under Fact Sheet Section II.E. (Planned Changes).

Attachment B provides a map of the area that shows the Facility. WWTF diagrammatic layouts are depicted in Attachments C.1 – C.2, a part of this Order.

B. Discharge Points and Receiving Waters

The WWTF is in Section 10, T8S, R13E, MDB&M, as shown on Attachment B, a part of this Order. Treated effluent is discharged via a 1.6 mile long ditch to Hartley Slough at Discharge Point 001 at 37°14'38" north latitude and 120°32'30" west longitude. Hartley Slough is an indirect tributary to the San Joaquin River. Planned improvements include construction of a new piped discharge (Discharge Point 002) to Hartley Slough at 37°15'12" north latitude and 120°31'46" west longitude. The effluent discharge to the WMA is referred to as Discharge Point 003, and the discharge to the LAA is referred to as Discharge Point 004.

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

Effluent limitations contained in Order 5-00-246 for Discharge Point 001 and representative monitoring data submitted with the RWD and covering from 2000 to 2003 follow:

Table F-2. Order 5-00-246 Effluent Limitations and Monitoring Data

Parameter (units)	Effluent Limitation			Monitoring Data (From 2000 to 2003)
	Average Monthly	Average Weekly	Maximum Daily	Highest Daily Discharge
BOD (mg/L)	30	45	90	8.0
TSS (mg/L)	30	45	90	30.5
Oil and Grease (mg/L)	10	-	15	16
Settleable Solids (mg/L)	0.2	-	1.0	
Chlorine Residual (mg/L)	0.1	-	0.5	0.94
Total Coliform (MPN/100 mL)		23 ¹	240	19.4

1. 7-Day Median

Monthly Average Design Flow (dry weather):	11.5	mgd
Monthly Average Design Flow Planned Expansion (dry weather):	20.0	mgd
Annual Average Daily Flow Rate:	8.5	mgd
Maximum Daily Flow Rate:	11.3	mgd
Average Temperature, Summer:	79.7	°F
Average Temperature, Winter:	68.0	°F
BOD ¹ :	3.5	mg/L
Total Suspended Solids:	6.8	mg/L

¹ 5-day, 20°C biochemical oxygen demand

Effluent limitations contained in Order 5-00-246 for Discharge Point 001 and representative monitoring data from self-monitoring reports from 2004 through April 2007:

Table F-3. Order 5-00-246 Effluent Limitations and Monitoring Data

Parameter (units)	Effluent Limitation			Monitoring Data (From 2004 to August 2007)		
	Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
BOD (mg/L)	30	45	90	8.8	-	16
TSS (mg/L)	30	45	90	22	-	68
Oil and Grease (mg/L)	10	-	15	3	-	7
Settleable Solids (mg/L)	0.2	-	1.0	0.03	-	0.3
Chlorine Residual (mg/L)	0.1	-	0.5	0.07	-	2.2
Total Coliform (MPN/100 mL)		23 ¹	240	-	50.5 ¹	>1,600

1. 7-Day Median

D. Compliance Summary

The Regional Water Board adopted CDO No. 97-018 on 24 January 1997. The CDO required the City to conduct a toxicity reduction evaluation specifically for control and reduction of ammonia toxicity. The City began operating the WWTF to remove ammonia and successfully reduced the toxicity of WWTF effluent. However, the operational changes to reduce toxicity made the WWTF susceptible to disruption from other factors (e.g., additional hydraulic loadings, adverse weather conditions, and mechanical failures) that caused other violations of the applicable WDRs (WDRs Order No. 94-167).

The Board then adopted CDO No. 98-219 on 11 December 1998, rescinding CDO No. 97-018, and requiring, in part, that the City implement WWTF modifications to maintain continuous compliance with the 10 mgd flow limit in WDRs Order 94-167. The CDO limited the monthly average dry weather to 7.7 mgd or less until modifications were completed. The Board adopted Special Order (SPO) No. 99-136 on 29 October 1999, which extended the completion date of WWTF modifications to 25 July 2001.

In 2000, the Board adopted WDRs Order No. R5-00-246 that superceded WDRs Order 94-167 and CDO No. R5-00-247 that superceded CDO No. 98-219, as modified.

CDO No. R5-00-247 requires the City to:

1. Increase WWTF capacity to 10 mgd by 11 July 2001.
2. Limit WWTF flow to 7.7 mgd until item 1 is completed.

3. Cease discharge of digester supernatant to land (i.e., to the WWTF's sludge-drying beds) no later than 30 June 2003.
4. Implement modifications necessary to comply with Receiving Water Limitation E.8 (pH) by 1 November 2002, or complete a study, subject to scientific peer review, suitable to support a Basin Plan amendment (BPA) for specific surface water quality objectives pH in the Hartley Slough, Miles Creek and Owens Creek watershed 1 September 2003.

The City complied with CDO Items 1 through 3 listed above. To comply with Item No. 4, the City began participation in the Basin Plan Advisory Committee on turbidity and pH. The Regional Water Board adopted at its October 2007 meeting a Basin Plan amendment that, once approved by the State Water Board and the U.S. Environmental Protection Agency (USEPA) and implemented, will remove the pH change criteria and moot the City's receiving water pH compliance issues. Given the City has complied with the components of CDO No. R5-00-247, rescission of the CDO by separate Order is appropriate.

The City has generally complied with the effluent limitations of WDRs Order No. R5-00-246. As described in more detail below, the effluent dominated and often backwater conditions associated with Hartley Slough have resulted in apparent receiving water violations for pH change, temperature change, and turbidity. To date, the discharge has not been shown to be the cause of these apparent violations.

E. Planned Changes

The Discharger proposes upgrades and expansion of the WWTF over the course of this permit in three phases:

1. In Phase 1, the City will construct a tertiary pump station, a flocculation basin with coagulant feed, filters, a UV disinfection unit, and an effluent reaeration unit. These improvements will result in a design monthly average dry weather flow capacity of 12 mgd with a tertiary level of treatment. The City anticipates completing these improvements by May 2010.

As part of the Phase 1 expansion, the City will also construct lined solar driers. The City plans to complete these solids handling improvements during the term of this Order.

2. In Phase 2, the City will construct a new headworks and influent pump station with fine screens and grit removal, a storm water retention basin with overflow to the emergency storage basins, a third primary clarifier, a fourth activated sludge basin, a third sludge digester, a solids holding tank, and additional lined solar driers. These improvements will result in a design average dry weather flow capacity of 16 mgd with a tertiary level of treatment.

3. In Phase 3, the City will construct a fourth primary clarifier, a fifth activated sludge basin, and a fifth secondary clarifier. These improvements will result in a design average dry weather flow capacity of 20 mgd with a tertiary level of treatment.

All phases will include implementation of the SymBio™ process to facilitate nitrification and denitrification. If the process cannot be implemented to meet a total nitrogen effluent concentration of 10 mg/L, separate anoxic denitrification basins will be added in Phases 2 and 3.

Completion of these upgrades will implement best practicable treatment and control for effluent and solids handling systems at the WWTF.

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 Limitations and Discharge Requirements (Findings). This section provides supplemental information, where appropriate, for the plans, policies, and regulations relevant to the discharge.

A. Legal Authority

See Limitations and Discharge Requirements - [Findings](#), Section II.C.

B. California Environmental Quality Act (CEQA)

The City of Merced certified a final environmental impact report (EIR) for the WWTF project in accordance with CEQA (Public Resources Code section 21000, et seq.) on 18 December 2006. The EIR identifies the following project water quality impacts as potentially significant and identifies the following mitigation measures:

Discharge to Hartley Slough

- 1 The proposed increase in discharge flow to Hartley Slough may cause erosion of the stream channel and increased sediment and turbidity. The EIR indicates the City will implement a monitoring program to evaluate erosion, and if necessary, implement best management practices to reduce impacts to a less than significant level.

Additionally, this Order includes receiving water limitations (Limitations and Discharge Requirements Section V.A.) and monitoring (Monitoring and Reporting Program Section VIII.) of Hartley Slough for sediment, settleable material, suspended material, and turbidity. Given this, the described impacts will be less than significant.

- 2 The increased temperature of the effluent discharge to Hartley Slough may cause exceedences of temperature water quality objectives identified in the *The Water Quality Control Plan (Basin Plan), For The California Regional Water Quality Control Board, Central Valley Region, Fourth Edition, Revised*

October 2007 (with Approved Amendments), The Sacramento River Basin and the San Joaquin River Basin, (hereinafter Basin Plan). The EIR indicates that the City will implement cooling if necessary to comply with the Basin Plan water quality objectives, thereby reducing the impact to a less than significant level.

Additionally, this Order includes receiving water limits and monitoring for temperature change consistent with the water quality objectives in the Basin Plan. The Order provides the Discharger the opportunity to evaluate appropriate averaging periods and ceiling limitations for temperature to protect WARM uses of Hartley Slough.

Discharge to Land (WMA and LAA)

Under the proposed project, discharges to the WMA and LAA will remain largely unchanged except that the recycled water will be of much better quality due to the proposed increase in the level of treatment from secondary to tertiary and the implementation of denitrification. Appropriately, the EIR does not identify any impacts associated with the discharge of tertiary treated effluent to the WMA or LAA as potentially significant.

As the responsible agency for water quality in the Central Valley under CEQA, this Regional Water Board reviewed the EIR and determined the following:

- Generally, under CWC Section 13389, the action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code Sections 21100-21177. Nonetheless, the project as approved by the City and regulated by this Order will not have a significant impact on water quality in Hartley Slough.
- The discharge to land approved by the City of Merced will not have a significant environmental impact on water quality.

Overall, the project proposed by the City will not have a significant effect on water quality. This Order imposes enforceable requirements, including monitoring of effluent quality and receiving waters, to ensure this is the case.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. The Basin Plan at page *II-2.00* states that the “...*beneficial uses of any specifically identified water body generally apply to its tributary streams.*”

The federal Clean Water Act (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 fishable and swimmable. 40 CFR 131.2 and 131.10 require that the States consider all waters' potential for 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 when designating beneficial uses. 40 CFR 131.3(e) defines existing beneficial uses as those uses actually attained after November 28, 1975, whether or not they are included in the water quality standards. 40 CFR 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 U.S.

Hartley Slough is an ephemeral, effluent dominated, water body that flows to Owens Creek and then to the San Joaquin River via a network of natural and artificial channels. The designated beneficial uses of Hartley Slough, as a tributary of the San Joaquin River reach between Sack Dam and the Merced River, are: municipal and domestic supply (MUN); agricultural supply (AGR); industrial process supply (PRO); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater habitat (WARM); migration of aquatic organisms (MIGR); spawning, reproduction, and /or early development (SPWN); and wildlife habitat (WILD). Known beneficial uses of Hartley Slough downstream of the discharge include REC-1, REC-2, AGR, WARM, and WILD. Due to the ephemeral nature of Hartley Slough, MUN may not be attainable downstream of the discharge. Nor is Cold SPAWN likely to occur.

The WMA has historically been regulated as a water of the U.S. because (a) it is wetland habitat designed as mitigation to compensate for the destruction of existing, established wetlands; (b) was established by converting uncultivated land subject to seasonal flooding from adjacent waters of the U.S. (i.e., Owens Creek and Duck Slough); (c) is not part of the Discharger's treatment operations; (d) is a well-established habitat for migratory waterfowl; and (e) will continue to receive WWTF effluent for the indefinite future at a frequency and duration sufficient to support vegetation typical of a wetland habitat.

In 2001 the U.S. Supreme Court issued a decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*. The decision stated that the federal CWA does not apply to isolated, intrastate, and non-navigable waters. The WMA is a constructed wetland area isolated from surrounding waters of the U.S. by a series of levees and is thus, an isolated, intrastate, and non-navigable water that is not subject to regulation under the CWA. Discharges to the WMA are subject to regulation under the California Water Code. Public access to the WMA is regulated and supervised by DFG. The WMA is managed by the California Department of Fish and Game to provide WARM, REC-2, and WILD uses. During the hunting season, DFG limits public access to around ten people three days per week. The WMA is posted to inform the visiting public that water within the WMA is treated effluent.

The Basin Plan designates the beneficial uses of groundwater as MUN, industrial service supply (IND), PRO, and AGR.

2. **Antidegradation Policy.** The Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed below in Fact Sheet Section IV.H., the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and the Basin Plan.
3. **Anti-Backsliding Requirements.** Compliance with the Anti-Backsliding requirements is discussed in Section IV.D.4.
4. **Emergency Planning and Community Right to Know Act.** Section 13263.6(a), California Water Code, requires that *“the Regional Water 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) (EPCRA) indicate as discharged into the POTW, for which the State Water Board or the Regional Water 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).

