CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4645
http://www.waterboards.ca.gov/centralvalley

ORDER NO. R5-2008-0055-01
NPDES NO. CA0077691
(as amended by Order No. R5-2010-0027)

WASTE DISCHARGE REQUIREMENTS FOR CITY OF VACAVILLE EASTERLY WASTEWATER TREATMENT PLANT SOLANO COUNTY

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

Table 1. Discharger Information

Discharger	**City of Vacaville**
Name of Facility	**Easterly Wastewater Treatment Plant**
Facility Address	**6040 Vaca Station Road**
	Elmira, CA 95625
	Solano 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 Vacaville Easterly Wastewater Treatment Plant** 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	Municipal Wastewater	38° 20' 48" N	121° 54' 06" W	Old Alamo Creek

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**25 April 2008**
This Order shall become effective on:	**14 June 2008**
This Order shall expire on:	**1 April 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:	**180 days prior to the Order expiration date**

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 25 April 2008 and amended by Order No. R5-2010-0027 on 18 March 2010.

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

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I. FACILITY INFORMATION

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

Table 4. Facility Information

Discharger	City of Vacaville
Name of Facility	Easterly Wastewater Treatment Plant
Facility Address	6040 Vaca Station Road
	Elmira, CA 95625
	Solano County
Facility Contact, Title, and Phone	Mr. David Tompkins, Assistant Public Works Director, (707) 469-6400
Mailing Address	SAME
Type of Facility	Public Owned Treatment Works (POTW)
Facility Design Flow	Average Dry Weather Flow (ADWF) = 15 million gallons per day (mgd) Average Wet Weather Flow (AWWF) = 39 mgd Peak Wet Weather Flow (PWWF) = 55 mgd

II. FINDINGS

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

A. Background. The City of Vacaville (hereinafter Discharger) is currently discharging pursuant to Order No. 5-01-044 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0077691. The Discharger submitted a Report of Waste Discharge, dated 1 September 2005 and applied for a NPDES permit renewal to discharge up to 15 mgd (ADWF) of treated municipal wastewater from the Easterly Wastewater Treatment Plant**,** hereinafter Facility. The application was deemed complete on 1 October 2005.

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 Easterly Wastewater Treatment Plant, which consists of two parallel plants, the existing North Plant and the newly constructed South Plant. The treatment system consists of headworks, primary sedimentation basins, aeration basins, secondary circular clarifiers, chlorination and dechlorination facilities, emergency ponds, dissolved aeration floatation thickener, anaerobic digesters, biosolids storage ponds, biosolids belt filter press and biosolids drying beds. Wastewater is discharged from Discharge Point 001 (see table on cover page) to Old Alamo Creek, tributary to New Alamo Creek, tributary to Ulatis Creek, and tributary to Cache Slough, all waters of the United States within Vaca Mountains

Watershed. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

C. **Legal Authorities.** This Order is issued pursuant to section 402 of the 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 Clean Water Code (CWC), commencing with section 13370. It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, Chapter 4, Division 7 of the CWC (commencing with section 13260).

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

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

F. **Technology-based Effluent Limitations***.* Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (CFR)[1] require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at Part 133 and Best Professional Judgment (BPJ) in accordance with Part 125, section 125.3. 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 section 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards. This Order contains requirements, expressed as a technology equivalence requirement, more stringent than secondary treatment requirements that are necessary to meet applicable water quality standards. The Regional Water Board has considered the factors listed in CWC Section 13241 in establishing these requirements. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in the Fact Sheet.

Section 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to

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

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

H. Water Quality Control Plans. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised August 2006), for the Sacramento and San Joaquin River Basins* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan.

The Basin Plan does not specifically identify beneficial uses for *Old Alamo Creek and New Alamo Creek*, but does identify present and potential uses for *the Sacramento San Joaquin River Delta (Delta)* to which *Old Alamo Creek*, via *New Alamo Creek*, is tributary. These beneficial uses are as follows: municipal and domestic supply (MUN), irrigation and stock watering agricultural supply (AGR), industrial process (PRO) and service supply (IND), contact (REC-1) and non-contact (REC-2) water recreation, freshwater habitat for both warm (WARM) and cold (COLD) species, migration (MIGR) waters for both warm (striped bass, sturgeon, and shad) and cold water freshwater species (salmon and steelhead), spawning (SPWN) for warm water species (striped bass, sturgeon, and shad), wildlife habitat (WILD), and navigation (NAV). The Basin Plan at page II-2.00 further states that the "…*beneficial uses of any specifically identified water body generally apply to its tributary streams* except as provided below:

• *MUN, COLD, MIGR and SPWN do not apply to Old Alamo Creek (Solano County) from its headwaters to the confluence with New Alamo Creek.*"

In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Thus, as discussed in detail in the Fact Sheet, beneficial uses applicable to Old Alamo Creek and New Alamo Creek are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	**Old Alamo Creek**	Existing: Irrigation and stock watering agricultural supply (AGR), industrial process (PRO) and service supply (IND), contact (REC-1) and non-contact (REC-2) water recreation, warm freshwater habitat (WARM), wildlife habitat (WILD) and navigation (NAV).
3.2 miles downstream of 001	**New Alamo Creek**	Existing: Municipal and domestic supply (MUN), irrigation and stock watering agricultural supply (AGR), industrial process (PRO) and service supply (IND), contact and non-contact water recreation (REC-1 and REC-2), freshwater habitat for both warm (WARM) and cold (COLD) species, migration (MIGR) waters for both warm (striped bass, sturgeon, and shad) and cold water freshwater species (salmon and steelhead), spawning (SPWN) for warm water species (striped bass, sturgeon, and shad), wildlife habitat (WILD) and navigation (NAV).
Groundwater	**Groundwater**	Existing: Municipal and domestic supply (MUN), irrigation and stock watering agricultural supply (AGR), industrial process (PRO) and service supply (IND).

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The listing for the northwestern portion of the Delta, which includes the section of Ulatis Creek to which Old and New Alamo Creeks are tributary, is listed as a WQLS for Chloropyrifos, DDT, Diazinon, Electrical Conductivity, Exotic Species, Mercury, Group A pesticides, and Unknown Toxicity in the 303(d) list of impaired water bodies. Since Old Alamo Creek and New Alamo Creek are immediate tributaries to the Delta and provide very little to no dilution, effluent limitations for these constituents are included in this Order except for Diazinon, Chloropyrifos, DDT, and Group A pesticides, since these constituents have consistently shown non-detect results in the effluent discharged. However monitoring for these constituents are included in the Effluent Constituent Study, Attachement H Requirements of this Order implement the Basin Plan.

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and later amended it on May 4, 1995 and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 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 February 13, 2001. These rules contain water quality criteria for priority pollutants.

J. **State Implementation Policy.** On March 2, 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 April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 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 February 24, 2005 that became effective on July 13, 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 Clean Water Act section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board has concluded that where the Regional Water Board's Basin Plan allows for schedules of compliance and the Regional Water Board is newly interpreting a narrative standard, it may include schedules of compliance in the permit to meet effluent limits that implement a narrative standard. See In the Matter of Waste Discharge Requirements for Avon Refinery (State Board Order WQ 2001-06 at pp. 53-55). See also Communities for a Better Environment (CBE) et al. v. State Water Resources Control Board, 34 Cal.Rptr.3d 396, 410 (2005). The Basin Plan for the Sacramento and San Joaquin Rivers includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives that are adopted after the date of adoption of the Basin Plan, which was September 25, 1995 (See Basin Plan at page IV-16). Consistent with the State Water Board's Order in the CBE matter, the Regional Water Board has the discretion to include compliance schedules in NPDES permits when it is including an effluent limitation that is a "new interpretation" of a narrative water quality objective. This conclusion is also consistent with the United States Environmental Protection Agency policies and administrative decisions. See, e.g., Whole Effluent Toxicity (WET) Control Policy. The Regional Water Board, however, is not required to include a schedule of compliance, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Regional Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Basin Plan, should consider feasibility of achieving compliance, and must impose a schedule that is as short as practicable to achieve compliance with the objectives, criteria, or effluent limit based on the objective or criteria.

For CTR constituents, Section 2.1 of the SIP provides that, based on a Discharger's request and demonstration that it is infeasible for an existing Discharger to achieve immediate compliance with an effluent limitation derived from a CTR criterion,

compliance schedules may be allowed in an NPDES permit. Unless an exception has been granted under section 5.3 of the SIP, a compliance schedule may not exceed 5 years from the date that the permit is issued or reissued, nor may it extend beyond 10 years from the effective date of the SIP (or 18 May 2010) to establish and comply with CTR criterion-based effluent limitations. Where a compliance schedule for a final effluent limitation that exceeds 1 year, the Order must include interim numeric limitations for that constituent or parameter. Where allowed by the Basin Plan, compliance schedules and interim effluent limitations or discharge specifications may also be granted to allow time to implement a new or revised water quality objective. This Order includes compliance schedules and interim effluent limitations and/or discharge specifications for cyanide, chlorodibromomethane, and dichlorobromomethane. In addition for compliance with the effluent limitation for nitrate, a compliance schedule is established in an accompanying Time Schedule Order (TSO). A detailed discussion of the basis for the compliance schedule(s) and interim effluent limitation(s) and/or discharge specifications 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 C.F.R. § 131.21; 65 Fed. Reg. 24641 (April 27, 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000 may be used for CWA purposes, whether or not approved by USEPA.

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 BOD_5 and TSS. The water quality-based effluent limitations consist of restrictions on 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. 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 Water Code section 13241 in establishing these requirements.

Water quality-based effluent limitations have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant water quality-based effluent limitations were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR section 131.38. The scientific procedures for calculating the individual water quality-based effluent limitations are based on the CTR-SIP, which was approved by USEPA on May 1, 2001. All beneficial uses and water quality

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

N. Antidegradation Policy. Section 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 (surface and groundwaters) be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet the permitted discharge is consistent with the antidegradation provision of section 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 federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Based on new information and the dedesignation of MUN and COLD beneficial uses from Old Alamo Creek (per Basin Plan amendment, Resolution R5-2005-0053 adopted on 25 April 2005), some effluent limitations have been removed and others have been relaxed. Additionally, the Discharger conducted a dilution study that found a minimum dilution of 1.1:1 at the confluence of Old Alamo and New Alamo Creeks. The rationale for the removal and relaxation of these effluent limitations is explained in the Fact Sheet. All other effluent limitations in this Order not related to new information or the beneficial use changes are at least as stringent as the effluent limitations in the previous Order.

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

Q. Monitoring and Reporting. Section 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 establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

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

S. **Provisions and Requirements Implementing State Law.** The provisions/requirements in subsections V.B, and VI.C.1, 2, 6, and 7 of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

T. **Notification of Interested Parties.** The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe 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.

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

IT IS HEREBY ORDERED, that Order No. 5-01-044 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the California Water Code (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.

III. DISCHARGE PROHIBITIONS

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

B. The by-pass or overflow of wastes to surface waters is prohibited, except as noted in Special Provision VI.C.4.d. and as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).

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

D. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point 001

1. Final Effluent Limitations – 1 May – 31 October – Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations from May 1 through October 31 when discharging to Old Alamo Creek at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP (Attachment E).

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

Table 6. Effluent Limitations (Tertiary – 1 May to 31 October)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C	mg/L	10	15	20	--	--
	lbs/day[1]	1252	1878	2504	--	--
Total Suspended Solids (TSS)	mg/L	10	15	20	--	--
	lbs/day[1]	1252	1878	2504	--	--
Settleable Solids	ml/L	0.1	--	0.2	--	--
pH	std units	--	--	--	6.5	8.5
Ammonia as N (total)	mg/L	1.3		3.2		
	lbs/day[1]	163		400		
Cyanide (total recoverable)	µg/L	4.1		8.9		
Chlorodibromomethane	µg/L	0.41		0.86		
Dichlorobromomethane	µg/L	0.63		0.99		
Nitrate (as N) (total recoverable)	mg/L	17	--	--	--	--
Turbidity	NTU	--	--	--	--	10
Total Coliform	MPN/100 mL	--	--	--	--	240
Total Trihalomethanes[2]	µg/L	--	--	122	--	--

1 Based upon a design average dry weather flow (ADWF) of 15 mgd.
2 The total THMs concentration shall be the sum of bromoform, chloroform, chlorodibromomethane, and dichlorobromomethane.

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

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

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

d. **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.

e. **Turbidity.** Effluent turbidity shall not exceed:

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

f. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

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

g. **Average Dry Weather Flow.** The Average Dry Weather Flow shall not exceed 15 mgd.

2. Final Effluent Limitations – 1 November – 30 April-Discharge Point 001

The Discharger shall maintain compliance with the following effluent limitations between November 1 through April 30 when discharging to Old Alamo Creek at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP (Attachment E).

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

Table 7. Effluent Limitations (Secondary – 1 November to 30 April)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C	mg/L	20	25	30	--	--
	lbs/day[1]	2504	3129	3755	--	--
Total Suspended Solids (TSS)	mg/L	30	45	50	--	--
	lbs/day[1]	3755	5633	6259	--	--
Settleable Solids	ml/L	0.1	--	0.2	--	--

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	std units	--	--	--	6.5	8.5
Ammonia as N (total)	mg/L	1.3	--	3.2	--	--
	lbs/day[1]	163	--	400	--	--
Cyanide (total recoverable)	µg/L	4.1	--	8.9	--	--
Chlorodibromomethane	µg/L	0.41	--	0.86	--	--
Dichlorobromomethane	µg/L	0.63	--	0.99	--	--
Nitrate (as N) (total recoverable)	mg/L	17	--	--	--	--
Total Coliform	MPN/100 mL	--	--	--	--	240
Total Trihalomethanes[2]	µg/L	--	--	122	--	--

1 Based upon a design average dry weather flow (ADWF) of 15 mgd.
2 The total THMs concentration shall be the sum of bromoform, chloroform, chlorodibromomethane, and dichlorobromomethane.

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

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

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

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

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

e. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed:

   i. 23 most probable number (MPN) per 100 mL, as a 30-day median.

f. **Average Daily Discharge Flow (Wet Weather).** The Average Daily Discharge Flow shall not exceed 55 mgd.

3. Interim Effluent Limitations

a. **Effective immediately and ending on 18 May 2010**, the Discharger shall maintain compliance with the following limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP. These interim effluent limitations shall apply in lieu of the

corresponding final effluent limitations specified in Effluent Limitations IV.A.1 for the same parameters during the time period indicated in this provision.

Table 8. Interim Effluent Limitations (CTR Constituents)

Parameter	Units	Sample Count	Standard Deviation	Mean	MEC	Maximum Daily Effluent Limit
Cyanide (total recoverable)	µg/L	37	4.4	6.3	17	21
Chlorodibromomethane	µg/L	36	2.6	3.9	14	14
Dichlorobromomethane	µg/L	36	6.0	17.4	43	43

b. **Effective immediately and ending on 1 May 2015 or upon completion of tertiary treatment in accordance with Provision VI.C.7.a.**, **whichever is sooner,** the Discharger shall maintain compliance with the following limitations at Discharge Point 001, with compliance measured at Monitoring Location EFF-001 as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified in Effluent Limitations IV.A.1 for the same parameters during the time period indicated in this provision.

Table 9. Interim Effluent Limitations (Non-CTR Constituents)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C	mg/L	20	25	30	--	--
	lbs/day[1]	2504	3129	3755	--	--
Total Suspended Solids (TSS)	mg/L	30	45	50	--	--
	lbs/day[1]	3755	5633	6259	--	--

[1] Based upon a design ADWF of 15 mgd.

c. **Turbidity. Effective immediately and ending on 1 May 2015 or upon completion of tertiary treatment in accordance with Provision VI.C.7.a., whichever is sooner**, the final effluent limitations for turbidity (Final Effluent Limitations IV.A.1.a. and IV.A.1.e.) are not required.

d. **Total Coliform Organisms. Effective immediately and ending on 1 May 2015 or upon completion of tertiary treatment in accordance with Provision VI.C.7.a., whichever is sooner** , the effluent total coliform organisms shall not exceed:

i. 23 most probable number (MPN) per 100 mL, as a 30-day median; and
ii. 240 MPN/100 mL at any time.

These interim effluent limitations shall apply in lieu of Final Effluent Limitations IV.A.1.a. and IV.A.1.f. for total coliform organisms.

e. **Mercury: Effective immediately,** the total annual mass discharge of total mercury shall not exceed 2.1 lbs. This interim performance-based limitation shall be in effect until the Regional Water Board establishes final effluent limitations after adoption of the final Sacramento-San Joaquin Delta Methylmercury TMDL.

f. **Electrical Conductivity:** The effluent electrical conductivity shall not exceed 1320 µmhos/cm on a monthly average. This interim performance-based limitation shall be in effect until the Regional Water Board establishes final effluent limitations based on the EC study required in Section VI.C.2.b.

B. Land Discharge Specifications – Not Applicable

C. Reclamation Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in the immediate receiving waters (Old Alamo Creek and New Alamo Creek), tributary to Ulatis Creek, and tributary to Cache 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 which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

3. **Chemical Constituents**. Chemical constituents to be present in concentrations that adversely affect beneficial uses.

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

5. **Dissolved Oxygen**:

   a. The dissolved oxygen concentration to be reduced below 5.0 mg/L for Old Alamo Creek and below 7.0 mg/L for New Alamo Creek 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**.

   a. For Old Alamo Creek, the pH to be depressed below 6.5 or raised above 8.5 pH units.
   b. For New Alamo Creek, the pH to be depressed below 6.5, raised above 8.5, nor the annual average to be changed by more than 0.5 units.

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. For New Alamo Creek only, 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. For New Alamo Creek only, Thiobencarb to be present in excess of 1.0 µg/L.

10. **Radioactivity**:

    a. Radionuclides to be present in concentrations that are harmful/deleterious 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. For New Alamo Creek only, radionuclides to be present in excess of the maximum contaminant levels specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations.

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

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

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

14. **Taste and Odors**. Taste- or odor-producing substances to be present in concentrations that cause nuisance, or otherwise adversely affect beneficial uses.

15. **Temperature**.

    a. The water temperature in Old Alamo Creek, as measured at RSW-002, to rise above 83 °F at any time.
    b. The annual average temperature in New Alamo Creek, as measured at RSW-004 (the Brown Alamo Dam), to increase more than 5 °F compared to the annual average background temperature, as measured at RSW-003 (Lewis Road).
    c. New Alamo Creek temperatures, as measured at RSW-004 (the Brown-Alamo Dam), to exceed the following:
        i. 5 °F over the ambient background temperature, as a monthly average during the period of March through August;
        ii. 72 °F as period average during September 1 through October 14;
        iii. 70 °F as period average during October 15 through October 31;
        iv. 66 °F as monthly average for November; and
        v. 60 °F as monthly average for the months of December through February.

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**. For New Alamo Creek only, the 30-day average for turbidity to increase as follows based on measurements taken at R3 and R4:

    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. Groundwater Limitations

1. Groundwater limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The Basin Plan designates all groundwater, including the shallow groundwater in the vicinity of the Facility, to have the beneficial uses of MUN, AGR, IND and PRO. The discharge shall not cause the groundwater to exceed water quality objectives, unreasonably affect beneficial uses, or cause a condition of pollution or nuisance.

2. Release of waste constituents from any storage, treatment, or disposal component associated with the Facility shall not, in combination with other sources of the waste constituents, cause groundwater within influence of the Facility to contain waste

constituents in concentrations in excess of natural background quality or that listed below, whichever is greater. Since the natural background quality has not been adequately characterized, these groundwater limitations are **effective within 42 months of adoption of this Order or upon completion of the Groundwater Water Quality Characterization Study (see Section VI.C.2.d.), whichever is sooner**:

a. Fecal coliform organisms median of 2.2 MPN/100 mL over any seven-day period.

b. Chemical constituents in concentrations that adversely affect beneficial uses, including the constituent concentrations listed below:

Parameter	Units	Limitation
Ammonia, Total (as NH_4)	mg/L	1.5
Total Dissolved Solids[1]	mg/L	450
Nitrate + Nitrite (as N)	mg/L	10

[1] A cumulative constituent comprised of dissolved matter consisting mainly of inorganic salts, small amounts of organic matter, and dissolved gases (*e.g.*, ammonia, bicarbonate alkalinity, boron, calcium, chloride, copper, iron, magnesium, manganese, nitrate, phosphorus, potassium, sodium, silica, sulfate, total alkalinity).

c. Exhibit a pH of less than 6.5 or greater than 8.5 pH units.

d. Impart taste, odor, toxicity, or color that creates nuisance or impairs any beneficial use.

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.

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

m. The Discharger shall 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.

C. Special Provisions

1. Reopener Provisions

a. **New or revised Water Quality Standards and/or new information**. Conditions that necessitate a major modification of a permit are described in 40 CFR section 122.62, including:

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

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

b. **Mercury.** If a TMDL program is adopted, this Order shall be reopened and the total mercury interim mass effluent limitation modified (higher or lower) or an effluent concentration limitation for total and/or methyl mercury imposed.