5. **Storm Water Requirements.** USEPA promulgated Federal Regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program regulates storm water discharges from wastewater treatment facilities. Wastewater treatment plants are applicable industries under the storm water program and are obligated to comply with the Federal Regulations. The City of Merced contains all storm water related to industrial activities on-site.
6. **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.

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

1. Under Section 303(d) of the CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 28 June 2007 USEPA gave final approval to California's 2006 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."
2. Total Maximum Daily Loads. The USEPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination.
 - a. The Basin Plan contains a TMDL for salt and boron applicable to the Discharger (*Control Program for Salt and Boron Discharges into the Lower San Joaquin River*) (Salt and Boron TMDL). It identifies existing NPDES point source dischargers as a low priority. Compliance dates for low priority dischargers are contained in Table IV-4.3 of the Basin Plan. Low priority dischargers are not required to be in compliance during wet through dry years for 16 years and 20 years during critical years, starting from the effective date of the control program [28 July 2006]. At that time, the discharge must not exceed the water quality objectives for EC that apply to the San Joaquin River at Vernalis. Generally, discharges must not exceed an EC of 700 umhos/cm from 1 April through 31 August and 1000 umhos/cm from 1 September through 31 March.

The City's discharge currently meets the requirements of the TMDL. Thus, this Order includes effluent EC limits based on Best Practicable Treatment and Control and requires the Discharger to submit a work plan to conduct a study to determine measures it will implement to achieve long term conformance with the Salt and Boron TMDL specifications.

- b. The Sacramento/San Joaquin Delta to which the San Joaquin River is tributary is also listed as impaired for mercury and Regional Water Board staff are preparing a methyl-mercury TMDL that will apply to the Discharger. Mercury was detected in the discharge at concentrations below the numerical water quality objective. This permit may be reopened to establish effluent limits for methyl-mercury and/or total mercury based on the TMDL once approved.

E. Other Plans, Policies and Regulations

Discharge of a waste to land in a concentration that exceeds the applicable water quality objective, or the natural background quality if it is greater than the water quality objective, for the constituent in receiving water risks unacceptable degradation and pollution. Waste is subject to a classification system pursuant to California Water Code (CWC) Section 13173 and Title 27, California Code of Regulations, Division 2 (Title 27). The waste authorized for discharge herein is exempt from Title 27 as follows:

1. The discharge wastewater authorized herein and the treatment and storage facilities associated with the discharge of are exempt from the requirements pursuant to CCR, 20090(a), based on the following:
 - a. The waste consists primarily of domestic sewage and treated effluent;
 - b. The waste discharge requirements are consistent with water quality objectives; and
 - c. The treatment and storage facilities are associated with a municipal wastewater treatment plant.
2. The discharge of biosolids authorized herein is exempt from the requirements of Title 27, pursuant to 27 CCR 20090(f), as a nonhazardous, decomposable waste used as a soil amendment pursuant to best management practices.

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 that are applicable to the discharge are contained herein.

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

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards, and 40 CFR 122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The 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 (1) USEPA's published water quality criteria, (2) a proposed state criterion (*i.e.*, water quality objective) or an explicit state policy interpreting its narrative water quality criteria (*i.e.*, the Regional Water Board's "Policy for Application of Water Quality Objectives") (40 CFR 122.44(d)(1) (vi) (A), (B) or (C)), or (3) an indicator parameter. The Basin Plan 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*" (narrative toxicity objective). The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as MUN, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (MCL) 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. Prohibition A concerns a change in location or manner of the discharge, or a change in its character, from what was provided in the RWD and evaluated for compliance with the CWC and CWA. Discharge requirements in this Order may not be protective of water quality if there is a substantial change, and hence such is prohibited.
2. Prohibition B prohibits bypass pursuant to 40 CFR 122.41 (m)(4), with federal allowance for exceptions set forth in section 1.G of Attachment D, Standard Provisions. It also prohibits overflows, which concerns release of untreated and partially treated wastewater.
3. Prohibition C reflects two general situations that, if created, justify cleanup or abatement enforcement activities and assessment of administrative civil liabilities.
4. Prohibition D concerns two categories of waste that are subject to full containment as prescribed by Title 23 and Title 27 of the California Code of Regulations and, if discharged, have high potential for creating a condition that would violate Prohibition C as well.

5. Prohibition E is to ensure pollutants associated with wastewater and biosolids applications to the LAA are not carried offsite during precipitation events.
6. Prohibition F implements a Basin Plan prohibition.
7. Prohibitions G and H are intended to ensure that applied biosolids meets minimum State and federal requirements.

B. Technology-Based Effluent Limitations (Discharge 001 and 002)

1. Scope and Authority

The CWA requires publicly owned wastewater treatment works to meet minimum effluent limitations based on secondary treatment or any more stringent limitations necessary to meet water quality standards.

2. Applicable Technology-Based Effluent Limitations

- a. **Flow.** The monthly average dry weather discharge flows shall not exceed 11.5 million gallons per day, 12.0 million gallons per day, 16.0 million gallons per day, or 20.0 million gallons per day, depending on certification. These flow limitations are based on the design capacity of the various planned modifications to the WWTF.
- b. **Settleable Solids.** This Order contains settleable solids limits based on the technical capabilities of the proposed treatment system.
- c. As previously mentioned, this Order requires the Discharger to upgrade to tertiary treatment. In the interim, this Order establishes effluent limitations for BOD, TSS, and pH based on the requirements of 40 CFR 133. These limits are presented below and apply to discharges to Hartley Slough during the period beginning **5 May 2008** and ending upon completion of tertiary improvements, not to exceed **18 May 2010**.

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
5-Day BOD @ 20 °C	mg/L	30	45	90
	lbs/day ¹	2,877	4,316	8,632
Total Suspended Solids	mg/L	30	45	90
	lbs/day ¹	2,877	4,316	8,632

- d. Final effluent limitations for discharges to Hartley Slough are based on the technical capability of tertiary wastewater treatment systems as follows:

¹ Based upon a design treatment capacity of 11.5 mgd.

Parameter	Units	Effluent Limitations		
		Average Monthly	Average Weekly	Maximum Daily
5-Day BOD @ 20 °C	mg/L	10	15	20
	lbs/day ¹	1001	1501	2002
	lbs/day ²	1334	2002	2669
	lbs/day ³	1668	2502	3336
Total Suspended Solids	mg/L	10	15	20
	lbs/day ¹	1001	1501	2002
	lbs/day ²	1334	2002	2669
	lbs/day ³	1668	2502	3336

1. Based on a design monthly average dry weather flow of 12.0 MGD (pending certification).
2. Based on a design monthly average dry weather flow of 16.0 MGD (pending certification).
3. Based on a design monthly average dry weather flow of 20.0 MGD (pending certification).

C. Water Quality-Based Effluent Limitations (WQBELs) (Discharge 001 and 002)

1. Scope and Authority

As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for pollutants that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an in-stream 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 any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

- a. **Receiving Water Beneficial Uses.** As previously described the receiving waters are Hartley Slough, the WMA, and groundwater. The applicable beneficial uses are:
 - i. Hartley Slough: MUN, AGR, PRO, REC-1, REC-2, WARM, MIGR, SPWN, and WILD.
 - ii. WMA: WARM, REC-2, and WILD uses.
 - iii. Groundwater: MUN, industrial service supply (IND), PRO, and AGR.
- b. **Hardness.** While no effluent limitation for hardness is necessary in this Order, hardness is critical to the assessment of the need for, and the development of, effluent limitations for certain metals.

For purposes of establishing water quality-based effluent limitations, a reported hardness value of 110 mg/L as CaCO₃ was used.

- c. **Assimilative Capacity/Mixing Zone.** Based on the available information, the worst-case dilution is assumed to be zero to provide protection for the receiving water beneficial uses. The impact of assuming zero assimilative capacity within the receiving water is that discharge limitations are end-of-pipe limits with no allowance for dilution within the receiving water.

3. Determining the Need for WQBELs

- a. City of Merced monitored its effluent for priority and non-priority pollutants. The Regional Water Board used the data to conduct the reasonable 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.² 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.
- b. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for aluminum, chlorine, cyanide, dibromochloromethane, dichlorobromomethane, iron, nitrite and nitrate, pathogens, pH, and toxicity. Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. A summary of the monitoring and the RPA is included in Attachment G. A detailed description for constituents of concern is provided below.
- c. **Aluminum.** Criteria for aluminum include the following:

Source	Criteria (ug/L)
California Primary MCL	1000
California Secondary MCL	200
USEPA Freshwater Aquatic Life Criteria (Chronic 4-day Average)	87
USEPA Freshwater Aquatic Life Criteria (Acute 1-hour Average)	750

The Regional Water Board has used USEPA’s criteria for prevention of acute and chronic toxicity to implement the Basin Plan’s narrative toxicity objective. The most stringent of these criteria is the chronic criteria of 87 ug/L. This criteria is based on studies conducted on waters with low pH (6.5 to 6.8 pH units) and

² See, Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City)

hardness (<10 mg/L as CaCO₃), conditions not commonly observed in valley floor waters like Hartley Slough. Thus the criteria is likely overly protective for this application. 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 CaCO₃ in 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 CaCO₃, the Department regulates aluminum based on the 750 µg/L acute criterion. In the case of Hartley Slough, it is unlikely that application of the stringent chronic criteria is necessary to protect aquatic life.

The effluent aluminum concentration has ranged from 50 ug/L to a maximum effluent concentration (MEC) of 960 ug/L. Thus the discharge has reasonable potential to cause an exceedance of water quality criteria for acute toxicity; therefore, an acute effluent limitation is established in this Order to protect WARM. The Order also requires the City to conduct a study to determine an appropriate chronic aluminum criteria on which to base appropriate effluent limitations and a reopener that will allow the Regional Water Board to reconsider the limitations herein.

The Basin Plan also includes a chemical constituent objective that states:

At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.

By tributary rule, Hartley slough has the designated beneficial use of MUN. Based on this, the lack of available dilution in Hartley Slough, and the above effluent data, the discharge has the reasonable potential to cause an exceedance of the Basin Plan chemical constituent objective for aluminum of 200 ug/L. This permit includes a final annual¹ 7-Day Median.al average effluent limit for aluminum Based on the MCL.

In USEPA's *Ambient Water Quality Criteria for Aluminum—1988* [EPA 440/5-86-008], USEPA states that “[a]cid-soluble aluminum...is probably the best measurement at the present...”; however, USEPA has not yet approved an acid-soluble test method for aluminum. Replacing the ICP/AES portion of the analytical procedure with ICP/MS would allow lower detection limits to be achieved. Based on USEPA's discussion of aluminum analytical methods, this Order allows the use of the alternate aluminum testing protocol described above to meet monitoring requirements.

- d. **Ammonia.** WDRs Order No. R5-00-246 includes effluent limitations for ammonia as follows: (i) monthly average of 2.3 mg/L, (ii) 4-day average of 5 mg/L, and (iii) daily maximum of 20 mg/L. As mentioned above, the Discharger operates the WWTF in nitrification mode. The Discharger is also adding treatment to increase the reliability of the nitrification process and to provide for denitrification. Regional Water Board staff evaluated daily effluent and weekly receiving water self-monitoring data from August 2004 through August 2007. Effluent ammonia concentrations are typically less than 1.0 mg/L. The maximum calculated effluent 30-day average (chronic) ammonia concentration was 1.0 mg/L, which is less than the minimum chronic criteria of 1.94 mg/L based on effluent pH and temperature data and the minimum R2 chronic criteria of 2.34 mg/L based on downstream receiving water pH and temperature data. The MEC of 5 mg/L is lower than the minimum acute criteria of 8.9 mg/L based on effluent pH and less than the minimum calculated R2 acute criteria of 8.4 mg/L based on the receiving water pH. The analysis indicates that there is no reasonable potential for effluent ammonia to cause an exceedance of a water quality criteria for ammonia in Hartley Slough. Thus, this Order does not contain effluent limitations for ammonia. It does require effluent monitoring for ammonia. Compliance with antibacksliding requirements is addressed in Fact Sheet Section IV.D.4.

- e. **Chlorine.** The Discharger currently uses chlorine for disinfection of the effluent waste stream. Failure of chlorination/dechlorination equipment is a common occurrence in the wastewater industry and has resulted in discharges of toxic levels of chlorine to surface waters. USEPA recommends, in its Ambient Water Quality Criteria for the protection of fresh water aquatic life, maximum 1-hour average and 4-day average chlorine concentrations of 0.019 mg/L and 0.011 mg/L, respectively. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations.