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

d. **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.

e. **Diazinon, chloropyrifos, and EC TMDL**. This Order may be reopened, as necessary, and establish new final effluent limitations for diazinon, chloropyrifos,

and EC based upon a waste load allocation derived from TMDLs established for the northwestern Delta, which includes Ulatis Creek immediately downstream of Old and New Alamo Creeks.

f. **EC and pH site-specific study.** This Order requires the Discharger to conduct a site-specific study for EC and pH and develop site-specific objectives for the protection of the local AGR beneficial use. This Order may be reopened to establish new effluent and groundwater limitations based on site-specific water quality objectives for EC and pH for protection of AGR.

g. **New Alamo Creek and Ulatis Creek Basin Plan Amendment.** Surveys to determine if the municipal and domestic supply beneficial use (MUN) exists or is attainable in New Alamo Creek and Ulatis Creek have been conducted. Requiring protection of MUN would require costly controls that are more stringent than required under the Clean Water Act and may be unnecessary for the protection of human health. If the Regional Water Board adopts a Basin Plan amendment that removes or redefines the MUN beneficial use for the lower segments of New Alamo Creek and Ulatis Creek and/or adopts site-specific objectives for one or more human health constituents, this Order may be reopened to modify or remove effluent limitations consistent with any water quality standards refinements adopted and approved for lower New Alamo Creek and Ulatis Creek.

h. **Cyanide Study.** The Discharger may conduct a study of the analytical procedures for laboratory analyses of cyanide. Past investigations indicate possible interference of other compounds causing false positive results in de-chlorinated effluent. This Order may be reopened to modify or remove the effluent limitation for cyanide pending the results of this study.

i. **Chlorodibromomethane and Dichlorobromomethane.** The Discharger applied for a case-by-case exception from the CTR for chlorodibromomethane and dichlorobromomethane. The Regional Water Board's Basin Planning Unit supports and submitted the exception to the State Water Resources Control Board 1 June 2007. The exception needs approval by both the State Water Resources Control Board and USEPA. Should the exception be granted, this Order may be reopened to remove chlorodibromomethane and dichlorobromomethane effluent limitations.

j. **Bis(2-ethylhexyl)phthalate**. This Order requires the Discharger to collect and analyze effluent bis(2-ethylhexyl)phthalate samples using a clean technique. Should the results of that sampling show bis(2-ethylhexyl)phthalate in concentrations that exceed the applicable water quality criteria, this Order may be reopened to establish new effluent limitations.

k. **Human Heath Criteria Dilution Study**. This Order requires the Discharger to conduct a Human Health Criteria Dilution Study to determine the available dilution for human health criteria in New Alamo Creek. Based on the findings of

the study, this Order may be reopened to modify the effluent limitations that may receive a human health dilution credit.

l. **Litigation-related issues.** Issues that may affect this Order are pending in the case of *City of Vacaville v. State Water Resources Control Board* (Contra Costa County Case No. CIV MSN 03-0956). This Order will be reopened as necessary to ensure compliance with any final, non-appealable decision in that case.

2. Special Studies, Technical Reports and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program (Attachment E, Section V.). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits a pattern of toxicity exceeding 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 effluent toxicity, and the procedures for reducing or eliminating effluent toxicity. The TRE Work Plan should be developed in accordance with EPA guidance[2] 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 demonstrate a pattern of toxicity and require the Discharger to initiate a TRE to address the effluent toxicity.

[2] See Attachment F (Fact Sheet) Section VII.B.2.a. for a list of EPA guidance documents that must be considered in development of the TRE Work Plan.

iii. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is > **1 TUc** (where TUc = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits a pattern of toxicity.

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

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

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

c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and 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:

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

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

3) A schedule for these actions.

b. **Electrical Conductivity (EC) and pH Study**. The Discharger shall complete and submit to the Regional Water Board a report on the results of a site-specific investigation of appropriate EC and pH levels to protect the beneficial use of agricultural supply for the most salt sensitive crops in areas irrigated with Old Alamo Creek, New Alamo Creek, and Ulatis Creek waters in the vicinity of the

Task	Compliance Date
Submit Work Plan	**6 Months from Adoption of this Order**
Submit Completed Study Report	**1 April 2015**

c. **Groundwater Monitoring Work Plan.** To determine compliance with Groundwater Limitations V.B. this provision requires the Discharger to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells and a sufficient number of designated monitoring wells downgradient of every treatment, storage, and disposal unit that does or may release waste constituents to groundwater. Currently, there are no groundwater monitoring wells downgradient of the asphalt-lined sludge drying beds and lined aerated lagoons. Additionally, the background monitoring wells may have been influenced by previous disposal or treatment practices or influenced by the effluent discharge to Old Alamo Creek. **Within 6 months following adoption of this Order,** the Discharger shall submit a Groundwater Monitoring Work Plan prepared in accordance with, and including the items listed in, the first section of Attachment I: *"Requirements for Monitoring Well Installation Work Plans and Monitoring Well Installation Reports."* All monitoring wells shall comply with the appropriate standards as described in California Well Standards Bulletin 74-90 (June 1991) and Water Well Standards: State of California Bulletin 74-81 (December 1981), and any more stringent standards adopted by the Discharger or County pursuant to CWC section 13801.

d. **Groundwater Water Quality Characterization.** The Discharger, after 2 years of monitoring, shall characterize natural background quality of monitored constituents in a technical report, to be submitted **within 42 months following adoption of this Order.** For each groundwater monitoring parameter/ constituent identified in the Monitoring and Reporting Program, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and a comparison of background groundwater quality to that in wells used to monitor the facility. Determination of background quality shall be made using the methods described in Title 27 California Code of Regulations Section 20415(e)(10), and shall be based on data from at least eight consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare measured concentrations for compliance monitoring wells with the calculated background concentration.

e. **Best Practical Treatment or Control (BPTC) Evaluation**. If the groundwater monitoring results show that the discharge of waste is threatening to cause or has caused groundwater to contain waste constituents in concentrations statistically greater than background water quality, the Discharger shall submit, **within six months following Executive Officer's approval of the Groundwater Water Quality Characterization Technical Report,**, a BPTC Evaluation Work Plan that sets forth a scope and schedule for a systematic and comprehensive technical evaluation of each component of the facilities' waste management system to determine best practicable treatment or control for each the waste constituents of concern. The work plan shall include a preliminary evaluation of each component of the waste management system and propose a time schedule for completing the comprehensive technical evaluation. The BPTC Evaluation Study shall be submitted to the Regional Water Board **within one year of Executive Officer's approval of the BPTC Evaluation Work Plan**.

f. **Effluent and Receiving Water Characterization Study.** An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third year of this permit term, the Discharger shall conduct monthly monitoring of the effluent at EFF-001 and of the receiving water at RSW-003 for all priority pollutants and other constituents of concern as described in Attachment H. Dioxin and Furan sampling shall be performed only twice during the year, as described in Attachment H. The report shall be completed in conformance with the following schedule.

Task	Compliance Date
Submit Work Plan and Time Schedule	No later than 2 years 6 months from adoption of this Order
Conduct monthly[1] monitoring	During third year of permit term
Submit Final Report	6 months following completion of final monitoring event

[1] Dioxin and Furan sampling shall be performed only twice during the year, as described in Attachment H.

g. **Human Health Criteria Dilution Study.** A dilution credit of 1.1:1 has been allowed in this Order for developing water quality-based effluent limitations based on human health criteria. The dilution credit is based on a worst-case dilution during low flow periods in New Alamo Creek and may not be appropriate for long-term human health criteria. The Discharger shall conduct a dilution study to evaluate the available dilution in New Alamo Creek, based on the harmonic mean flow in New Alamo Creek. The Discharger shall submit a work plan and schedule to the Regional Water Board within **six months of adoption of this Order**. The final study shall be submitted **within 18 months of Executive Officer approval of the work plan**.

3. Best Management Practices and Pollution Prevention

a. **Pollution Prevention Plan for salinity and mercury.** The Discharger shall update and implement pollution prevention plans for salinity and mercury in accordance with CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plan are outlined in the Fact Sheet, Attachment F, Section VII.B.3.c. Updated implementation plans shall be completed and submitted **within 6 months of the effective date of this Order** for approval by the Executive Officer. Evaluation of the implementation of the Pollution Prevention Plans shall be completed and submitted to the Regional Water Board **within one year following work plan approval by the Executive Officer**.

b. **Salinity Reduction Goal.** The Discharger shall provide to the Regional Water Board annual reports demonstrating reasonable progress in the reduction of salinity in its discharge to Old Alamo Creek. The Regional Water Board finds that an annual average salinity goal of 864 µmhos/cm as electrical conductivity is a reasonable intermediate goal for the term of this Order. The goal is based on the weighted average electrical conductivity of the City of Vacaville's water supply (i.e. 364 µmhos/cm in 2006), plus an increment of 500 µmhos/cm for typical consumptive use. The goal may be achieved by adopting a local ordinance limiting use of residential water softners and/or reducing salinity in the City's water supply as discussed in it's 1 December 2002 Salinity Source Control Study Phase I Report and 1 March 2006 Salinity Source Control Study final Effectiveness Report. The annual reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.).

4. Construction, Operation and Maintenance Specifications

a. **Emergency Storage Pond Operating Requirements.**

i. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.

ii. Pond shall be managed to prevent breeding of mosquitoes. In particular,

a) An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.
b) Weeds shall be minimized.
c) Dead algae, vegetation, and debris shall not accumulate on the water surface.

iii. Freeboard shall never be less than two feet (measured vertically to the lowest point of overflow.

iv. Pond shall be operated in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations V.B.

b. **Influent Flow Meter Repair and Operating Requirements.**

The Influent Flow monitoring infrastructure shall be certified by a registered civil engineer as a permanent structure or plans and specifications submitted for a permanent structure within 30 days of the effective date of this Order.

c. **Flood Protection Requirements.**

The treatment facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

d. **Bypass (Blending) Requirements.**

Effective immediately and until 30 April 2015, during wet weather high flow events the intentional bypass of the secondary treatment facilities may be allowed when influent flows exceed the capacity of the secondary treatment facilities. The bypassing shall cease as soon as possible following the conclusion of the wet weather high flow conditions.

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. **Sludge/Biosolids Discharge Specifications**

i. 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.

ii. Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant performance.

iii. 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.

iv. The use and disposal of biosolids shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards 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. The Discharger must comply with the standards and time schedules contained in 40 CFR 503 whether or not they have been incorporated into this Order.

c. **Biosolids Disposal Requirements**

i. The Discharger shall comply with the Monitoring and Reporting Program for biosolids disposal contained in Attachment E.

ii. Any proposed change in biosolids use or disposal practice from a previously approved practice shall be reported to the Executive Officer and U.S. EPA Regional Administrator at least **90 days** in advance of the change.

iii. The Discharger is encouraged to comply with the "Manual of Good Practice for Agricultural Land Application of Biosolids" developed by the California Water Environment Association.

d. **Biosolids Storage Requirements**

i. Facilities for the storage of Class B biosolids shall be located, designed and maintained to restrict public access to biosolids.

ii. Biosolids storage facilities shall be designed and maintained to prevent washout or inundation from a storm or flood with a return frequency of 100 years.

iii. Biosolids storage facilities, which contain biosolids, shall be designed and maintained to contain all storm water falling on the biosolids storage area during a rainfall year with a return frequency of 100 years.

iv. Biosolids storage facilities shall be designed, maintained and operated to minimize the generation of leachate.

e. **Collection System.** On 2 May 2006, the State Water Board adopted State Water Board Order 2006-0003, a Statewide General WDR for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order 2006-0003 and any future revisions thereto. Order 2006-0003 requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the General WDR. The Discharger signed the Notice of Intent on 24 October 2006 to comply with the Statewide General WDR for Sanitary Sewer Systems for coverage under State Water Board Order 2006-0003 for operation of its wastewater collection system.

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

f. **Continuous Reporting requirements.** 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 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

a. **Effective 1 May 2015**, from **1 May – 31 October of each year**, wastewater shall be oxidized, coagulated, filtered, and adequately disinfected pursuant to the DPH reclamation criteria, 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.

7. Compliance Schedules

a. **Title 22 Disinfection Requirements and Discontinuance of Bypass (blending) Practices.** The Discharger shall comply with the following time schedule to ensure compliance with Sections VI.C.6.a. and Discharge Prohibitions III.B. of this Order:

Task	Date Due
Submit Method of Compliance Workplan/Schedule	Within **6 months** of adoption of this Order
Submit and implement Pollution Prevention plan (PPP)[1] pursuant to CWC section 13263.3	Within **6 months** of adoption of this Order
Progress Reports[2]	**1 June, annually,** after approval of work plan until final compliance
Full Compliance	**1 May 2015**

[1] The PPP shall be prepared for BOD, TSS, total coliform organisms, and turbidity, where appropriate, and shall meet the requirements specified in CWC section 13263.3(d)(3)

[2] The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final date.

b. **Compliance Schedule for final effluent limitations for cyanide, chlorodibromomethane, and dichlorobromomethane**. The Discharger shall comply with the following time schedule to ensure compliance with the effluent limitations for cyanide, chlorodibromomethane, and dichlorobromomethane contained in this Order:

Task	Date Due
Submit Method of Compliance Workplan/Schedule	Within **6 months** of adoption of this Order
Submit and implement Pollution Prevention plan (PPP)[1] pursuant to CWC section 13263.3	Within **6 months** of adoption of this Order
Progress Reports[2]	**1 June, annually,** after approval of work plan until final compliance
Full Compliance	**18 May 2010**

[1] The PPP shall be prepared for cyanide, chlorodibromomethane, and dichlorobromomethane, where appropriate, and shall meet the requirements specified in CWC section 13263.3(d)(3).

[2] The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final date.

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 IV A.1.a and interim effluent limitations for BOD and

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

B. **Total Mercury Mass Loading Effluent Limitations.** The procedures for calculating mass loadings are as follows:

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

C. **Average Dry Weather Flow Effluent Limitations (Section IV.A.1.g.)**. The Average Dry Weather Flow represents the average dry weather flow discharged by the Facility (i.e. daily average flow when groundwater is at or near normal and runoff is not occurring). Compliance with the Average Dry Weather Flow effluent limitations will be determined annually based on the average daily flow over three consecutive dry weather months (e.g., July, August, and September).

D. **Average Daily Discharge Flow (Wet Weather) Effluent Limitations (Section IV.A.2.f.)**. The Average Daily Discharge Flow for wet weather represents the peak wet weather flow discharged by the Facility (i.e. average daily flow during peak wet weather events).

E. **Total Coliform Organisms Effluent Limitations (Section IV.A.1.f. and Section IV.A.2.e.)**. The following procedures should be used for determining compliance with the 7-day median and 30-day median total coliform effluent limitations:

i. **7-day Median (Section IV.A.1.f.)** From 1 May – 31 October, 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.

ii. **30-day Median (Section IV.A.2.e.)** From 1 November – 30 April, for each day that an effluent sample is collected and analyzed for total coliform organisms, the 30-day

median shall be determined by calculating the median concentration of total coliform bacteria in the effluent utilizing the bacteriological results of the last thirty days for which analyses have been completed. If the 30-day median of total coliform organisms exceeds a most probable number (MPN) of 23 per 100 milliliters, the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period.

F. **Effluent Mass Limitations**. The effluent mass limitations contained in Final Effluent Limitations IV.A.1.a. and interim effluent limitations IV.A.2.a and IV.A.2.b are based on the permitted average dry weather flow (Final Effluent Limitation IV.A.1.g and calculated as follows:

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

If the effluent flow exceeds the permitted average dry weather flow due to wet-weather storm events or when groundwater is above normal and runoff is occurring, the effluent mass limitations contained in Final Effluent Limitations IV.A.1.a. and Interim Effluent Limitations IV.A.2.a and IV.A.2.b. shall not apply.

G. **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. The Discharger shall maintain documentation that supports validation of all false positives. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

ATTACHMENT A – DEFINITIONS

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

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(l). 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).

Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

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

Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters include~~d~~, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters 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.

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

Ocean Waters are the territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent pollutants 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.

Priority Pollutants are defined as USEPA Priority Pollutants and consists of constituents listed in the most recent National Toxics Rule and California Toxics Rule.

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.

Satellite Collection System is the portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water is any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

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

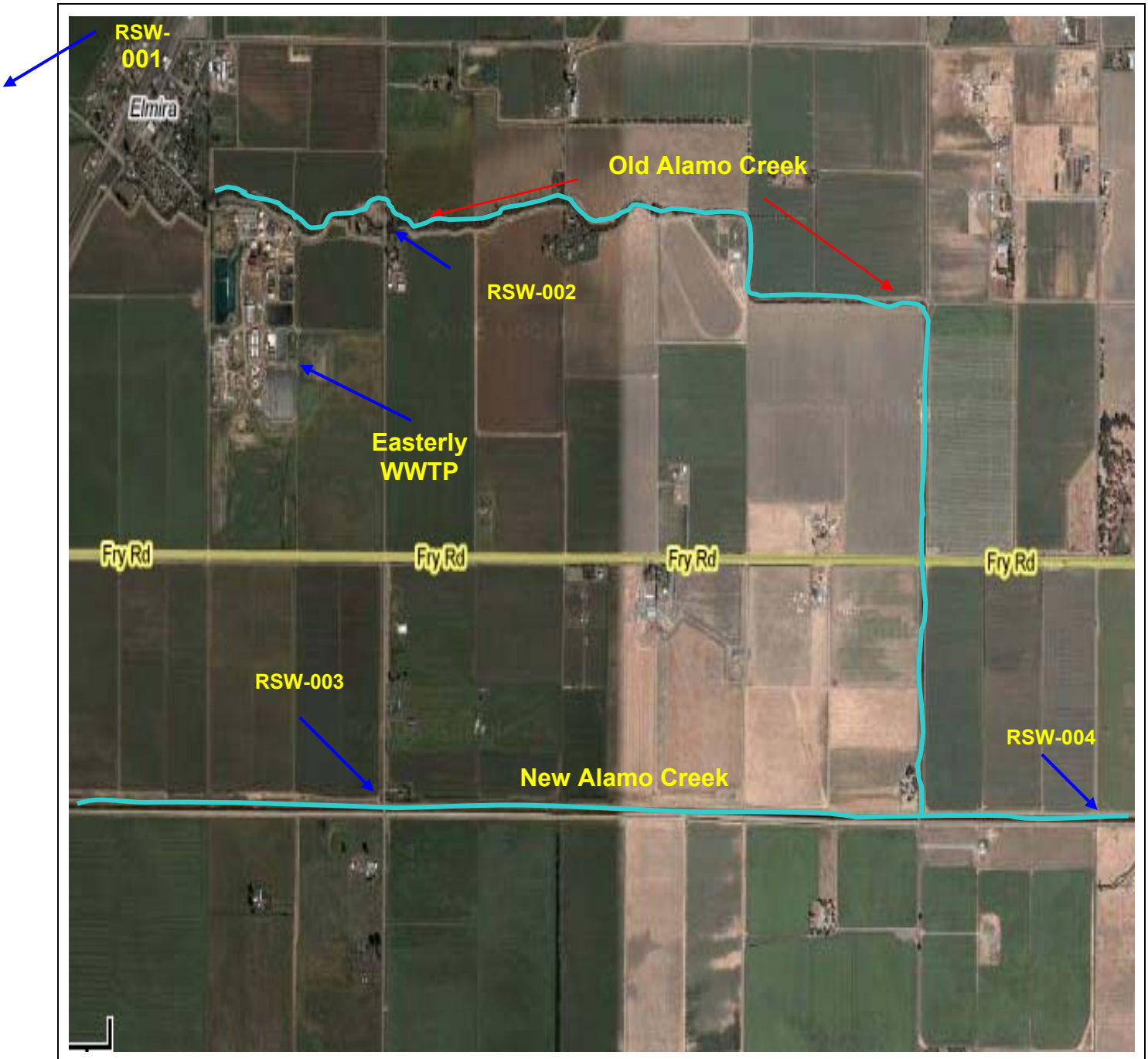
$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:

x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

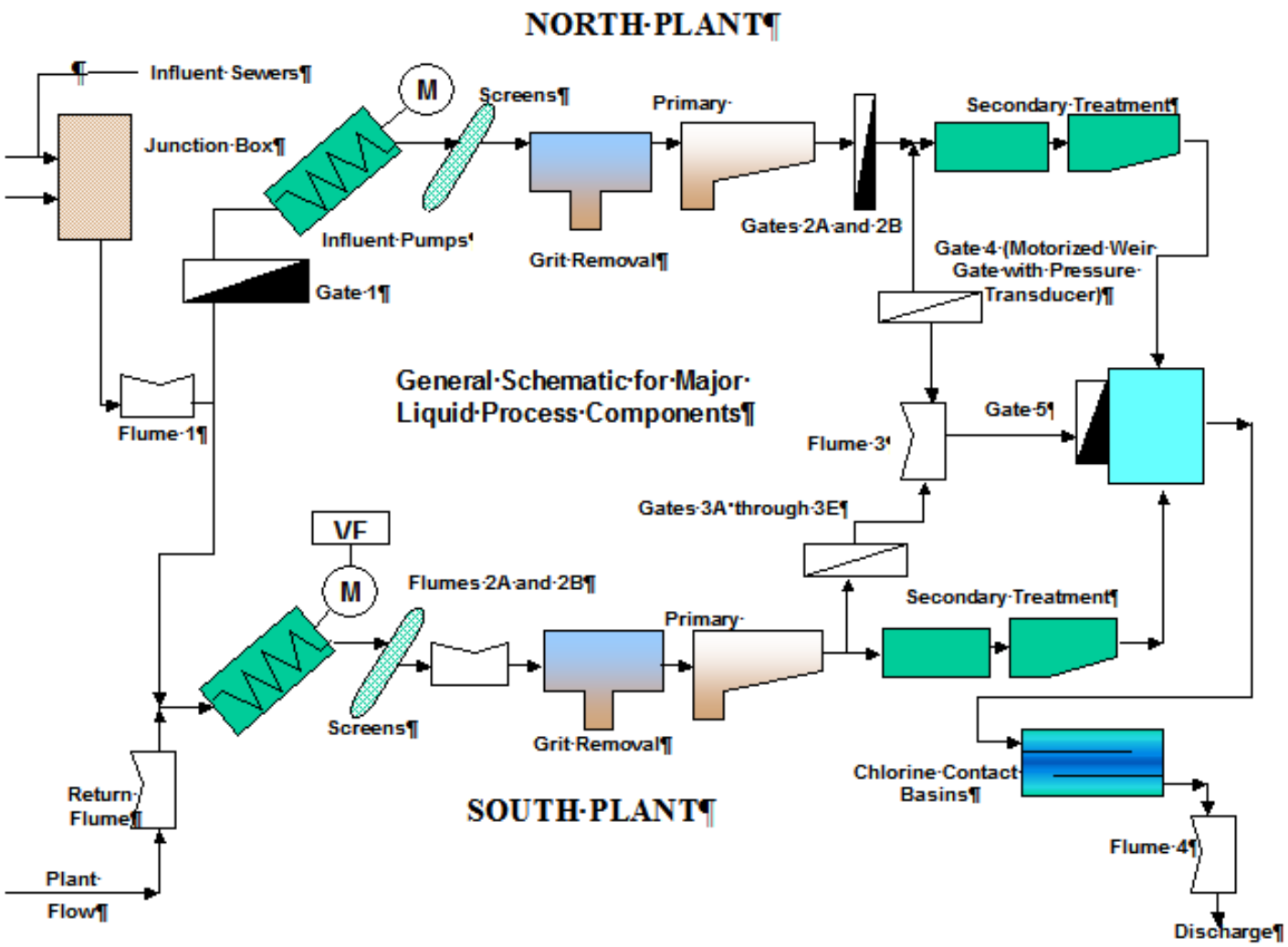
Toxicity Reduction Evaluation (TRE) is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps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