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.

Discharger is proposing tertiary improvements that include Ultraviolet (UV) light disinfection. Until, the improvements are constructed, interim limits for chlorine are included into this permit. Because chlorine is an acutely toxic constituent that can be and will be monitored continuously, an interim average one-hour limitation is considered more appropriate than an average daily limitation. Interim, average one-hour and four-day limitations for chlorine, based on these criteria, are included in this Order.

- f. **Cyanide.** The CTR includes maximum 1-hour average and 4-day average cyanide concentrations of 22 ug/L and 5.2 ug/L, respectively, for the protection of freshwater aquatic life.

The observed cyanide MEC was detected in an effluent sample collected April 2001 at a concentration of 20 ug/L. Subsequent samples collected in July 2006 and January of 2007 were 10 ug/L and 7 ug/L, respectively. These concentrations exceed the CTR criteria for cyanide and, thus effluent limitations for cyanide are required. Effluent Limitations for cyanide are included in this Order and are based on CTR standards for the protection of freshwater aquatic life.

- g. **Dibromochloromethane.** The CTR includes a dibromochloromethane criterion of 0.41 ug/L for the protection of human health and is based on a one-in-a-million cancer risk for waters from which both water and organisms are consumed. The MEC for dibromochloromethane was 4.1 ug/L detected in an effluent sample collected July 2005. The MEC exceeds the water quality criteria; thus effluent limitations for dibromochloromethane are required and included in this Order.
- h. **Dichlorobromomethane.** The CTR includes a dichlorobromomethane criterion of 0.56 ug/L for the protection of human health based consumption of organisms and water. Dichlorobromomethane was detected at a MEC of 17 ug/L in an effluent sample collected July 2005. The MEC exceeds the water quality criteria; thus, effluent limitations for dichlorobromomethane are required. Effluent Limitations for dichlorobromomethane are included in this Order.
- i. **Iron.** The Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit for iron of 300 ug/L. The MEC for iron of 1,100 ug/L was detected in an effluent sample collected in January 2005. Samples collected in July 2005 and July 2006 included results of 430 ug/L and 520 ug/L, respectively. These results are greater than the water quality criteria; thus an effluent limitation for iron is required. An annual average effluent limitation for iron of 300 ug/L is included in this Order and is based on the Basin Plan water quality objectives for chemical constituents and the State Secondary MCL.
- j. **Mercury.** The current USEPA Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, continuous concentration, for mercury is 0.77 ug/L (30-day average, chronic criteria). The CTR contains a human health criterion of 0.050 ug/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR 131, USEPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that “...*more stringent mercury limits may be determined and implemented through use of the State’s narrative criterion.*” In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. The maximum observed effluent mercury concentration was 0.022 ug/L. Thus, no effluent limitation for mercury is required by the SIP/CTR.

Regional Water Board staff is preparing for consideration a methyl-mercury TMDL that will include waste load allocations for the Discharger. This Order will be reopened if necessary to include effluent limitations for methyl-mercury and/or total mercury once the TMDL is approved.

- k. **Nitrite and Nitrate.** To control ammonia toxicity, the WWTF is operated in nitrification mode. The MEC for nitrate as nitrogen of 54 mg/L was from a sample collected in January 2007. Title 22 CCR, Table 64431-A, includes a primary MCL of 10 ug/L for the sum of nitrate and nitrite, measured as nitrogen. The discharge from the WWTF has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for nitrite and nitrate. Effluent Limitations for nitrate and nitrate plus nitrite are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply. This Order includes limitations for the sum of nitrite and nitrate.
- l. **Oil and Grease.** The existing permit includes monthly average and daily maximum effluent limitations of 10 mg/L and 15 mg/L, respectively, for oil and grease. The basis for these limits is unclear. From August 2004 through August 2007, the Discharger sampled its effluent weekly for oil and grease (161 results). The MEC was 6.9 mg/L and the average was 1.32 mg/L. During the same period, the Discharger has not caused an exceedence of the receiving water limits for oil and grease in Hartley Slough. Based on this, there is no reasonable potential for oil and grease to cause an exceedence of a water quality objective for oil and grease in Hartley Slough. Oil and grease limitations are not necessary and have been removed from this permit. Compliance with antibacksliding requirements is addressed in Fact Sheet Section IV.D.4.
- m. **Pathogens.** As mentioned, beneficial uses of Hartley Slough include REC-1 and unrestricted AGR. To protect identified beneficial uses from infectious agents (pathogens), the wastewater must be adequately treated. The principal pathogens that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Treatment, consisting of chemical coagulation, sedimentation, and filtration, removes approximately 99.5% of pathogens. Disinfection of the tertiary effluent ensures greater removal.

Title 22 requires that for sprinkler irrigation of food crops recycled water must be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median, not exceed 23 MPN/100 mL in more than one sample in any 30-day period, and never exceed 240 MPN/100 mL. It defines this as “disinfected tertiary treatment,” and adds that this is the level required as the supply of non-restricted recreational impoundments. 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.”

It is not necessary to be exact in quantifying pathogens in this circumstance as they are living and mobile, multiply exponentially and are impractical to quantify exactly or regulate by weekly average limitations. Tests for detection and enumeration of indicator organisms are used in place of tests for pathogens. The accepted general indicator for pathogenic bacteria is coliform bacteria, which has been authenticated as a reliable standard. Test results allow prediction of

coliform organism populations as a most probable number and limitations typically are specified in terms of daily maximum and a 7-day median. Hence, a total coliform population of 2.2 MPN/100 mL, in the opinion of the DPH, ensures the risk of disease from pathogenic bacteria is at an acceptable level for any of the identified direct uses.

Filtration treatment technology can consistently produce an effluent that does not exceed 2 nephelometric turbidity units (NTU) as a daily average and more than 5.0 NTU 5% of the time within a 24-hour period.

To ensure that other pathogen groups are successfully reduced requires a high degree of filtration as well as the disinfection level described above. Filtration ensures a higher quality effluent by removing finer organic material, and it increases the effectiveness and reliability of the disinfection process. The performance standard for effective filtration is measured in turbidity. Disinfected tertiary effluent that achieves this turbidity and the total coliform density previously described ensures that the risk of disease from all pathogen groups is at an acceptable level for any of the identified direct uses.

Title 22 only applies to direct reuse. In indirect use situations where human exposure is or will be similar, it is reasonable to conclude that the health risk will be acceptable if the treatment process and results are the same as, or comparable to, what Title 22 requires for the same exposure in direct reuse. The receiving water is used for irrigation of agricultural land and for contact recreation purposes (i.e., unrestricted). Disinfected tertiary treatment is also recommended in DPH's "*Uniform Guidelines for the Disinfection of Wastewater*" for surface water discharges under conditions similar to Hartley Slough (e.g., limited dilution, REC-1 and ready access to the watercourse). As these indirect uses are similar to the direct uses where Title 22 specifies a minimum of "disinfected tertiary treatment," the Regional Water Board concludes that "disinfected tertiary treatment" is appropriate for Discharge Points 001 and 002. The method of treatment is not prescribed by this Order, but the Order does specify that wastewater must be treated using a process and to a level the same as or equivalent to that of Title 22. Monitoring turbidity allows immediate detection of filter failure that enables rapid corrective action. Coliform testing requires several hours or days to identify high coliform concentrations. To ensure the WWTF achieves appropriate disinfected tertiary treatment, this Order contains effluent limitations reflecting a tertiary level of treatment and disinfection, or fail-safe equivalent, and associated monitoring for Discharges 001 and 002 compliance. In accordance with CWC Section 13241, the Regional Water Board has considered the following:

- i. The past, present and probable future beneficial uses of Hartley Slough and downstream water bodies include MUN, AGR, PRO, REC-1, REC-2, WARM, MIGR, SPWN, and WILD.

- ii. The environmental characteristics of the hydrographic unit, including the quality of the available water, will be improved by the requirement to provide disinfected tertiary treatment for this wastewater discharge. Disinfected 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 DPH.
- 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 loss of beneficial uses within downstream waters, without the disinfected 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 disinfected 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. DPH recommends that, in order to protect the public health, relatively undiluted wastewater effluent must be treated to a disinfected tertiary level for contact recreational and food crop irrigation uses. Without disinfected 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 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 Title 22, CCR.

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

- n. **pH.** The Basin Plan includes a water quality objective for surface waters that the "...pH shall 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 Regional Water Board adopted a Basin Plan amendment to remove the portion of the limit for pH change. The amendment is awaiting State Board and USEPA approval. Final effluent limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

- o. **Toxicity.** The Basin Plan states that “[a]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.” The Basin Plan further states that “...effluent limits based upon acute biotoxicity tests of effluents will be prescribed...”. Final effluent limitations for acute toxicity are included in this Order.
- p. **Salinity.** The discharge contains total dissolved solids (TDS), chloride, sulfate, and electrical conductivity (EC). These parameters are indicative of the salinity of the discharge. 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. EC is a general indicator of the other salinity constituents. The secondary MCL for EC is 900 $\mu\text{mhos/cm}$ as a recommended level, 600 $\mu\text{mhos/cm}$ as an upper level, and 2200 $\mu\text{mhos/cm}$ as a short-term maximum. 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) indicates that irrigation with water with an EC of 700 $\mu\text{mhos/cm}$ is protective of salt sensitive crops. Most other crops can tolerate higher EC concentrations without harm, however, as the salinity of the irrigation water increases beyond 700 $\mu\text{mhos/cm}$, more crops are potentially harmed by the EC, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

Effluent data from August 2004 through August 2007 indicate the average effluent EC is 630 $\mu\text{mhos/cm}$ with a range of 316 $\mu\text{mhos/cm}$ to 872 $\mu\text{mhos/cm}$. As previously described, the discharge is subject to the requirements of the Salt and Boron TMDL. By 28 July 2022 for wet through dry years and 28 July 2026 critical years, the discharge must not exceed an EC of 700 $\mu\text{mhos/cm}$ from 1 April through 31 August and 1000 $\mu\text{mhos/cm}$ from 1 September through 31 March.

The City’s discharge currently meets the requirements of the TMDL. Thus, this Order includes a effluent EC limit based on Best Practicable Treatment and Control, as an interim salinity limit, and requires the Discharger to submit work plans to conduct a studies to reduce salinity to achieving long term conformance with the Salt and Boron TMDL specifications.

4. WQBEL Calculations

- a. Unless otherwise noted, all mass limitations in this Order were calculated by multiplying the concentration limitation by the design flow and the appropriate unit conversion factors.
- b. Where applicable, effluent limitations for water quality-based limitations were calculated in accordance with Section 1.4 of the SIP. The following paragraphs describe the general methodology used for calculating effluent limitations.
- c. *Calculations for Effluent Limitations*—In calculating maximum effluent limitations, the effluent concentration allowances were set equal to the criteria/standards/objectives, as there was no allowance given for dilution.

$$ECA_{acute} = CMC \quad ECA_{chronic} = CCC \quad ECA_{HH} = HH$$

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 criteria

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.

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

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

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

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

- d. **Mass-based Effluent Limitations**—Mass-based effluent limitations were based upon a design treatment capacity of 11.5 million gallons per day, 12.0 million gallons per day, 16.0 million gallons per day, or 20.0 million gallons per day, depending on certification.
- e. **Aluminum.** This permit includes a final daily maximum effluent limit based on the acute criteria for aluminum. The limit was calculated as follows:

$$MDEL = mult_{MDEL} [\min(M_A ECA_{acute}, M_C ECA_{chronic})]$$

$$ECA = CMC = 750 \text{ ug/L}$$

$$mult_{MDEL} = 3.11$$

$$M_A = 0.321$$

$$MDEL = 3.11[0.321 \cdot 750 \text{ ug/L}] = 748.7 \sim 750 \text{ ug/L}$$

This permit also includes a final annual average effluent limit for aluminum of 200 ug/L based on the MCL.