Reference: **SW 1/4 OF SE1/4 OF SECTION 19, T6N, R1E, MDB&M** U.S.G.S TOPOGRAPHIC MAP ELMIRA *Not to scale*	SITE LOCATION MAP CITY OF VACAVILLE EASTERLY WWTP SOLANO COUNTY	N W E S

ATTACHMENT C – FLOW SCHEMATIC



ATTACHMENT D –STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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 C.F.R. § 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).)

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

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations section 122.48 requires that all NPDES permits specify monitoring and reporting requirements. Water Code Sections 13267 and 13383 also authorize the Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements, which implement the federal and state regulations.

I. GENERAL MONITORING PROVISIONS

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

B. Chemical, bacteriological, and bioassay analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the Discharger, analyses performed by a non-certified 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
--	**INF-001**	Treatment plant influent, at headworks.
001	**EFF-001**	Discharge from the treatment plant at the last connection through which waste can be admitted into the outfall at the effluent sample monitoring station: 38º, 20', 43" N, Latitude; 121º, 54', 05" W, Longitude for grab and composite sampling; and at the end of chlorine contact: 38º, 20', 43" N, Latitude; 121º, 54', 10" W, Longitude, for disinfection efficiency (i.e. total coliform organisms)
	RSW-001	Old Alamo Creek, at Leisure Town Road.
	RSW-002	Old Alamo Creek, 1200 feet downstream (on the east side of Lewis Rd) from the point of discharge 001.
	RSW-003	New Alamo Creek at Lewis Rd, 6000 ft upstream of Old Alamo-New Alamo confluence.
	RSW-004	New Alamo Creek at the Brown-Alamo Dam, 2000 ft downstream of Old Alamo-New Alamo confluence.
	RGW-001	Monitoring Well #1
	RGW-002	Monitoring Well #2
	RGW-003	Monitoring Well #3
	RGW-004	Monitoring Well #4
	RGW-005	Monitoring Well #5
	BIO-001	Biosolids.
	SPL-001	Water Supply

III. INFLUENT MONITORING REQUIREMENTS

A. Monitoring Location INF-001

1. The Discharger shall monitor influent to the facility at INF-001 as follows:

Table E-2. Influent Monitoring

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

[1] 24-hour flow proportional composite

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor effluent from the Easterly WWTP when discharging to Old Alamo Creek at EFF-001 as follows:

Table E-3. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method and (Minimum Level, units), respectively
Flow	mgd	Meter	Continuous	
Total Residual Chlorine[1]	mg/L	Meter	Continuous	
Turbidity[2]	NTU	Meter	Continuous	
Temperature	°F	Meter	Continuous	
pH	pH units	Meter	Continuous	
BOD 5-day 20°C	mg/L	24-hr Composite[6]	5 days/week	
Total Suspended Solids	mg/L	24-hr Composite[6]	5 days/week	
Total Coliform Organisms	MPN/100 mL	Grab	5 days/week	
Settleable Solids	mL/L	Grab	1/day	
Dissolved Oxygen	mg/L	Grab	1/day	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/day	
Ammonia (as N) [3, 4]	mg/L	Grab	1/week	
Nitrate (as N)	mg/L	Grab	1/week	
Total Dissolved Solids	mg/L	Grab	1/month	
Cyanide, Total[5]	µg/L	Grab	1/month	
Chlorodibromomethane[5]	µg/L	Grab	1/month	
Chloroform[5]	µg/L	Grab	1/month	
Dichlorobromomethane[5]	µg/L	Grab	1/month	
Bromoform	µg/L	Grab	1/month	
Total Trihalomethanes[8]	µg/L	Grab	1/month	
Bis(2-ethylhexyl) phthalate[5]	µg/L	Grab	1/quarter	
Oil and Grease	mg/L	Grab	1/month	
Mercury, total	ng/L	Grab	1/month	[7]
Mercury, methyl	ng/L	Grab	1/month	[7]
Radionuclides		Grab	1/year	

1 Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L. In addition, if a dechlorinating chemical is used to dechlorinate the effluent, this chemical shall be monitoring continuously.

2 Turbidity monitoring only required from 1 May through 31 October. (Turbidity monitoring is not required until after construction of filtration facilities.)

3 Concurrent with biotoxicity monitoring

4 Report as total.

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

6 24-hour flow proportioned composite

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

8 Total Trihalomethanes includes the sum of bromoform, chlorodibromomethane, dichlorobromomethane, and chloroform.

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 monthly 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 EFF-001.

3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*).

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition, and its subsequent amendments or revisions. 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 flow proportional 24-hour composites 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-001 sampling location, as identified in the Monitoring and Reporting Program. If no upstream water is available, or if Old Alamo Creek water demonstrates acute or chronic toxicity, laboratory water maybe used.

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, and its subsequent amendments or revisions.

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

7. *Dilutions* – For regular chronic toxicity testing it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent. For accelerated and/or TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-4, below. The receiving water control shall be used as the diluent (unless the receiving water is toxic).

   If the receiving water is toxic, laboratory control water may be used as the diluent, in which case, the receiving water should still be sampled and tested to provide evidence of its toxicity.

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.a.iii).

Table E-4. 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 $100/LC_{50}$, $100/EC_{25}$, $100/IC_{25}$, and $100/IC_{50}$, as appropriate.

      b. The statistical methods used to calculate endpoints;

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

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

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

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

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

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

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

VI. LAND DISCHARGE MONITORING REQUIREMENTS (NOT APPLICABLE)

VII. RECLAMATION MONITORING REQUIREMENTS (NOT APPLICABLE)

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001, RSW-002, RSW-003, and RSW-004

1. The Discharger shall monitor the receiving waters at RSW-001, RSW-002, RSW-003, and RSW-004 as follows:

Table E-5. Receiving Water Monitoring Requirements-

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow[1]	cfs	Meter[2]	1/week	
Temperature	°F (°C)	Grab	1/week	
pH	Standard Units	Grab	1/week	
Dissolved Oxygen	mg/L	Grab	1/week	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/week	

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Turbidity	NTUs	Grab	1/week	
Total Dissolved Solids	mg/L	Grab	1/month	

[1] Flow monitoring only required in New Alamo Creek, upstream of the confluence with Old Alamo Creek.
[2] Estimate of receiving water flow, recorded for each day of sample collection. Use nearby gauging station, if available.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations RSW-001 and RSW-002 and RSW-003 and RSW-004. Attention shall also be given to the presence or absence of:

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

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

C. Monitoring Location RGW-001 thru RGW-005

1. Groundwater grab samples shall be collected from all groundwater monitoring wells. Prior to sampling, the wells should be pumped until the temperature, specific conductivity, and pH have stabilized to ensure representative samples. The Discharger shall monitor groundwater at RGW-001, RGW-002, RGW-003, RGW-004, and RGW-005 as follows:

Table E-6. Receiving Water Monitoring Requirements-Groundwater Wells

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Depth to Groundwater	feet	Grab	Quarterly	
Groundwater Elevation[1]	feet	Grab	Quarterly	
pH	pH units	Grab	Quarterly	
Electrical Conductivity @ 25°C	µmhos/cm	Grab	Quarterly	
TDS	mg/L	Grab	Quarterly	
Fecal Coliform Organism	MPN/100ml	Grab	Quarterly	
Nitrate (as N)	mg/L	Grab	Quarterly	
Ammonia, Total (as NH_4)	mg/L	Grab	Quarterly	

[1] Groundwater elevation shall be used to calculate the direction and gradient of groundwater flow. Elevations shall be measured to the nearest one-tenthof a foot from mean sea level. The groundwater elevation shall be measured prior to purging the wells.

Prior to construction or destruction of any groundwater monitoring wells, plans and specifications for groundwater monitoring wells shall be submitted to the Regional Board staff for review and approval. Wells shall comply with requirements of the Department of Water Resources. Installation and/or destruction of groundwater

monitoring wells are permitted through the Solano County Department of Environmental Management.

IX. OTHER MONITORING REQUIREMENTS

A. Biosolids-Monitoring Location BIO-001

1. A composite sample of sludge shall be collected annually at Monitoring Location BIO-001 in accordance with EPA'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).

2. A composite sample of sludge shall be collected when sludge is removed from the ponds for disposal in accordance with USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the metals listed in Title 22.

3. 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.

4. Upon removal of sludge, the Discharger shall submit characterization of sludge quality, including sludge percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of sludge 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 sludge samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in USEPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989.

B. Municipal Water Supply

1. **Monitoring Location SPL-001**

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

Table E-7. Municipal Water Supply Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Dissolved Solids	mg/L	Grab	1/quarter	
Electrical Conductivity @ 25°C[1]	µmhos/cm	Grab	1/quarter	
Standard Minerals[2]	mg/L	Grab	1/year	

[1] If the water supply is from more than one source, the EC shall be reported as a weighted average and include copies of supporting calculations.

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

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Upon written request of the Regional Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Regional Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Regional Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986.

5. **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 (± 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.

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

   a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

   b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

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. Monitoring results shall be submitted to the Regional Water Board by the **first day** of the second month following sample collection. Quarterly and annual monitoring

results shall be submitted by the **first day of the second month following each calendar quarter, semi-annual period, and year**, respectively.

3. In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized in such a manner to illustrate clearly whether the discharge complies with waste discharge requirements. The highest daily maximum for the month, monthly and weekly averages, and medians, and removal efficiencies (%) for BOD and Total Suspended Solids, shall be determined and recorded as needed to demonstrate compliance.