- f. **Chlorine.** Until UV disinfection is installed, the Discharger shall comply with limits for chlorine included into this permit. Because chlorine is an acutely toxic constituent, this permit includes interim one-hour average and four-day average limitations based on the USEPA criteria.
- g. **Cyanide.** The following equations summarize the calculations for final cyanide effluent limitations:

$$\underline{CCC = 5.2 \text{ ug/L}}$$

$$\underline{CMC = 22 \text{ ug/L}}$$

$$AMEL = 1.55[\min(0.321CMC, 0.527CCC)] = 4.3 \text{ ug/L}$$

$$MDEL = 3.11[\min(0.321CMC, 0.527CCC)] = 8.5 \text{ ug/L}$$

- h. **Dibromochloromethane.** Pursuant to the SIP, the final AMEL for dibromochloromethane is set at 0.41 ug/L. With the AMEL set equal to 0.41 ug/L, the MDEL is calculated as follows:

$$MDEL = \left(\frac{3.11}{1.55}\right) AMEL = 0.82 \mu\text{g} / L$$

- i. **Dichlorobromomethane.** Pursuant to the SIP, the average monthly effluent limitation is set at 0.56 ug/L. With the AMEL set equal to 0.56 ug/L, the MDEL was calculated as follows:

$$MDEL = \left(\frac{3.11}{1.55}\right) AMEL = 1.1 \mu\text{g} / L$$

- j. **Iron.** An annual average effluent limitation for iron of 300 ug/L is included in this Order and is based on the Basin Plan water quality objectives for chemical constituents and the State Secondary MCL.
- k. **Nitrite and Nitrate.** This Order includes a monthly average effluent limitation for nitrate+nitrite as nitrogen based on the MCL.
- l. **Pathogens.** This Order includes the following effluent limitations for coliform based on the requirements of Title 22:

Total Coliform Organisms: Effluent total coliform organisms concentrations shall not exceed the following:

- i. 2.2 MPN/100 mL as a seven-day median
- ii. 23 MPN/100 mL more than once in any 30-day period; and
- iii. 240 MPN/100 mL at any time.

It also includes the following turbidity limits that are also based on Title 22 requirements:

Turbidity: Effluent turbidity shall not exceed the following:

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

- m. **pH.** This Order applies the Basin Plan directly to the effluent as there is at times, no dilution in Hartley Slough. Specifically, the Order states the effluent pH shall not be depressed below 6.5 nor raised above 8.5.
- n. **Toxicity.** USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc.*" Based on this guidance, the following effluent limitations for acute toxicity have been included in this Order:

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

- i. 70% for any one bioassay, and
- ii. 90% for the median of any three or more consecutive bioassays.

- o. **Salinity.** The *Water Quality Control Plan for the Tulare Lake Basin* limits the EC of municipal discharges to that of the source water plus 500 umhos/cm or 1000 umhos/cm, whichever is less. These limits are considered best practicable treatment and control for municipal discharges in the Tulare Lake Basin and can be used as guides to help set appropriate interim limits in Sacramento and San Joaquin River Basins. This Order includes the following as interim limits on effluent EC for Discharges 001 and 002:

Electrical Conductivity. The annual average effluent EC shall not exceed 500 umhos/cm plus that of the source water, or 1000 umhos/cm, which ever is less.

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 requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

- a. **Chronic Aquatic Toxicity.** Attachment E of this Order requires quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, Special Provisions VI.C.2.b. requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

D. Final Effluent Limitations

1. Final Limitations.

Final limitations in this Order are the more stringent of the technology based limitations and water quality based limitations presented above.

2. 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 that are included in this Order were calculated based upon the permitted average daily discharge flow allowed in Section IV.A.1.b. of the Limitations and Discharge Requirements.

3. 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 example chlorine residual³, dibromochloromethane, and dichlorobromomethane, as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. For BOD, TSS, pH, coliform, and turbidity, 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.

4. Satisfaction of Anti-Backsliding Requirements.

Sections 402(o)(2)(A) and 402(o)(2)(B)(i) of the federal Clean Water Act allow for the re-issuance of a permit with less stringent effluent limitations if there have been material and substantial alterations to the regulated facility’s operations that justify the application of less stringent limits, or if new information becomes available that was not available at the time the permit was initially issued. As described above in Section VI.C.3.d, the Discharger has modified its WWTF and WWTF operations to remove ammonia from its effluent. Additional proposed modifications will enhance the ability of the WWTF to remove ammonia. Over three years of daily self-monitoring data (1126 data points) indicate there is no reasonable potential for WWTF effluent to cause an exceedence of a water quality criteria for ammonia in Hartley Slough. This Order removes the ammonia limits previously prescribed in WDRs Order No. R5-00-246 based on the modifications to the WWTF and the new information consistent with CWA Sections 402(o)(2)(A) and 402(o)(2)(B)(i).

³ 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., above, for rationale regarding the chlorine residual effluent limitations.

Removing the ammonia limit from the permit will not have an impact on water quality and will fully protect beneficial uses, because historical water quality data have shown that the facility has consistently met ammonia objectives and, in addition, the upgrades will allow the Discharger to attain an even higher level of protection. Therefore, removal of the ammonia limit is consistent with and State and federal anti-degradation policies.

As described above in Section IV.C.3.I., three years of self-monitoring data indicates there is no reasonable potential for the WWTF effluent to cause an exceedance of the oil and grease limits in WDRs Order No. R5-00-246, or cause or contribute to an in-stream excursion above the Basin Plan's narrative objectives for oil and grease. Thus this Order removes the monthly average and daily maximum effluent limitations for oil and grease of 10 mg/L and 15 mg/L, respectively. Removal of these limitations for oil and grease is based on new information consistent with anti-backsliding requirements of Clean Water Act, Sections 402(o)(2)(A) and Section 402(o)(2)(B)(i) and/or 40 CFR 122.44(l)(2)(i)(B)(1).

Removing the oil and grease limits from the permit will not have an impact on water quality, because historical water quality data have shown that there is no reasonable potential for the WWTF effluent to cause or contribute to an exceedance of the oil and grease water quality objectives, much less exceed the limits currently codified in the existing permit. Removal of the effluent limitations for oil and grease is therefore consistent with the anti-degradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16..

E. Interim Effluent Limitations

1. **Cyanide, Dibromochloromethane, and Dichlorobromomethane.** The SIP contains policy 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; include interim compliance dates separated by no more than one year; and be included in the Provisions. Interim limitations for constituents with CTR/NTR-based final effluent limitations in this Order are based on the current treatment plant performance. Interim limitations for technology-based effluent limitations are based on permit limitations carried forward from the previous Order.

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. Where actual sampling shows an exceedance of the proposed 3.3-standard deviation interim limit, the maximum detected concentration has been established as the interim limitation. 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 sampling point 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 NTR- and CTR-based 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. For example, USEPA states in the Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for copper, that it will take an unstressed system approximately three years to recover from a pollutant in which exposure to copper exceeds the recommended criterion. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the Effluent Limitation can be achieved.

Table F-4. Interim Effluent Limitation Calculation Summary

Parameter	MEC µg/L	Mean	Standard Deviation	Number of Samples	Interim Limitation (ug/L)
Dibromochloromethane	4.1	2.2	1.3	22	6.5
Cyanide	20	14.0	16.1	26	67.0
Dichlorobromomethane	19	9.0	4.1	25	22.5

2. BOD, TSS, Total Coliform Organisms, and Turbidity.

The establishment of tertiary limitations has not been previously required for this discharge; therefore, a schedule for compliance with the tertiary requirements is included as a Provision in this Order. This Order provides interim effluent for BOD, TSS, Total Coliform Organisms, and Turbidity based on the existing effluent limitations required by Order No. 5-00-246. Full compliance with the final effluent limitations for BOD, TSS, Total Coliform Organisms, and Turbidity are not required by this Order until **18 May 2010**.

3. Aluminum, Iron, Nitrate+Nitrite.

Interim effluent limits for aluminum and iron were calculated by using the methods described in Subsection 1, above.

F. Land Discharge Specifications WMA Discharge 003

The WMA was created by the City of Merced some years ago as mitigation for loss of wetland caused by the establishment of the LAA. The WMA is managed by the California Department of Fish and Game to include provide wetland habitat for migratory water fowl and other wildlife. The public is allowed limited access for hunting and other wetland related activities that include REC-2, WARM, and WILD beneficial uses. Treated recycled water discharged to the WMA must meet Title 22 requirements and others listed as follows to maintain these beneficial uses:

- a. Total coliform organisms concentrations shall not exceed the following:
 - i. 23 MPN/100 mL as a monthly median, and
 - ii. 240 MPN/100 mL in more than one sample in any 30-day period.
- b. Effluent shall be contained within the WMA;
- c. Recycled water shall be managed to conform with the requirements of Title 22, Division 4, Chapter 3, California Code of Regulations.
- d. Objectionable odors shall not be perceivable beyond the limits of the WMA.
- e. Public contact with recycled water shall be controlled using signs and/or other appropriate means. All areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording: "RECYCLED WATER – DO NOT DRINK, AGUA DE DESPERDICIO RECLAMADA – NO TOME" Each sign shall display an international symbol similar to that shown in Attachment G.
- f. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitoes. More specifically:
 - i. Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation.
 - ii. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitoes, shall not be used to store recycled water.
- g. There shall be no cross-connections between potable water supply piping and piping containing recycled water. Supplementing recycled water with potable water shall not occur except through an air-gap separation or, if approved by the DPH, a reduced pressure principle backflow device.

G. Reclamation Specifications LAA Discharge 004

Treated wastewater discharged to the LAA must meet the requirements of California Code of Regulations, Title 22. To protect public health and protect water quality, recycled water and its application is required to meet the following:

- a. Total coliform organisms concentrations shall not exceed the following:
 - i. 23 MPN/100 mL as a monthly median, and
 - ii. 240 MPN/100 mL in more than one sample in any 30-day period.
- b. Discharge shall be contained within the LAA at all times;
- c. Recycled water shall be managed to conform with the requirements of Title 22, Division 4, Chapter 3, California Code of Regulations.
- d. Objectionable odors shall not be perceivable beyond the limits of the Land Application Area at any time.
- e. Public contact with recycled water shall be controlled using signs and/or other appropriate means. All areas where recycled water is used that are accessible to the public shall be posted with signs that are visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording: "RECYCLED WATER – DO NOT DRINK, AGUA DE DESPERDICIO RECLAMADA – NO TOME" Each sign shall display an international symbol similar to that shown in Attachment H.
- f. The combined application of recycled water, biosolids, fertilizers and other soil amendments to the Land Application Area shall not exceed the nitrogen or hydraulic loading reasonably necessary to satisfy the nitrogen or water uptake needs of the area considering the plant, soil, climate, and irrigation management system (*i.e.*, generally accepted agronomic rates).
- g. Areas irrigated with recycled water shall be managed to prevent breeding of mosquitoes. More specifically:
 - i. Ditches not serving as wildlife habitat shall be maintained free of emergent, marginal, and floating vegetation.
 - ii. Low-pressure and un-pressurized pipelines and ditches, which are accessible to mosquitoes, shall not be used to store recycled water.
- h. Discharges to the LAA shall be managed to minimize erosion.
 - i. There shall be no standing water in the LAA 24 hours after recycled water is applied.
 - j. The Discharger may not discharge recycled water to the LLA during periods of precipitation or when soils are saturated.
- k. No irrigation with recycled water shall take place within 50 feet of any domestic water supply well.
- l. No impoundment of recycled water shall occur within 100 feet of any domestic water supply well.

- m. Workers shall be educated regarding proper hygienic procedures to ensure personal and public safety.
- n. There shall be no cross-connections between potable water supply piping and piping containing recycled water. Supplementing recycled water with potable water shall not occur except through an air-gap separation or, if approved by the DPH, a reduced pressure principle backflow device.
- o. A 50-foot buffer zone shall be maintained between effluent disposal areas and all property boundaries.

H. Satisfaction of Antidegradation Policy

1. Surface Water

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, (3) it results in a high level of treatment of sewage waste, and (4) it will not cause an exceedance of water quality objectives. The Discharger submitted a report entitled *City of Merced, Report of Waste Discharge, Antidegradation Analysis*, on 10 January 2008 that examines whether the proposed project will lower the water quality in the receiving water bodies, whether the increased discharge is protective of the beneficial uses of the receiving waters, and whether lowering of the water quality, if any, in the receiving water is consistent with maximum benefit to the people of the State. Based on the Analysis, Discharger monitoring and information in the record, the following conclusions can be made:

- Hartley Slough is an effluent dominated waterbody, the discharge to which has been occurring for years. During a large part of the year, water quality is primarily determined by the presence of the existing discharge. Thus, baseline water quality is the quality of the WWTF secondary effluent. By this metric, additional flows whose concentration-based limits are more stringent do not result in degradation of waterbody, but instead will result in additional assimilative capacity. However, because the permit allows for an expansion that results in higher volumetric flows from the facility, there will be additional mass loading of pollutants to downstream waterbodies.
- State policy encourages recycling of wastewater and recycling of wastewater is of benefit to the people of the State. The wastewater discharged to Hartley Slough is recycled by downstream farmers for AGR, provides water for WARM and WILD and is designated as REC-1. These uses would not be possible year-round without the discharge.
- The proposed project will increase the authorized discharge flow from 10 mgd to 11.5 mgd of secondary treated wastewater, and eventually increase up to

20 mgd of tertiary treated wastewater. Growth in the Central Valley cities is among the fastest in the State, and this project will ensure that the City of Merced has the capacity to handle additional sewage flows that accompany population growth and development. This provides a maximum benefit to the people of the State.

- The effluent contains 43 priority and non-priority pollutants at detectable concentrations. The proposed WWTF upgrades (filtration, UV disinfection, denitrification, and effluent re-aeration) will implement BPTC, which will provide higher-quality flows that will help attain downstream beneficial uses.
- Following the upgrades:
 - The receiving water quality with respect to concentration will either improve or remain the same.
 - The receiving water conditions, as measured by the dissolved oxygen concentration, pH, temperature, turbidity and toxicity will improve or remain the same.
 - Generally, mass loads will improve or remain the same after the implementation of filtration. For example implementation of tertiary treatment at a flow of 20 mgd will result in BOD₅ and TSS loads to Hartley Slough that are 33.3% less than those authorized by WDRs Order No. 5-00-246 at 10 mgd.

Based on the above, the proposed modifications to the discharge to Hartley Slough will not lower receiving water quality below the existing baseline and will not impact any beneficial uses of the receiving water. The project will provide additional high quality water that can be used beneficially downstream of the WWTF. The project is consistent with State and federal antidegradation policies. Increased treatment will enhance the quality of the waters below the discharge point. Increases in mass loading that are attributable to increased flows from the Facility are vitally necessary to accommodate future housing and economic expansion, and are therefore consistent with the maximum benefit to the people of the State.

The permit allows the Discharger to conduct a use attainability analysis to determine whether the designated beneficial uses of MUN and Cold SPAWN exist or are attainable. Should the use attainability analysis indicate that some of the beneficial uses of the receiving water have never been attained and are incapable of being attained, removing these uses would not run contrary to the State anti-degradation policy, provided that the permit continues to retain protection at levels currently attained in the receiving waterbody.

2. **Land Discharge**

The proposed project includes WWTF upgrades that represent BPTC. Sludge treatment units will be modified to eliminate the migration of leachate to groundwater. Recycled water applied to the WMA and LAA will be denitrified.

Application of denitrified recycled water to the WMA and LAA will not result in exceedences of groundwater water quality objectives and the ability to recycle the wastewater in a water short area is of maximum benefit to the people of the State.

The total discharge flow to the WMA and LAA is not expected to increase and in many respects the effluent quality will improve. Given these facts, the proposed discharge is consistent with State Water Board Resolution 68-16.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan specifies water quality objectives to protect the beneficial uses of surface water and groundwater, including numeric and narrative objectives, 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 beneficial uses.

A. Surface Water

This Order contains Receiving Surface Water Limitations, as summarized below, based on the Basin Plan water quality objectives

- 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.”
- b. **Biostimulatory Substances.** The Basin Plan includes a water quality objective that “[*W*]ater shall not contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.”
- c. **Color.** The Basin Plan includes a water quality objective that “[*W*]ater shall be free of discoloration that causes nuisance or adversely affects beneficial uses.”
- d. **Chemical Constituents.** The Basin Plan includes a water quality objective that “[*W*]aters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.”
- e. **Dissolved Oxygen.** Hartley Slough has the designated beneficial use of SPWN. For water bodies with the designated beneficial use of SPWN, the Basin Plan includes a minimum water quality objective of 7.0 mg/L of dissolved oxygen.
- f. **Floating Material.** The Basin Plan includes a water quality objective that states “[*W*]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses.”

- g. **Oil and Grease.** The Basin Plan includes a water quality objective that “[W]aters 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.”
- h. **pH.** The Basin Plan includes water quality objective that “[T]he pH shall not be depressed below 6.5 nor raised above 8.5...” This Order includes receiving water limitations based on the Basin Plan objective.
- i. **Pesticides.** The Basin Plan includes a water quality objective for pesticides beginning on page III-6.00. Receiving Water Limitations for pesticides are included in this Order and are based on the Basin Plan objective.
- j. **Radioactivity.** The Basin Plan includes a water quality objective that “[R]adionuclides shall not 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.” The Basin Plan states further that “[A]t a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations...”
- k. **Sediment.** The Basin Plan includes a water quality objective that “[T]he suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses”
- l. **Settleable Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.”
- m. **Suspended Material.** The Basin Plan includes a water quality objective that “[W]aters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses.”
- n. **Taste and Odors.** The Basin Plan includes a water quality objective that “[W]ater 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.”
- o. **Temperature.** The Hartley Slough has the beneficial use of WARM. The Basin Plan includes the objective that “[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature.” This Order includes a receiving water limitation

based on this objective. The Order also provides the Discharger the opportunity to provide evidence of appropriate averaging periods for the incremental change limit and appropriate ceiling temperatures.

- p. **Toxicity.** The Basin Plan includes a water quality objective that “[A]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.”
- q. **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.”

B. Groundwater

Basin Plan water quality objective for toxicity requires that 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 states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 ml. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or other beneficial use.

The current Orders (WDRs Order Nos 97-034 and 5-00-246) regulating discharges to the LAA and WMA include groundwater limitations that stipulate the discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations greater than background water quality. In contrast to these Orders, the proposed Order prescribes groundwater limitations that implement water quality objectives for groundwater from the Basin Plan in narrative form. It also requires the Discharger to go through a process to establish more appropriate site-specific numeric groundwater limitations. Since the proposed Order implements

existing objectives, the Regional Water Board need not undertake at this time further consideration of the factors in CWC Section 13241 (including economic considerations).

Groundwater limitations are required to protect the beneficial uses of the underlying groundwater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code Sections 13267 and 13383 authorizes the Regional Water Board to require technical and monitoring reports. The Monitoring and Reporting Program (MRP), Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRP for this facility.

A. Influent Monitoring

Influent monitoring is required to collect data on the characteristics of the wastewater and to assess compliance with effluent limitations (e.g., BOD and TSS reduction requirements).

B Effluent Monitoring

Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving waters.

To assess compliance with effluent limitations, this Order requires effluent monitoring for those constituents with limitations.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Twice monthly 96-hour bioassay testing is required to demonstrate Compliance with the effluent limitation for acute toxicity.
2. **Chronic Toxicity.** Quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

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

2. Groundwater

Groundwater in the area of the sludge beds was impacted from the use of unlined sludge drying beds and past discharge of digester supernatant to the beds. The Discharger proposes to implement sludge treatment and drying systems that will implement BPTC and will eliminate the discharge of leachate from biosolids/sludge units to groundwater (i.e., remove the source of impacts). The application of BPTC will satisfy the State antidegradation policy for the proposed discharge. However, current data is insufficient to determine whether groundwater impacts caused by historic sludge disposal operations threaten the beneficial uses of groundwater and whether further mitigation is necessary or required. This can and will be addressed through Regional Water Board action separate from this Order.

The Discharger has ceased application of food processing wastewater to the LAA and proposes to apply tertiary treated, denitrified effluent to the LLA and WMA. Application of recycled water will not result in violations of water quality objectives. This notwithstanding, impacts by historic applications of industrial wastewater to the LAA and their potential to adversely impact beneficial uses has not been evaluated to determine whether further mitigation is necessary or required. As above, this can and will be addressed through Regional Water Board action separate from this Order.

E. Other Monitoring Requirements

1 Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.5.b.).

2 Water Supply Monitoring

Water supply monitoring is required to evaluate one source of constituents in the wastewater.

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to

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

B. Special Provisions

1. Reopener Provisions

This Order includes standard reopener provisions that allow the Regional Water Board to modify, revoke, and reissue the Order based on special conditions, resulting from priority pollutant results, fish tissue results, or whole effluent toxicity results. It also contains a reopener that allows the Regional Water Board address conditions that necessitate a major permit modification. Additional specific reopeners are included as follows:

- a. **Aluminum.** This Order allows the Discharger to conduct a water effects ratio study to develop a site-specific objective. This Order contains a reopener that allows the Regional Water Board to reconsider effluent limitations for aluminum based on the study results.
- b. **Mercury.** Mercury was detected in the effluent below the applicable water quality criteria. However, mercury is bioaccumulative and Regional Water Board staff are preparing for Regional Water Board consideration a TMDL for methylmercury. This Order includes a reopener that allows the Regional Water Board to develop mercury effluent limits should mercury be determined to be causing toxicity or if required by the TMDL once approved.
- c. **Temperature.** This Order allows the Discharger to examine appropriate receiving water temperature averaging periods and ceiling temperatures in issues in Hartley Slough. It also includes a reopener to allow the Regional Water Board to consider and incorporate into this Order receiving water limitations based on the study results if appropriate.
- d. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a 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.
- e. **Biosolids.** This Order requires that the use and disposal of biosolids comply with existing State laws and regulations and includes some permitting requirements and technical standards from 40 CFR 503. If the State Water Board and the Regional Water Board are given the authority to implement

regulations contained in 40 CFR part 503, this Order may be reopened to incorporate appropriate time schedules and technical standards.

2. Special Studies and Additional Monitoring Requirements

- a. **WWTF Expansion.** For authorization to discharge tertiary effluent in excess of 11.5 mgd the Discharger must:
 - i. Submit certification from a California-registered civil engineer with experience in the design and operation of wastewater treatment plants that the WWTF is capable of meeting discharge limitations and has adequate capacity to treat and dispose of these flows in compliance with this Order.
 - ii. Show that the California Environmental Quality Act requirements have been satisfied for the WWTF expansion project.
- b. **Temperature Study.** This permit allows the Discharger to conduct a study to determine protective averaging periods for receiving water temperature changes and temperature ceilings to protect WARM in Hartley Slough.
- c. **Elimination of Reasonable Potential Study.** This Order requires the Discharger to conduct a study to assess whether the tertiary, UV disinfected effluent contains cyanide, dibromochloromethane, and dibromochloromethane and total chlorine residual that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. If the study determines that after implementation of tertiary treatment and UV disinfection that there is no longer reasonable potential for these constituents, and the Executive Officer provides written concurrence of the determination, the Discharger may request that the Regional Water Board reopen the Order to consider removal of effluent limits for these constituents.
- d. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00.) Adequate WET data is not available to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective. Attachment E of this Order requires Quarterly chronic WET monitoring for demonstration of compliance with the narrative toxicity objective.

In addition to WET monitoring, this provision requires the Discharger to submit to the Regional Water Board an Initial Investigative TRE Work Plan for approval by the Executive Officer, to ensure the Discharger has a plan to immediately move forward with the initial tiers of a TRE, in the event effluent toxicity is encountered in the future. The provision also includes a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity is demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUC (where TUC = $100/\text{NOEC}$) 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.