4. With the exception of flow, all constituents monitored on a continuous basis (metered), shall be reported as daily maximums, daily minimums, and daily averages; flow shall be reported as the total volume discharged per day for each day of discharge.

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

6. 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.

7. SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

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

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

Table E-8. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	First day of calendar month following permit effective date	All	Submit with monthly SMR
Hourly	First day of calendar month following permit effective date	Hourly	Submit with monthly SMR
Daily	First day of calendar month following permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	Submit with monthly SMR
Weekly	First day of calendar month following permit effective date	Sunday through Saturday	Submit with monthly SMR
Monthly	First day of calendar month following permit effective date	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
Quarterly	Closest of January 1, April 1, July 1, or October 1 after (or on) first day of calendar month following permit effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 of same year August 1 of same year November 1 of same year February 1 of next year
Semiannually	Closest of January 1 or July 1 after (or on) first day of calendar month following permit effective date	January 1 through June 30 July 1 through December 31	August 1 of same year February 1 of the next year
Annually	January 1 after (or on) first day of calendar month following permit effective date	January 1 through December 31	February 1 of the next year

C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit 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.

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

Standard Mail	FedEx/UPS/ Other Private Carriers
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

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

D. Other Reports

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

Table E-9. Reporting Requirements for Special Provisions Progress Reports

Special Provision	Reporting Requirements
Electrical Conductivity (EC) and pH Study (Special Provisions VI.C.2.b)	**1 June**, annually**,** after approval of work plan until final compliance

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. This does not apply to online analyzers used for continuous monitoring.

3. The Discharger's sanitary sewer system collects wastewater using sewers, pipes, pumps, and/or other conveyance systems and directs the raw sewage to the wastewater treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Sanitary sewer overflows are prohibited by this Order. All violations must be reported as required in Standard Provisions. Facilities (such as wet wells, regulated impoundments, tanks, highlines, *etc*.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage facilities.

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

   a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.

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

c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration. Flow meters must be certified by an independent company.

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.

5. **Annual Pretreatment Reporting Requirements.** The Discharger shall submit annually a report to the Regional Water Board, with copies to US EPA Region 9 and the State Water Board, describing the Discharger's pretreatment activities over the previous 12 months. In the event that the Discharger is not in compliance with any conditions or requirements of this Order, including noncompliance with pretreatment audit/compliance inspection requirements, then the Discharger shall also include the reasons for noncompliance and state how and when the Discharger shall comply with such conditions and requirements.

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

   a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling, or grab samples, as appropriate, 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 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 a 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 non-priority pollutants which may be causing or contributing to Interference, Pass-Through or adversely impacting sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR 136 and amendments thereto.

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

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

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

   i. complied with baseline monitoring report requirements (where applicable);
   ii. consistently achieved compliance;
   iii. inconsistently achieved compliance;
   iv. significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
   v. complied with schedule to achieve compliance (include the date final compliance is required);
   vi. did not achieve compliance and not on a compliance schedule; and
   vii. compliance status unknown.

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

This quarterly reporting requirement shall commence upon issuance of this Order.

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

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

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

   i. Warning letters or notices of violation regarding the industrial users' apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations.
   ii. Administrative orders regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
   iii. Civil actions regarding the industrial users' noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
   iv. Criminal actions regarding the industrial users noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations.
   v. Assessment of monetary penalties. For each industrial user identify the amount of the penalties.
   vi. Restriction of flow to the POTW.
   vii. Disconnection from discharge to the POTW.

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

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

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

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

and the

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

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

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

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	**5A480105002**
Discharger	City of Vacaville
Name of Facility	Easterly Wastewater Treatment Plant
Facility Address	6040 Vaca Station Road
	Elmira, CA 95625
	Solano County
Facility Contact, Title and Phone	Mr. David Tompkins, Assistant Public Works Director, (707) 469-6400
Authorized Person to Sign and Submit Reports	Mr. David Tompkins, Assistant Public Works Director
Mailing Address	650 Merchant Street, Vacaville, Ca 95688
Billing Address	SAME as mailing
Type of Facility	POTW
Major or Minor Facility	Major
Threat to Water Quality	Category 1
Complexity	Category A
Pretreatment Program	Y
Reclamation Requirements	N/A
Facility Permitted Flow	15 mgd Average Dry Weather Flow (ADWF)
Facility Design Flow	15 mgd (ADWF)
Watershed	Vaca Mountains
Receiving Water	Old Alamo Creek and New Alamo Creek
Receiving Water Type	Tributaries to the Sacramento-San Joaquin Delta

A. The City of Vacaville (hereinafter Discharger) is the owner and operator of the Easterly Wastewater Treatment Plant (hereinafter Facility), a POTW.

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

B. The Facility discharges wastewater to Old Alamo Creek tributary to New Alamo Creek, tributary to the Sacramento-San Joaquin River Delta, all waters of the United States, and is currently regulated by Order 5-01-044 which was adopted on 15 March 2001 and expired on 1 March 2006. The terms and conditions of the current Order have been automatically continued and remain in effect until new Waste Discharge Requirements and NPDES permit are adopted pursuant to this Order.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on 1 September 2005. Site visits were conducted on 30 November 2006 and 22 August 2007, to observe operations and collect additional data to develop permit limitations and conditions.

II. FACILITY DESCRIPTION

The Discharger provides sewerage service to the City of Vacaville and for the unincorporated community of Elmira and serves a population of approximately 96,735. The Facility's average dry weather flow (ADWF) design capacity is 15 mgd.

A. Description of Wastewater and Biosolids Treatment or Controls

The Facility consists of two parallel treatment plants, the existing North Plant and the newly constructed South Plant. The treatment system at the North Plant consists of bar screens, grit removal, primary clarifiers, activated sludge aeration basins, and secondary clarifiers with nitrification capacity of 6 mgd ADWF. The new South Plant that was commissioned in November 2004 consists of headworks, primary sedimentation basins, aeration basins, secondary circular clarifiers, a chlorination contact chamber and dechlorination facilities. Secondary effluent from the North Plant is disinfected at the South Plant. Sludge is anaerobically digested, dewatered using a belt filter press. Dried biosolids are hauled to the B&J Landfill. The North Plant was designed for 10 mgd ADWF but derated to 6 mgd because of nitrification capacity, and 27 mgd daily peak wet weather flow (PWWF) with primary effluent by-pass to disinfection for flows above 17 mgd. Improvements to the North Plant were completed December 2006. The new South Plant was designed to handle 9 mgd ADWF. Therefore, the designed flow for both plants in operation is 15 mgd ADWF and 55 mgd PWWF with primary effluent by-pass to disinfection for flows above 39 mgd (as limited by secondary treatment capabilities).

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 19, T6N, R1E, MDB&M, as shown in Attachment B (Figure B-1), a part of this Order.

2. Treated municipal wastewater is discharged at Discharge Point 001 to Old Alamo Creek, at a point Latitude 38°, 20', 48" N and longitude 121°, 54', 06". Old Alamo Creek is a water of the United States, and *tributary to New Alamo Creek, which is tributary to a section of Ulatis Creek found within the legal boundaries of the Sacramento-San Joaquin River Delta*.

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

After adoption of the previous NPDES permit, Order No. 5-01-044, by the Regional Water Board in March 2001, the Discharger petitioned the adopted Order to the State Water Board. The State Water Board held a three day hearing September 2001 and adopted Water Quality Order WQO 2002-0015 in October 2002. The major issues of the petition were regarding the tributary rule and beneficial use designations; beneficial uses of Old Alamo Creek; Sources of Drinking Water Policy (State Water Board Resolution 88-63); disinfection requirements; bypass prohibition; and effluent, groundwater, and receiving water limitations. The Discharger and the California Association of Sanitation Agencies challenged WQO 2002-0015 in Superior Court.

WQO 2002-0015 stayed the copper effluent limit, chloroform effluent limit, receiving water temperature limit, receiving water ammonia limit, groundwater limitations, and compliance schedules for tertiary limits, until the Regional Water Board acted on the remand. Additionally, WQO 2002-0015 stayed for three years the compliance schedules for limits based on the COLD and MUN beneficial uses in Old Alamo Creek, including the effluent and receiving water dissolved oxygen limits, final biochemical oxygen demand effluent limits, chlorodibromomethane effluent limits, dichlorobromomethane effluent limits, and chloroform effluent limits.

The Discharger's challenge to Order No. 5-01-044 is still being litigated in the Contra Costa County Superior Court, *City of Vacaville v. State Water Resources Control Board* (Contra Costa County Case No. CIV MSN 03-0956).

Since the adoption of Order No. 5-01-044, the Basin Plan was amended to de-designate the COLD and MUN beneficial uses in Old Alamo Creek. This Order reflects the changes in beneficial uses of Old Alamo Creek. The Discharger, Regional Water Board, State Water Board, and USEPA are working to determine the beneficial uses of New Alamo Creek. In addition, the Discharger has requested the State Water Board to grant an exception to implementation of the dichlorobromomethane and chlorodibromomethane CTR criteria pursuant to Section 5.3 of the State Implementation Policy.

Effluent limitations/Discharge Specifications contained in the existing Order for discharges from 001 (Monitoring Location EFF-001) and representative monitoring data from the term of the previous Order are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From 1/2004 – To 5/2007)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
BOD*	mg/L	20	25	30	6.0		16
TSS*	mg/L	30	45	50	7.6		39.8
Total Coliform*	MPN/100ml	23[1]		240			500
Dichlorobromomethane*	µg/L			23			43
Chlorodibromomethane*	µg/L			8.4			14
Chloroform*	µg/L			39			73
Oil & Grease	mg/L	10		15	<5	<5	<5
Antimony	µg/L			6.0			0.7

* - Interim limitations, final limitations and/or compliance schedules stayed.

1. For total coliform, the effluent limitation is a monthly median

D. Compliance Summary

The City of Vacaville previously accrued MMPs that were assessed by ACLC No. R5-2004-0522 and ACLC No. 5-01-0521 for violations from 1 January 2000 to 31 March 2004 in the total amount of eighty-four thousand dollars ($84,000). These cases are now closed. Most violations were for chlorine residual, settleable solids, total coliform and pH limits. Since April 2004, the City accrued similar effluent violations. Also, the influent monitoring structure had not operated for over three years in violation of the permit requirement to monitor influent flows. The influent monitoring structure, a flume, was installed as part of the recent construction project to expand the treatment plant but was not providing consistent flow measurement. The flume was modified and has been providing influent flow measurements since October 2007. The City has provided documentation that these interim modifications have resulted in accurate, reliable and repeatable influent flow measurements. Further, the City has taken appropriate actions to ensure that permanent modifications will be completed by end of summer 2008.

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)

See Limitations and Discharge Requirements - Findings, Section II.E.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans**. The Regional Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised August 2006), for the Sacramento and San Joaquin River Basins* (Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Board Resolution No. 88-63 requires that, with certain exceptions, the Regional Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. The beneficial uses of the Sacramento-San Joaquin River Delta which includes the section of Ulatis Creek downstream of the discharge are municipal and domestic supply, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, water contact recreation, other non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, wildlife habitat, and navigation.