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

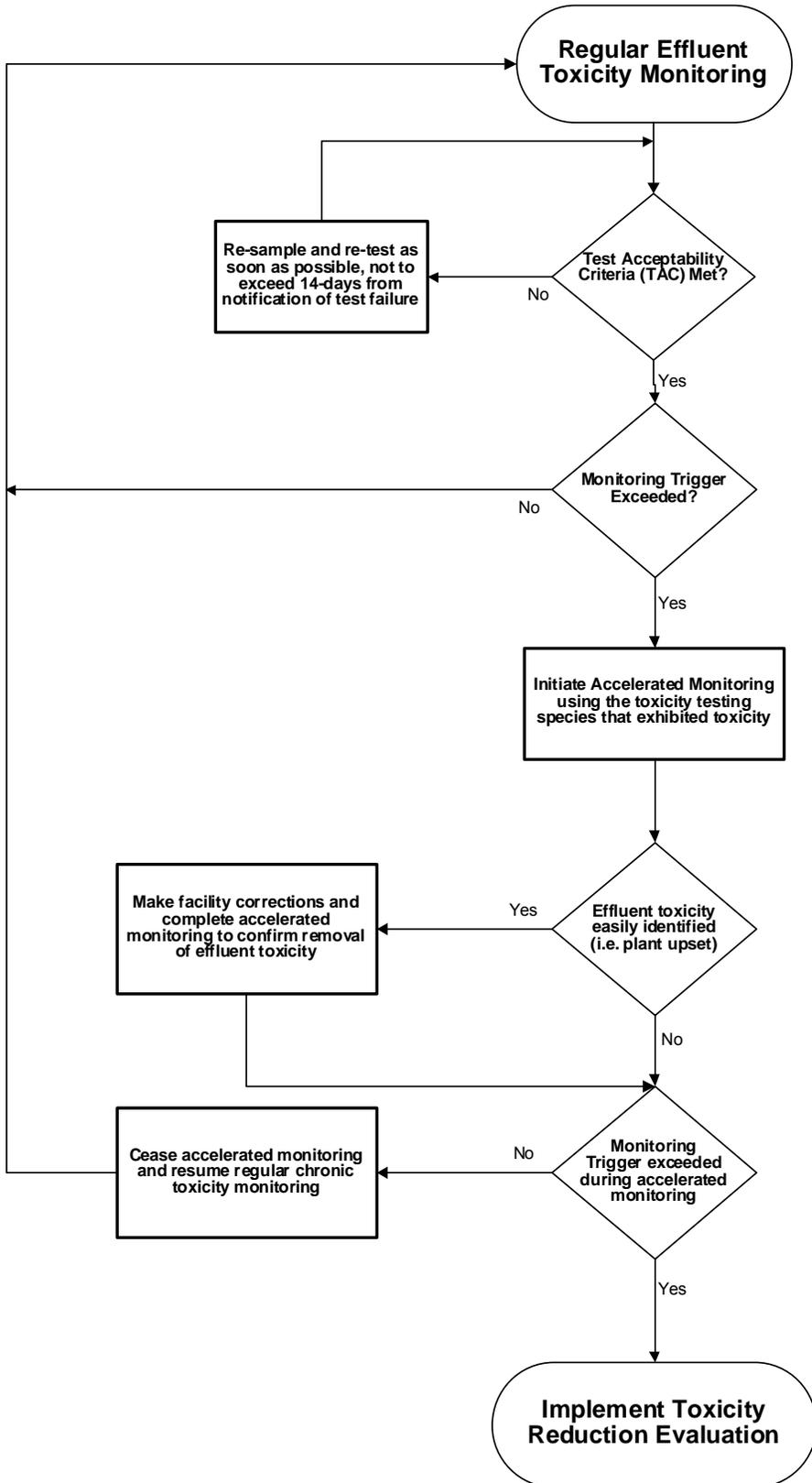
See the WET Accelerated Monitoring Flow Chart (Figure F-3), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE 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-3
WET Accelerated Monitoring Flow Chart**



- e. **Land Use and Groundwater Limitations Study.** This Order requires the Discharger to submit a technical report in the form of a work plan and proposed schedule to complete studies to compile sufficient technical data to characterize the uses of groundwater that could be impacted by discharges to the WMA and LAA and to derive appropriate groundwater limitations. Studies must be designed to:
- i. Determine the spatial extent of groundwater affected by, and that could be affected by, the discharge.
 - ii. Determine the types of crops that are, and could potentially be, grown, and any other potential beneficial uses of groundwater, that could be affected by the discharge.
 - iii. Evaluate and propose for Regional Water Board evaluation and consideration, with supporting documentation, appropriate numeric groundwater quality objectives for groundwater that could be affected by the WWTF discharge.

Following consideration of the study results, this Order may be reopened to modify Groundwater Limitations.

- f. **Land Application Area Use Study.** This Order requires Discharger to provide an updated LAA management plan to ensure wastewater, biosolids and commercial fertilizers and other soil amendments will be applied to the LAA as defined herein in accordance with this Order's Recycled Water Specifications and Biosolids Discharge Specifications and at reasonable agronomic rates considering the crop, soil, climate, and irrigation management system.
- g. **TMDL Compliance Study: TMDL Compliance Study.** As the discharge to Hartley Slough will in the long term have to comply with the Salt and Boron TMDL for the Lower San Joaquin River, this Order requires the Discharger to submit a work plan with proposed time schedule to study alternatives and identify measures the Discharger will implement to reduce salinity in the discharge to meet the TMDL.
- h. **Use Attainability Analysis (UAA) Study.** As Hartley Slough is an effluent dominated water body, the designated beneficial uses of MUN and Cold SPAWN may not exist or be attainable therein. This Order provides the Discharger an opportunity to provide the the information/support necessary for the Regional Water Board to conduct a UAA for the MUN and/or the Cold SPAWN beneficial use designations for Hartley Slough.

3. Best Management Practices and Pollution Prevention

Pollutant Minimization Program. Pursuant to the SIP, this Order requires the Discharger to develop and conduct a Pollutant Minimization Program (PMP) when there is evidence (e.g., sample results reported as DNQ when the effluent limitation is less than the MDL, sample results from analytical methods more sensitive than

those methods required by this Order, presence of whole effluent toxicity, health advisories for fish consumption, results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either: 1) A sample result is reported as DNQ and the effluent limitation is less than the RL; or 2) A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in Attachment A and reporting protocols described in MRP Section X.

4. Construction, Operation, and Maintenance Specifications

- a. To protect water quality and public health, this Order requires the the WWTF to be designed, constructed, operated and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
- b. To protect public health, this Order requires the Discharger to preclude public contact with wastewater though such means as fences and signs, or other acceptable alternatives.

5. Special Provisions for Municipal Facilities (POTWs Only)

a. Pretreatment Requirements.

- i. The federal Clean Water Act, Section 307(b), and Federal Regulations, 40 CFR 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. The Discharger has an approved Industrial Pretreatment Program, as more completely set forth in 40 CFR 403. Thus this Order imposes pretreatment requirements pursuant to 40 CFR 403.
- ii. This Order requires the Discharger to implement and enforce its approved pretreatment program. If the Discharger fails to perform the pretreatment functions, the Regional Water Board, the State Water Board or the USEPA may take enforcement actions against the Discharger, as authorized by the CWA.

b. Biosolids/Sludge Provisions.

- i. The Biosolids/Sludge Provisions in this Order are necessary to ensure that the treatment and disposal of biosolids, sludge and other residuals produced by WWTF operations are handled and disposed of in a manner that protects public health and water quality, proscribes conditions of nuisance and pollution, and is consistent with regulations, including but not limited to, Title 27, CCR, Division 2, Subdivision 1, section 20005, et seq. They are also necessary to ensure proper WWTF performance.

- ii. This Order also requires the City to notify the Regional Water Board Executive Officer and USEPA of any proposed change in biosolids use or disposal practice from a previously approved practice at least **90 days** in advance of the change.

c. Collection System Provisions.

The State Water Board issued General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003-DWQ (General Order) on 2 May 2006. The General Order requires public agencies that own or operate sanitary sewer systems with greater than one mile of pipes or sewer lines to enroll for coverage under the General Order. The General Order requires agencies to develop sanitary sewer management plans and report all sanitary sewer overflows (SSOs), among other requirements and prohibitions. The Discharger enrolled as required and must comply with both the General Order and this Order.

The Discharger's collection system is part of the wastewater collection, treatment and disposal system. Pursuant to federal regulations, the Discharger must properly operate and maintain its collection system [40 CFR 122.41(e)], report any non-compliance [40 CFR 122.41(i)(6) and (7)], and mitigate any discharge from the collection system in violation of this order [40 CFR 122.41(d)].

The General Order contains requirements for operation and maintenance of collection systems and for reporting and mitigating SSOs. Matters concerning the collection system will be regulated by the General Order.

d. Continuous Monitoring Provisions.

This permit, and the Monitoring and Reporting Program which is a part of this permit, requires that certain parameters be monitored on a continuous basis. The wastewater treatment facility is not staffed on a full time basis. Permit violations or system upsets can go undetected during this period. The Discharger is required to establish an electronic system for operator notification for continuous recording device alarms. For existing continuous monitoring systems, the electronic notification system shall be installed within six months of adoption of this permit. For systems installed following permit adoption, the notification system shall be installed simultaneously.

6. Other Special Provisions

- i. To protect the REC-1 and AGR uses of Hartley Slough, this Order requires effluent to be oxidized, coagulated, filtered, and disinfected, or equivalent treatment provided prior to discharging a monthly average dry weather flow in excess of 11.5 mgd.
- ii. Pursuant to CWC Sections 13260 and 13264 this Order requires the Discharger to notify the Regional Water Board in the event of any change in

control or ownership of land or waste discharge facilities presently owned or
Transfer of this Order to new owners or operators is subject to the approval of
the Executive Officer.

7. Compliance Schedules

- a. **Cyanide, Dibromochloromethane, and Dichlorobromomethane - Compliance Schedule:** This Order contains Effluent Limitations based on water quality criteria contained in the CTR for cyanide, dibromochloromethane, and dichlorobromomethane. It also contains Discharge Specifications based on the CTR criteria for cyanide. The Discharger submitted a request and justification dated April 2006 for a compliance schedule for cyanide, dibromochloromethane, and dichlorobromomethane. The compliance schedule justification included all items specified in Paragraph 3, items (a) through (d), of Section 2.1 of the SIP. Thus this Order includes a compliance schedule for cyanide, dibromochloromethane, and dichlorobromomethane that requires final effluent limits for these constituents to become effective on **18 May 2010**. A compliance schedule is appropriate for cyanide, dibromochloromethane, and dichlorobromomethane because these are new limitations and the WWTF must be upgraded to meet the new limitations. To meet the final effluent limitations for these constituents, the Discharger has to complete the bid process and construct necessary treatment units that will include at minimum tertiary treatment units and new UV disinfection units. The Discharger's engineer has provided a schedule that demonstrates the soonest the Discharger can possibly comply is **17 May 2010**. As the compliance schedule is greater than one year, this Order requires the Discharger to submit semi-annual progress reports until it achieves compliance with the final limitations. These progress reports are interim requirements that will allow the Regional Water Board to evaluate the Discharger's progress towards completing the planned project.
- b. **Compliance Schedule for Nitrate + Nitrite.** This Order includes effluent limitations for nitrate+nitrite of 10 mg/L. This Order includes a compliance schedule to ensure that the Discharger construct appropriate treatment units to provide the required level of treatment by as soon as possible, but by no later than the end of the permit term. A compliance schedule is appropriate for nitrate+nitrite because it is a new limitation and the WWTF must be upgraded to meet the new limitation. The Discharger has included in its proposed WWTF upgrades implementation of the SymBio™ process (nitrification/denitrification). Modeling performed by the Discharger's consultant indicates that with this process, the WWTF effluent should be able to meet the proposed effluent nitrite-nitrate limitations at the time of permit adoption and after each expansion, however, compliance is not certain. Should the SymBio™ process prove to be incapable of reliably producing an effluent that consistently complies with the final effluent limits for nitrate + nitrite, the Discharger has committed to construct separate denitrification basins. The Discharger's engineering consultant has provided a schedule that indicates that to secure funding and to complete design, bid, and construction of these units would take approximately five years, thus the soonest date by which the Discharger could possibly ensure compliance would

be approximately five years from the adoption date of the Order. As the compliance schedule is greater than one year, this Order requires the Discharger to submit annual progress reports until it achieves compliance with the final limitations. These progress reports are interim requirements that will allow the Regional Water Board to evaluate the Discharger's progress towards completing the planned project.

- c. **Compliance Schedule for Biosolids/Sludge Handling Modifications:** The Discharger has proposed construction modifications to its Biosolids/Sludge handling systems that will preclude the migration of associated leachate to groundwater. This Order includes a time schedule that requires the Discharger to complete these modifications prior to the expiration of the term of this permit. A compliance schedule is appropriate for modifications to the Biosolids/Sludge Handling Units as the Discharger will have to construct new treatment units. The Discharger's engineering consultant has provided a schedule that indicates that to secure funding and to complete design, bid, and construction of these modifications will take approximately five years, thus the soonest date by which the Discharger could possibly ensure compliance would be approximately five years from the adoption date of the Order. As the compliance schedule is greater than one year, this Order requires the Discharger to submit semi-annual progress reports until it achieves compliance with the final limitations. These progress reports are interim requirements that will allow the Regional Water Board to evaluate the Discharger's progress towards completing the planned project.
- d. **Compliance Schedule for Tertiary Treatment.** The permit includes tertiary effluent limits to protect WARM and AGR in Hartley Slough. The Discharger has proposed construction of tertiary treatment units to comply with these limits. This Order includes a compliance schedule that requires completion of proposed treatment units to ensure compliance with the BOD, TSS, SS, coliform, turbidity, and removal efficiency limits in Effluent Limitations Section IV.A.1.a and IV.A.1.g.,h, and i and to ensure that effluent is oxidized, coagulated, filtered, and adequately disinfected as defined by Title 22 CCR, Division 4, Chapter 3, or equivalent. A compliance schedule is appropriate for tertiary BOD, TSS, SS, coliform, turbidity, and removal efficiency limitations because they are new limitations and the WWTF must be upgraded to meet the new limitations. To meet final effluent limits for these constituents, the Discharger has to complete the bid process and construct necessary treatment units that will include at minimum tertiary treatment units. The Discharger's engineer has provided a schedule that demonstrates the soonest the Discharger can possibly comply is 17 May 2010. As the compliance schedule is greater than one year, this Order requires the Discharger to submit annual progress reports until it achieves compliance with the final limitations. These progress reports are interim requirements that will allow the Regional Water Board to evaluate the Discharger's progress towards completing the planned project.

- e. **Compliance Schedule for Aluminum and Iron.** The permit includes a compliance schedule that requires the Discharger to complete measures to ensure compliance with the final aluminum and iron Effluent Limitations and Discharge Specifications. A compliance schedule is appropriate for aluminum and iron because they are new limitations and the WWTF must be upgraded to meet the new limitations. To meet final effluent limits for these constituents, the Discharger has to complete the bid process and construct necessary treatment units that will include at minimum tertiary treatment units. The Discharger's engineer has indicated that the WWTF effluent should meet the proposed aluminum and iron limitations once tertiary treatment units are completed. This, however, is not certain. If the WWTF does not meet aluminum and iron limitations, the Discharger will have to study and select an appropriate coagulant to aid in achieving compliance. The Discharger's engineer has provided a schedule that indicates to properly study and select appropriate seasonal coagulant would take 18 months. Thus the earliest the Discharger can ensure compliance is 30 November 2011. As the compliance schedule is greater than one year, this Order requires the Discharger to submit annual progress reports until it achieves compliance with the final limitations. These progress reports are interim requirements that will allow the Regional Water Board to evaluate the Discharger's progress towards completing the planned project.

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 City of Merced WWTF. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the following posting in at the WWTF, local public facilities and publishing in the Merced Sun Star on 11 January 2008.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on 11 February 2008.

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: 13/14 March 2008
Time: 8:30 am
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is <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 Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge (RWD), related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling (559) 445-5116.

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 W. Dale Harvey at (559) 445-6190.

ATTACHMENT G – RPA SUMMARY

City of Merced CTR Constituent Data													
Constituent	CTR #	Units	Criterion	Source	MEC (Jan 2001- Apr 2003)	Jan-04	Jan-05	Jul-05	Jan-06	Jul-06	Jan-07	MEC	RP?
Antimony	1	µg/L	6	Primary MCL	0.3	<2	J0.4	<0.5	<0.5	<0.5	J0.3	J0.4	No
Arsenic	2	µg/L	10	Primary MCL	3.5	3	4.0	3.6	3.1	2.8	3.9	4.0	No
Beryllium	3	µg/L	4	Primary MCL	ND <0.2	<1	<0.2	<0.1	<0.2	<0.5	<0.1	<0.1	No
Cadmium	4	µg/L	4.8(a)	CTR/NTR	0.8	<1	0.1	<0.1	<0.1	<0.1	J0.06	0.8	No
Chromium (Total)	5a	µg/L	520	Primary MCL	3	<5	3.8	2.4	2.6	2.2	2.3	3.8	No
Chromium (VI)	5b	µg/L	11	CTR/NTR	0.8	---	<0.2	<0.2	<0.2	<0.2	J0.11	0.8	No
Copper	6	µg/L	10.7(b)	CTR/NTR	6	<5	7.9	4.8	4.0	4.9	6.4	7.9	No
Lead	7	µg/L	3.2 (b)	CTR/NTR	1.5	<5	1.5	0.73	1.1	0.49	0.60	1.5	No
Mercury	8	µg/L	0.05	CTR/NTR	0.00914	0.0049	0.022	0.0089	0.0048	0.0038	0.0095	0.022	No
Nickel	9	µg/L	57 (b)	CTR/NTR	20	<10	3.8	3	2.4	2.5	2.1	20	No
Selenium	10	µg/L	5	CTR/NTR	ND<1	<2	<1	<1	<1	<1	2.0	2.0	No
Silver	11	µg/L	3.3 (a)	CTR/NTR	0.2	<1	0.2	0.1	J 0.07	<0.1	0.1	0.2	No
Thallium	12	µg/L	1.7	CTR/NTR	0.09	<1	<0.1	<0.1	<0.1	<0.1	<0.1	0.09	No
Zinc	13	µg/L	137.5 (b)	CTR/NTR	90?	<50	56	35	49	38	60	90?	No
Cyanide	14	µg/L	5.2	CTR/NTR	20	<10	<10	<10	<10	10	7	20	Yes
Asbestos	15	MFL	7 MFL	CTR/NTR	ND<0.2	---	<0.53	<0.50	<1.00	<0.20	<0.48	<0.2	No
2,3,7,8-TCDD (Dioxin)	16	µg/L	1.30E-08	CTR/NTR	<4.78E-07?	<4.7E-06	<2.9E-6	<5.00E-06	<1.4E-06	<5.00E-06	<1.8E-06	<4.78E-07?	No
Acrolein	17	µg/L	320	CTR/NTR	ND<5	---	<5	<5	<5	<5	<5	<5	No
Acrylonitrile	18	µg/L	0.059	CTR/NTR	ND<2	---	<2	<2	<2	<2	<2	<2	No
Benzene	19	µg/L	1	Primary MCL	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Bromoform	20	µg/L	4.3	CTR/NTR	0.4	<0.5	<0.5	<0.5	<0.5	J 0.2	J0.08	0.4	No
Carbon tetrachloride	21	µg/L	0.25	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Chlorobenzene (Mono chlorobenzene)	22	µg/L	70	Primary MCL	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Dibromochloromethane	23	µg/L	0.41	CTR/NTR	4 ?	2	1	4.1	1.8	3.9	1.4	4.1	Yes
Chloroethane	24	µg/L	---	---	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
2- Chloroethyl vinyl ether	25	µg/L	---	---	ND<1	---	<1	<1	<1	<1	<1	<1	No

City of Merced CTR Constituent Data													
Constituent	CTR #	Units	Criterion	Source	MEC (Jan 2001-Apr 2003)	Jan-04	Jan-05	Jul-05	Jan-06	Jul-06	Jan-07	MEC	RP?
Chloroform	26	µg/L	80	Primary MCL	52 ?	16	44	57	25	29	25	57	No
Dichlorobromomethane	27	µg/L	0.56	CTR/NTR	19 ?	6.5	7.6	17	6.7	11	7	19 ?	Yes
1,1-Dichloroethane	28	µg/L	5	Primary MCL	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
1,2-Dichloroethane	29	µg/L	0.38	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
1,1-Dichloroethene	30	µg/L	0.057	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
1,2-Dichloropropane	31	µg/L	0.52	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
1,3-Dichloropropylene (1,3-Dichloropropene)	32	µg/L	0.5	Primary MCL	ND<0.5	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Ethylbenzene	33	µg/L	300	Primary MCL	0.4	<0.5	<0.5	<0.5	<0.5	<0.5	J0.07	0.4	No
Bromomethane	34	µg/L	48	CTR/NTR	ND<0.5?	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.46?	No
Chloromethane	35	µg/L	---	---	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Methylene chloride (Dichloromethane)	36	µg/L	4.7	CTR/NTR	0.5	<2	<0.5	<0.5	<0.5	BJ 0.24	J0.2	0.5	No
1,1,2,2-Tetrachloroethane	37	µg/L	0.17	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Tetrachloroethene	38	µg/L	0.8	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Toluene	39	µg/L	150	Primary MCL	2.6	2	2	0.5	3.0	J 0.2	1.3	3.0	No
trans-1,2-Dichloroethylene	40	µg/L	10	Primary MCL	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
1,1,1-Trichloroethane	41	µg/L	200	Primary MCL	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
1,1,2-Trichloroethane	42	µg/L	0.6	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Trichloroethene	43	µg/L	2.7	CTR/NTR	ND<0.5	<0.5	<0.5	<0.5	<0.5	J 0.07	<0.5	J 0.07	No
Vinyl chloride	44	µg/L	0.5	CTR/NTR	ND<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
2-Chlorophenol	45	µg/L	120	CTR/NTR	ND<2	<5	<2	<2	<2	<2	<2	<2	No
2,4-Dichlorophenol	46	µg/L	93	CTR/NTR	ND<1	<5	<1	<1	<1	<1	<1	<1	No
2,4-Dimethylphenol	47	µg/L	540	CTR/NTR	ND<2	<5	<2	<2	<2	<2	<2	<2	No
4,6-Dinitro-2-methylphenol	48	µg/L	13.4	CTR/NTR	ND<5	<25	<5	<5	<5	<5	<5	<5	No
2,4-Dinitrophenol	49	µg/L	70	CTR/NTR	ND<5	<50	<5	<5	<5	<5	<5	<5	No
2-Nitrophenol	50	µg/L	---	--	ND<5	<25	<5	<5	<5	<5	<5	<5	No
4-Nitrophenol	51	µg/L	---	--	ND<5	<25	<5	<5	<5	<5	<5	<5	No
4-Chloro-3-methylphenol	52	µg/L	---	--	ND<1	<10	<1	<1	<1	<1	<1	<1	No
Pentachlorophenol	53	µg/L	0.28	CTR/NTR	ND<1	<25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	No
Phenol	54	µg/L	2100	CTR/NTR	ND<1	<10	<1	<1	<1	<1	<1	<1	No

City of Merced CTR Constituent Data													
Constituent	CTR #	Units	Criterion	Source	MEC (Jan 2001-Apr 2003)	Jan-04	Jan-05	Jul-05	Jan-06	Jul-06	Jan-07	MEC	RP?
2,4,6-Trichlorophenol	55	µg/L	2.1	CTR/NTR	ND<5	<5	<5	<5	<5	<5	<5	<5	No
Acenaphthene	56	µg/L	1200	CTR/NTR	ND<0.3	<5	<0.31	<0.3	<0.3	<0.3	<0.3	<0.3	No
Acenaphthylene	57	µg/L	---	---	ND<0.2	<5	<0.21	<0.2	<0.2	<0.2	<0.2	<0.2	No
Anthracene	58	µg/L	9600	CTR/NTR	ND<0.3	<5	<0.31	<0.3	<0.3	<0.3	<0.3	<0.3	No
Benzdine	59	µg/L	0.00012	CTR/NTR	ND<5	---	<5	<5	<5	<5	<5	<5	No
1,2-Benzanthracene	60	µg/L	0.0044	CTR/NTR	ND<0.3	<5	<0.31	<0.3	<0.3	<0.3	<0.3	<0.3	No
Benzo(a)pyrene (3,4-Benzopyrene)	61	µg/L	0.0044	CTR/NTR	ND<0.3	<5	<0.31	<0.3	<0.3	<0.3	<0.3	<0.3	No
3,4-Benzofluoranthene	62	µg/L	0.0044	CTR/NTR	ND<0.3	<5	<0.31	<0.3	<0.3	<0.3	<0.3	<0.3	No
Benzo(g,h,i)perylene	63	µg/L	---	---	ND<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	No
Benzo(k)fluoranthene	64	µg/L	0.0044	CTR/NTR	ND<0.3	<5	<0.31	<0.3	<0.3	<0.3	<0.3	<0.3	No
Bis(2-chloroethoxy) methane	65	µg/L	---	---	ND<5	<5	<5	<5	<5	<5	<5	<5	No
Bis(2-chloroethyl) ether	66	µg/L	0.031	CTR/NTR	ND<1	<25	<1	<1	<1	<1	<1	<1	No
Bis(2-chloroisopropyl) ether	67	µg/L	1400	CTR/NTR	ND<2	<50	<2	<2	<2	<2	<2	<2	No
Bis(2-ethylhexyl) phthalate	68	µg/L	1.8	CTR/NTR	0.9	<5	0.6	<3	<3	<3	<3	0.9	No
4-Bromophenyl phenyl ether	69	µg/L	---	---	ND<5	<5	<5	<5	<5	<5	<5	<5	No
Butyl benzyl phthalate	70	µg/L	3000	CTR/NTR	ND<5	<5	<5	<5	<5	<5	<5	<5	No
2-Chloronaphthalene	71	µg/L	1700	CTR/NTR	ND<5	<5	<5	<5	<5	<5	<5	<5	No
4-Chlorophenyl phenyl ether	72	µg/L	---	---	ND<5	<5	<5	<5	<5	<5	<5	<5	No
Chrysene	73	µg/L	0.0044	CTR/NTR	ND<0.3	<5	<0.31	<0.3	<0.3	<0.3	<0.3	<0.3	No
Dibenzo(a,h)-anthracene	74	µg/L	0.0044	CTR/NTR	ND<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	No
1,2-Dichlorobenzene	75	µg/L	600	Primary MCL	0.8	<5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	No
1,3-Dichlorobenzene	76	µg/L	400	CTR/NTR	ND<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
1,4-Dichlorobenzene	77	µg/L	5	Primary MCL	4	<5	<0.5	<0.5	<0.5	0.2	0.2	4	No
3,3'-Dichlorobenzidine	78	µg/L	0.04	CTR/NTR	ND<5	<10	<5	<5	<5	<5	<5	<5	No
Diethyl phthalate	79	µg/L	23000	CTR/NTR	ND<2	<5	<2	<2	<2	<2	<2	<2	No
Dimethyl phthalate	80	µg/L	31300	CTR/NTR	ND<2	<5	<2	<2	<2	<2	<2	<2	No
Di-n-butylphthalate	81	µg/L	2700	CTR/NTR	ND<5	<5	<5	<5	<5	<5	<5	<5	No
2,4-Dinitrotoluene	82	µg/L	0.11	CTR/NTR	ND<5	<20	<5	<5	<5	<5	<5	<5	No
2,6-Dinitrotoluene	83	µg/L	---	---	ND<5	<20	<5	<5	<5	<5	<5	<5	No
Di-n-octylphthalate	84	µg/L	---	---	ND<5	<5	<5	<5	<5	<5	<5	<5	No