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

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

This Order contains Effluent Limitations requiring a tertiary level of treatment, or equivalent, which is necessary to protect the beneficial uses of the receiving water. The Regional Water Board has considered the factors listed in CWC section 13241 in establishing these requirements, as discussed in more detail in the Fact Sheet, Attachment F, Section IV.C.3.t.

2. **Thermal Plan.** The State Water Board adopted a *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for surface waters. However, the immediate receiving waters do not fall under an estuary or enclosed bay, therefore the thermal plan is not applicable to this discharge.

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

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

4. **Antidegradation Policy.** Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water (surface and groundwater) quality be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the State and federal antidegradation policies. As discussed in detail in the Fact Sheet (Attachment F, Section IV.D.4.) the discharge is consistent with the antidegradation provisions of 40 CFR section 131.12 and State Water Board Resolution 68-16.

5. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at title 40, Code of Federal Regulations section 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the

previous permit, with some exceptions in which limitations may be relaxed. Compliance with the Anti-Backsliding requirements is discussed in Section IV.D.3.

6. **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) (EPCRKA) 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 Regional Water Board has adopted a numeric receiving water objective for arsenic, barium, copper, cyanide, iron, manganese, silver, and zinc that apply to the Sacramento-San Joaquin River Delta, including Ulatis Creek and Cache Slough to which Old and New Alamo Creeks are tributary. The most recent toxic chemical data report does not indicate any reportable off-site releases or discharges to the collection system for this facility. Therefore, a reasonable potential analysis based on information from Emergency Planning and Community Right to Know Act (EPCRA) cannot be conducted. Based on information from EPCRA, there is no reasonable potential to cause or contribute to an excursion above any numeric water quality objectives included within the Basin Plan or in any State Water Board plan, so no effluent limitations are included in this permit pursuant to CWC section 13263.6(a).

   However, as detailed elsewhere in this Order, available effluent data indicate that effluent concentrations of cyanide have a reasonable potential to cause or contribute to an excursion above numeric water quality objectives for cyanide included within the Basin Plan and an effluent limitation is established for this constituent based on federal and state laws and regulations.

7. **Stormwater 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 stormwater program and are obligated to comply with the Federal Regulations.

8. **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 1972 Clean Water Act, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On July 25, 2003 USEPA gave final approval to California's 2002 Section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment.*" The listing for the northwestern portion of the Delta as a WQLS includes: Chloropyrifos, DDT, Diazinon, Electrical Conductivity, Exotic Species, Mercury, Group A Pesticides, and Unknown Toxicity. Since Old Alamo and New Alamo Creeks are immediate tributaries to the Delta and provide very little to no dilution, effluent limitations are included in this Order for all of these constituents that are detected in the discharge. Diazinon and Chloropyrifos have consistently shown as non-detect in the effluent and therefore no effluent limitations are included in this Order, but monitoring for these and the other 303(d) listed constituents are included in the Constituent Study required by this Order.

2. **Total Maximum Daily Loads.** The US EPA requires the Regional Water Board to develop total maximum daily loads (TMDLs) for each 303(d) listed pollutant and water body combination. A TMDL for mercury in the Delta will be adopted by the Regional Board in 2008. All other TMDLs do not expect to be adopted within the next year.

E. Other Plans, Polices and Regulations

1. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), section 20005 *et seq*. (hereafter Title 27). The exemption, pursuant to Title 27 CCR section 20090(a), is 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 described herein are associated with a municipal wastewater treatment plant.

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

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

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

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

The CWA requires point source 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) EPA'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 requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, discoloration, toxic substances, radionuclides, or taste and odor producing substances that adversely affect beneficial uses. The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The Basin Plan also limits chemical constituents in concentrations that adversely affect surface water beneficial uses. For waters designated as municipal, the Basin Plan specifies that, at a minimum, waters shall not contain concentrations of constituents that exceed Maximum Contaminant Levels (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. *As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal Regulations, 40 CFR 122.41 (m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the Federal Regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the Federal Regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.* However, on 8 May 2003 the State Water Board and Regional Water Board agreed to Stay the bypass prohibition contained in the Discharge Prohibitions of Order 5-01-044 until the Contra Costa County Superior Court considers the Discharger's petition for Writ challenging the prohibition on bypass. Subsequently on 5 September 2003, the Regional Water Board adopted Resolution No. R5-2003-0129, amending Provision F.4 of Order No. 5-01-044, to stay the time schedule until the Court considers the Discharger's Petition for Writ. Therefore, Special Provisions VI.C.5.d. allows the Discharger to bypass of the secondary treatment facilities during wet weather high flow conditions. A compliance schedule to discontinue the bypass practices, pending the resolution of the Court action, is provided in Special Provision VI.C.7.a. of this Order.

B. Technology-Based Effluent Limitations

1. Scope and Authority

Regulations promulgated in section 125.3(a)(1) require technology-based effluent limitations for municipal Dischargers to be placed in NPDES permits based on Secondary Treatment Standards or Equivalent to Secondary Treatment Standards.

The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) established the minimum performance requirements for POTWs [defined in section 304(d)(1)]. Section 301(b)(1)(B) of that Act requires that such treatment works must, as a minimum, meet effluent limitations based on secondary treatment as defined by the USEPA Administrator.

Based on this statutory requirement, USEPA developed secondary treatment regulations, which are specified in Part 133. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of biochemical oxygen demand (BOD_5), total suspended solids (TSS), and pH.

2. Applicable Technology-Based Effluent Limitations

a. **BOD_5 and TSS.** Federal Regulations, 40 CFR, Part 133, establish the minimum weekly and monthly average level of effluent quality attainable by secondary treatment for BOD_5 and TSS. Tertiary treatment is necessary to protect the beneficial uses of the receiving stream and the final effluent limitations for BOD_5 and TSS are based on the technical capability of the tertiary process. BOD_5 is a measure of the amount of oxygen used in the biochemical oxidation of organic matter. The secondary and tertiary treatment standards for BOD_5 and TSS are indicators of the effectiveness of the treatment processes. The principal design parameter for wastewater treatment plants is the daily BOD_5 and TSS loading rates and the corresponding removal rate of the system. In applying 40 CFR Part 133 for weekly and monthly average BOD_5 and TSS limitations, the application of tertiary treatment processes results in the ability to achieve lower levels for BOD_5 and TSS than the secondary standards currently prescribed; the 30-day average BOD_5 and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. In addition to the average weekly and average monthly effluent limitations, a daily maximum effluent limitation for BOD_5 and TSS is included in the Order to ensure that the treatment works are not organically overloaded and operate in accordance with design capabilities. The mass limitations are based on the design flow of 15 mgd. See Table F-3 for final technology-based effluent limitations required by this Order. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. If 85 percent removal of BOD_5 and TSS must be achieved by a secondary treatment plant, it must also be achieved by a tertiary (i.e., treatment beyond secondary level) treatment plant. This Order contains a limitation requiring an average of 85 percent removal of BOD_5 and TSS over each calendar month.

b. **pH.** Federal Regulations, 40 CFR Part 133, also establish technology-based effluent limitations for pH. The secondary treatment standards require the pH of the effluent to be no lower than 6.0 and no greater than 9.0 standard units.

c. **Flow.** The expanded wastewater treatment plant for the City of Vacaville is designed to provide a secondary level of treatment for up to a design average dry weather flow of 15.0 mgd.

Summary of Technology-based Effluent Limitations
Discharge Point 001

Table F-3a. Summary of Technology-based Effluent Limitations – May 1 - October 31

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd	15				
BOD	mg/L[1]	10	15	20		
	lbs/day[2]	1252	1878	2504		
TSS	mg/L[1]	10	15	20		
	lbs/day[2]	1252	1878	2504		
pH[3]					6.0	9.0

[1] The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.
[2] Based on a design average dry weather flow (ADWF) of 15.0 mgd.
[3] More stringent water quality-based effluent limitations for pH have been applied in this Order.

Table F-3b. Summary of Technology-based Effluent Limitations – November 1 – April 30

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd	15				
BOD	mg/L[1]	20	25	30		
	lbs/day[2]	2504	3127	3753		
TSS	mg/L[1]	30	45	50		
	lbs/day[2]	3753	5630	6255		
pH[3]					6.0	9.0

[1] The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.
[2] Based on a design ADWF of 15.0 mgd.
[3] More stringent water quality-based effluent limitations for pH have been applied in this Order.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

As specified in section 122.44(d)(1)(i), permits are required to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels that cause, have reasonable potential to cause, or contribute to an 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.** The Basin Plan does not specifically identify beneficial uses for *Old Alamo Creek and New Alamo Creek*, but does identify present and potential uses for *the Sacramento San Joaquin River Delta (Delta)* to which *Old Alamo Creek*, via *New Alamo Creek*, is tributary. These beneficial uses are as follows: municipal and domestic supply (MUN), irrigation and stock watering agricultural supply (AGR), industrial process (PRO) and service supply (IND), contact (REC-1) and non-contact (REC-2) water recreation, freshwater habitat for both warm (WARM) and cold (COLD) species, migration (MIGR) waters for both warm (striped bass, sturgeon, and shad) and cold water freshwater species (salmon and steelhead), spawning (SPWN) for warm water species (striped bass, sturgeon, and shad), wildlife habitat (WILD), and navigation (NAV). The Basin Plan further states at page II-2.00 that the "…*beneficial uses of any specifically identified water body generally apply to its tributary streams except as provided below:*

• *MUN, COLD, MIGR and SPWN do not apply to Old Alamo Creek (Solano County) from its headwaters to the confluence with New Alamo Creek*."

In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters (except for Old Alamo Creek (Solano County) from its headwaters to the confluence with New Alamo Creek) with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Therefore applicable beneficial uses for Old Alamo Creek include: AGR, REC-1, REC-2, WARM, PRO, IND, and, WILD; and applicable beneficial uses for New Alamo Creek include: MUN, AGR, REC-1, REC-2, COLD, WARM, MIGR, SPWN, PRO, IND, WILD and NAV.

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. The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness, the lower the hardness the lower the water quality criteria. The hardness-dependent metals include cadmium, copper, chromium III, lead, nickel, silver, and zinc. The equation describing the total recoverable regulatory criterion is as follows:

CTR Criterion (expressed as dissolved) = WER x CF x $e^{m[\ln(H)]+b}$ (Equation 1)

Where:

WER = water-effect ratio (default of 1.0 used in this Order)

CF = total-to-dissolved conversion factor

m = criterion-specific constant

H = Hardness

b = criterion-specific constant

The constants "m" and "b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e. acute or chronic).

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, "floating" effluent limitations that are reflective of actual conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. Recent studies indicate that using the receiving water lowest hardness for establishing water quality criteria is not the most protective for the receiving water. The Regional Water Board has evaluated these studies

and concurs that for some parameters the beneficial uses of the receiving water are best protected using the lowest hardness value of the effluent, while for some parameters, the use of both the lowest hardness value of the receiving water and the lowest hardness value of the effluent is the most protective, provided sufficient hardness data for the effluent and receiving water are available.