City of Merced CTR Constituent Data													
Constituent	CTR #	Units	Criterion	Source	MEC (Jan 2001-Apr 2003)	Jan-04	Jan-05	Jul-05	Jan-06	Jul-06	Jan-07	MEC	RP?
1,2-Diphenylhydrazine	85	µg/L	0.04	CTR/NTR	ND<1	---	<1	<1	<1	<1	<1	<1	No
Fluoranthene	86	µg/L	300	CTR/NTR	ND<0.05	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No
Fluorene	87	µg/L	1300	CTR/NTR	ND<0.1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	No
Hexachlorobenzene	88	µg/L	0.00075	CTR/NTR	ND<1	<5	<1	<1	<1	<1	<1	<1	No
Hexachlorobutadiene	89	µg/L	0.44	CTR/NTR	ND<1	<5	<1	<1	<1	<1	<1	<1	No
Hexachlorocyclopentadiene	90	µg/L	50	Primary MCL	ND<1	---	<1	<1	<1	<1	<1	<1	No
Hexachloroethane	91	µg/L	1.9	CTR/NTR	ND<1	<5	<1	<1	<1	<1	<1	<1	No
Indeno(1,2,3-c,d)pyrene	92	µg/L	0.0044	CTR/NTR	ND<0.05	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No
Isophorone	93	µg/L	8.4	CTR/NTR	ND<1	<5	<1	<1	<1	<1	<1	<0.1	No
Naphthalene	94	µg/L	---	---	ND<0.2	<5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	No
Nitrobenzene	95	µg/L	17	CTR/NTR	ND<1	<10	<1	<1	<1	<1	<1	<1	No
N-Nitrosodimethylamine	96	µg/L	0.00069	CTR/NTR	ND<5	---	<5	<5	<5	<5	<5	<5	No
N-Nitrosodi-n-propylamine	97	µg/L	0.005	CTR/NTR	ND<5	<25	<5	<5	<5	<5	<5	<5	No
N-Nitrosodiphenylamine	98	µg/L	5	CTR/NTR	ND<1	<5	<1	<1	<1	<1	<1	<1	No
Phenanthrene	99	µg/L	---	---	ND<0.05	<10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No
Pyrene	100	µg/L	960	CTR/NTR	ND<0.05	<5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No
1,2,4-Trichlorobenzene	101	µg/L	5	Primary MCL	ND<0.5	<5	<5	<0.05	<5	<0.5	J0.1	<0.5	No
Aldrin	102	µg/L	0.00013	CTR/NTR	ND<0.005	<0.1	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	No
alpha-Hexachlorocyclohexane (BHC)	103	µg/L	0.0039	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
beta-Hexachlorocyclohexane	104	µg/L	0.014	CTR/NTR	ND<0.005	<0.1	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	No
gamma-Hexachlorocyclohexane (Lindane)	105	µg/L	0.019	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
delta-Hexachlorocyclohexane	106	µg/L	---	---	ND<0.005	<0.1	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	No
Chlordane	107	µg/L	0.00057	CTR/NTR	ND<0.02	<2	<0.02	<0.02	<0.04	<0.05	<0.05	<0.02	No
4,4'-DDT	108	µg/L	0.00059	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
4,4'-DDE	109	µg/L	0.00059	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
4,4'-DDD	110	µg/L	0.00083	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
Dieldrin	111	µg/L	0.00014	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
alpha-Endosulfan	112	µg/L	0.056	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No

City of Merced CTR Constituent Data													
Constituent	CTR #	Units	Criterion	Source	MEC (Jan 2001-Apr 2003)	Jan-04	Jan-05	Jul-05	Jan-06	Jul-06	Jan-07	MEC	RP?
beta-Endosulfan	113	µg/L	0.056	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
Endosulfan sulfate	114	µg/L	110	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
Endrin	115	µg/L	0.036	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
Endrin aldehyde	116	µg/L	0.76	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
Heptachlor	117	µg/L	0.00021	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
Heptachlor epoxide	118	µg/L	0.0001	CTR/NTR	ND<0.01	<0.1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No
PCB-1016 (Arochlor 1016)	119	µg/L	0.00017	CTR/NTR	ND<0.1	<0.2	<0.099	<0.1	<0.2	<0.1	<0.1	<0.099	No
PCB-1221 (Arochlor 1221)	120	µg/L	0.00017	CTR/NTR	ND<0.1	<0.2	<0.099	<0.1	<0.2	<0.1	<0.1	<0.099	No
PCB-1232 (Arochlor 1232)	121	µg/L	0.00017	CTR/NTR	ND<0.1	<0.2	<0.099	<0.1	<0.2	<0.1	<0.1	<0.099	No
PCB-1242 (Arochlor 1242)	122	µg/L	0.00017	CTR/NTR	ND<0.1	<0.2	<0.099	<0.1	<0.2	<0.1	<0.1	<0.099	No
PCB-1248 (Arochlor 1248)	123	µg/L	0.00017	CTR/NTR	ND<0.1	<0.2	<0.099	<0.1	<0.2	<0.1	<0.1	<0.099	No
PCB-1254 (Arochlor 1254)	124	µg/L	0.00017	CTR/NTR	ND<0.1	<0.2	<0.099	<0.1	<0.2	<0.1	<0.1	<0.099	No
PCB-1260 (Arochlor 1260)	125	µg/L	0.00017	CTR/NTR	ND<0.1	<0.2	<0.099	<0.1	<0.2	<0.1	<0.1	<0.099	No
Toxaphene	126	µg/L	0.0002	CTR/NTR	ND<0.5	<2.0	<0.5	<0.5	<1	<0.5	<0.5	<0.5	No

(a)
$$\text{Criteria} = \left(\frac{m(H_c \cdot H_{rw}) \left(e^{m(\ln(H_{rw})) + b} \right)}{H_{rw}} \right) + e^{m(\ln(H_{rw})) + b}$$

(b) Criterion based on a minimum effluent hardness of 110 mg/L as CaCO3

City of Merced Non-CTR Constituent Data												
Analyte	Units	Criterion	Source	Jan-04	Jan-05	Jul-05	Jan-06	Jul-06	Jan-07	MEC	RP?	
2,4,5-TP (Silvex)	µg/L	10	USEPA Ambient Water Quality Criteria		<1	<1	<1	<1	<1	<1	No	
2,4-D	µg/L	70	Primary MCL		<10	<10	<10	<10	<10	<10	No	
Alachlor (Alanex)	µg/L	2	Primary MCL		<1	<1	<1	<1	<1	<1	No	
Aluminum (Al)	µg/L	87	USEPA Ambient Water Quality Criteria	<50	960	430	170	520	210	960	Yes	
Ammonia (NH3-N)	mg/L	1.5	USEPA Ambient Water Quality (pH 8, Temp. 22 C)		0.22	0.10	0.08	0.27	<0.05	0.27	No	
Atrazine (AAtrex)	µg/L	1	Primary MCL		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No	
Barium (Ba)	µg/L	1000	Primary MCL		100	100	81	94	100	100	No	
Bentazon (Basagran)	µg/L	18	Primary MCL		<2	<2	<2	<2	<2	<2	No	
bis(2-ethylhexyl) adipate	µg/L	30	USEPA IRIS	<5	<3	<3	<3	<3	<3	<3	No	
Carbofuran	µg/L	0.5	USEPA Ambient Water Quality Criteria		<5	<5	<5	<5	<5	<5	No	
Chlorpyrifos (Dursban)	µg/L	0.014	USEPA Ambient Water Quality Criteria	<0.52	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No	
cis-1,2-Dichloroethene	µg/L	6	Primary MCL	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No	
Dalapon	µg/L	110	USEPA Ambient Water Quality Criteria		<10	<10	<10	<10	<10	<10	No	
Diazinon	µg/L	0.05	USEPA Ambient Water Quality Criteria	<0.52	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	No	
Dibromochloropropane	µg/L	0.2	Primary MCL		<0.01	0.007	<0.01	<0.01	<0.01	0.007	No	
Dinoseb (DNBP)	µg/L	7	Primary MCL		<2	<2	<2	<2	<2	<2	No	
Diquat	µg/L	0.5	USEPA Ambient Water Quality Criteria		<4	<4	<4	<4	<4	<4	No	
Endothall	µg/L	100	Primary MCL		<45	<45	<45	<45	<45	<45	No	
Ethylenedibromide	µg/L	0.05	Primary MCL		<0.02	<0.02	<0.02	0.029	<0.02	0.029	No	
Fluoride	µg/L	1000	Public Health Goal		600	700	600	600	710	710	No	
Glyphosate	µg/L	700	Primary MCL		<25	<25	<25	<25	<25	<25	No	
Iron (Fe)	µg/L	300	Secondary MCL		1100	490	220	600	260	1100	Yes	
Manganese (Mn)	µg/L	50	Secondary MCL/Basin Plan Objective	30	40	10	23	17	22	40	No	
MBAS, Calculated as LAS, mol wt 340	µg/L	500	Secondary MCL		70	<50	<50	97	75	97	No	
Methoxychlor	µg/L	30	Public Health Goal	<1	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	No	
Methyl tert-Butyl Ether (MTBE)	µg/L	5	Secondary MCL	<3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No	
Molinate (Ordram)	µg/L	13	USEPA Ambient Water Quality Criteria		<2	<2	<2	<2	<2	<2	No	
Nitrate (NO3-N)	mg/L	10	Primary MCL		42	36	41	34	54	54	Yes	
Nitrite (NO2-N)	mg/L	1	Primary MCL		<0.05	<0.1	<0.05	0.06	<0.05	0.06	No	
Oxamyl	µg/L	50	Primary MCL		<20	<20	<20	<20	<20	<20	No	

City of Merced Non-CTR Constituent Data

Analyte	Units	Criterion	Source	Jan-04	Jan-05	Jul-05	Jan-06	Jul-06	Jan-07	MEC	RP?
pH	Std. Unit	6.5-8.5	Basin Plan Objective		7.5	7.9	7.5	8.1	7.7	8.1	No
Picloram	µg/L	500	Primary MCL		<1	<1	<1	<1	<1	<1	No
Simazine (Princep)	µg/L	4	Primary MCL		<1	<1	<1	<1	<1	<1	No
Styrene	µg/L	10	USEPA Secondary MCL (Taste and Odor)		<0.5	<0.5	<0.5	<0.5	J0.1	J0.1	No
Sulfate (SO4)	mg/L	250	Secondary MCL		55	47	44	32	53	55	No
Thiobencarb (Bolero)	µg/L	1	Basin Plan Objective/Secondary MCL		<1	<1	<1	<1	<1	<1	No
Tributyltin	µg/L	0.063	USEPA Ambient Water Quality Criteria		0.00261	<0.002	0.00104	<0.002	J0.0016	0.00261	No
Trichlorofluormethane (F-11)	µg/L	150	Primary MCL	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	No
Trichlorotrifluoroethane (F-113)	µg/L	1200	Primary MCL		<1	<1	<1	<1	<1	<1	No
Xylenes (Total)	µg/L	20	USEPA Secondary MCL (Taste and Odor)	<0.5	<0.5	<0.5	<0.5	<0.5	J0.4	J0.4	No

**ATTACHMENT H – INTERNATIONAL
SYMBOL FOR NONPOTABLE WATER**