Because of the non-linearity of the Total Recoverable Criterion equation, the relationship can be either concave downward or concave upward depending on the criterion-specific constants. For those contaminants whereby the regulatory criteria exhibit a concave downward relationship as a function of hardness (e.g. acute and chronic copper, chromium III, nickel, and zinc, and chronic cadmium), use of the lowest recorded effluent hardness for establishment of water quality objectives is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher.

For purposes of calculating WQBELs for hardness dependent metals, the lowest effluent hardness of 125 mg/L as $CaCO_3$ was used, based on 58 samples from January 2003 through November 2007.

c. **Assimilative Capacity/Mixing Zone.** The City completed an effluent dilution analysis, prepared by Flow Science to better assess the fate and dilution of the facility's effluent in its receiving waters. The analysis evaluated the fate and dilution of the effluent under a range of seasonal conditions. Based on results of the dilution dye study, and protective of all scenarios, the minimum dilution available at the confluence of Old Alamo and New Alamo Creeks is 1.1 to 1.0. Therefore, a dilution credit of 1.1 was used in this order when establishing effluent limitations for the protection of MUN at New Alamo Creek. This dilution credit may not be appropriate for long-term human health criteria. Therefore, this Order requires the Discharger to conduct a human health criteria dilution study to re-evaluate the human health dilution credit.

Due to periods of no flow in Old Alamo Creek upstream of the discharge, no dilution has been allowed for setting effluent limitations for protection of beneficial uses applicable to Old Alamo Creek (i.e. AGR, PRO, IND, REC-1, REC-2, WARM, WILD and NAV).

3. Determining the Need for WQBELs

a. CWA section 301 (b)(1) requires NPDES permits to include effluent limitations that achieve technology-based standards and any more stringent limitations necessary to meet water quality standards. Water quality standards include Regional Water Board Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board-adopted standards, and federal standards, including the CTR and NTR. The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical

b. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for cyanide, chlorodibromomethane, total trihalomethanes, dichlorobromomethane, ammonia, nitrate, chlorine residual, electrical conductivity (EC), chloride, and total dissolved solids (TDS). Water quality-based effluent limitations (WQBELs) for these constituents are included in this Order. A summary of the reasonable potential analysis (RPA) for all constituents is provided in Attachment G and a detailed discussion of the RPA for each constituent that required effluent limitations is provided below.

c. The Regional Water Board conducted the RPA in accordance with Section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control.[1] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency.*" Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents. Effluent data from December 2004 through November 2007 was used for the RPA. This dataset represents the quality of the effluent after the Facility was last upgraded. Since Old Alamo Creek frequently has no flow upstream of the discharge, the RPA was conducted using only effluent data for compliance with criteria/objectives protective of the beneficial uses of Old Alamo Creek. For criteria/objectives protective of the MUN beneficial use, which is applicable to New Alamo Creek, receiving water data collected in

[1] See, Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City)

New Alamo Creek, upstream of the confluence with Old Alamo Creek, was used for the RPA.

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

e. **Ammonia.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger currently uses nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. Applying 40 CFR section 122.44(d)(1)(vi)(B), it is appropriate to use USEPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms.

USEPA's *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life*, for total ammonia, recommends acute (1-hour average; criteria maximum concentration) standards based on pH and chronic (30-day average, criteria continuous concentration) standards based on pH and temperature. It also recommends a maximum four-day average concentration of 2.5 times the criteria continuous concentration. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the immediate receiving stream, Old Alamo Creek does not have a beneficial use of cold freshwater habitat, the recommended criteria for waters where salmonids and early life stages are present was not used in the calculation of effluent limitations. USEPA's recommended criteria are show below:

$$CCC_{30-day} = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \times \left(1.45x10^{0.028(25-MAX(T,7))} \right), \text{ and}$$

$$CMC = \left(\frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}} \right),$$

where *T* is in degrees Celsius

Since Old Alamo Creek is an effluent dominated waterbody, acute and chronic ammonia toxicity criteria were calculated using effluent pH and temperature.

The maximum permitted effluent pH is 8.5 as the Basin Plan objective for pH in

the receiving stream is in the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 3.2 mg/L, with salmonids not present.

The 30-day average CCC is calculated using the temperature and pH of the effluent. Using effluent data from January 2005 through November 2007, the CCC (30-day average) was calculated for each day when temperature and pH were measured. The lowest 99.9% 30-day average CCC was 2.56 mg/L during this period. The 4-day average CCC is derived in accordance with the USEPA criteria document as 2.5 times the 30-day CCC. Based on the 30-day average CCC of 2.56 mg/L (as N), the 4-day average CCC that should not be exceeded is 6.40 mg/L (as N).

The Regional Water Board calculates WQBELs in accordance with SIP procedures for non-CTR constituents, and ammonia is a non-CTR constituent. The SIP procedure assumes a 4-day averaging period for calculating the long-term average discharge condition (LTA). However, USEPA recommends modifying the procedure for calculating permit limits for ammonia using a 30-day averaging period for the calculation of the LTA corresponding to the 30-day chronic criterion. Therefore, while the LTAs corresponding to the acute and 4-day chronic criteria were calculated according to SIP procedures, the LTA corresponding to the 30-day chronic criterion was calculated assuming a 30-day averaging period. The lowest LTA representing the acute, 4-day average chronic, and 30-day chronic criteria is then selected for deriving the AMEL and the MDEL. The remainder of the WQBEL calculation for ammonia was performed according to the SIP procedures. This Order contains a final AMEL and MDEL for ammonia of 1.3 mg/L and 3.2 mg/L, respectively, based on USEPA's *National Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life* (see Attachment F, Table F-6 for the WQBEL calculations for ammonia).

f. **Bis (2-ethylhexyl) phthalate.** Bis (2-ethyl-hexyl) phthalate is used primarily as one of several plasticizers in polyvinyl chloride (PVC) resins for fabricating flexible vinyl products. According to the Consumer Product Safety Commission, USEPA, and the Food and Drug Administration, these PVC resins are used to manufacture many products, including soft squeeze toys, balls, raincoats, adhesives, polymeric coatings, components of paper and paperboard, defoaming agents, animal glue, surface lubricants, and other products that must stay flexible and noninjurious for the lifetime of their use. The State MCL for bis(2 ethylhexyl)phthalate is 4 µg/l and the USEPA MCL is 6 µg/l. The NTR criterion for Human health protection for consumption of water and aquatic organisms is 1.8 µg/l and for consumption of aquatic organisms only is 5.9 µg/l.

The MEC for bis (2-ethyl-hexyl) phthalate was 53 µg/L, based on 12 samples. Three of the 12 samples detected bis(2-ethylhexyl)phthalate above the water quality criteria of 1.8 µg/l. Early 2007, the Discharger began using a clean

technique to collect and analyze for bis(2-ethylhexyl) phthtalate. Since using the clean technique bis(2-ethylhexyl) phthalate has not been detected in the effluent. Due to the uncertainty in the data from samples collected prior to 2007, a RPA can not be made for bis (2-ethylhexyl) phthalate. This Order requires that the Discharger continue to sample for bis(2-ethylhexyl) phthalate using a clean technique. If the results show concentrations exceeding water quality criteria, this Order may be reopened to establish new effluent limitations.

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

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

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

h. **Cyanide.** The CTR includes maximum 1-hour average and 4-day average cyanide criteria of 22 µg/L and 5.2 µg/L, respectively, for the protection of freshwater aquatic life. The MEC for cyanide was 17 µg/L, based on 37 samples. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for cyanide. No dilution is allowed due to periods of no flow in Old Alamo Creek. An AMEL and MDEL for cyanide of 4.1 µg/L and 8.9 µg/L, respectively, are included in this Order based on CTR criteria for the protection of freshwater aquatic life (See Attachment F, Table F-5 for WQBEL calculations). The Discharger is unable to immediately comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the statistical methods for calculating interim effluent limitations described in Attachment F, Section IV.D.1., an interim performance-based maximum daily limitation of 21 µg/L was calculated.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit.*" Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …"*(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable*." The Discharger provided this information on 15 February 2007. The new water quality-based effluent limitations for cyanide become effective on **18 May 2010**.

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

The Discharger has been collecting data since June 2001 on influent and effluent cyanide concentrations. The majority of the results for influent cyanide are non-detect. Similar results at other wastewater treatment plants also show no influent cyanide concentrations, but effluent concentrations exceed water quality objectives. The Discharger is studying whether the chlorination/dechlorination of effluent produces compounds that interfere with the cyanide laboratory analysis that create false positives and/or whether cyanides are released in the treatment process. Should the Discharger provide new information based on its cyanide study that warrants a change to the cyanide effluent limitations, this Order may be reopened to modify or remove the effluent limitations for cyanide.

i. **Chlorodibromomethane*.*** The CTR includes a chlorodibromomethane criterion of 0.41 µg/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 chlorodibromomethane was 14 µg/L, based on 36 samples. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for chlorodibromomethane.

No chlorodibromomethane has been detected in the receiving water. However, the lowest detection level of the receiving water chlorodibromomethane concentrations at RSW-003 is <0.5 µg/L, which is greater than the CTR criterion. Therefore, no assimilative capacity for chlorodibromomethane is available and the dilution credit of 1.1 could not be used in developing WQBELs for chlorodibromomethane for the protection of the applicable MUN use in New

Alamo Creek. This Order includes an AMEL and MDEL for chlorodibromomethane of 0.41 µg/L and 0.86 µg/L, respectively, based on the CTR criterion for the protection of human health (See Attachment F, Table F-5 for WQBEL calculations).

The Discharger is unable to immediately comply with these new effluent limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the statistical methods for calculating interim effluent limitations described in Attachment F, Section IV.D.1., an interim performance-based maximum daily limitation of 14 µg/L was calculated.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit.*" Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …"*(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable*." The Discharger provided this information on 15 February 2007. The new water quality-based effluent limitations for chlorodibromomethane become effective on **18 May 2010**.

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

j. **Dichlorobromomethane*.*** The CTR includes a dichlorobromomethane criterion of 0.56 µg/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 dichlorobromomethane was 43 µg/L, based on 36 samples. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for dichlorobromomethane.

No dichlorobromomethane has been detected in the receiving water. The lowest detection level of the receiving water dichlorobromomethane concentrations at RSW-003 is <0.5 µg/L; therefore, some assimilative capacity for

dichlorobromomethane is available. The minimum available dilution credit of 1.1 was used in developing effluent limitations for dichlorobromomethane for the protection of the applicable MUN use at New Alamo Creek. This Order includes an AMEL and MDEL for dichlorobromomethane of 0.63 µg/L and 0.99 µg/L, respectively, based on the CTR criterion for the protection of human health (See Attachment F, Table F-5 for WQBEL calculations).

The Discharger is unable to immediately comply with these new effluent limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a Discharger to achieve immediate compliance with a CTR criterion. Using the statistical methods for calculating interim effluent limitations described in Attachment F, Section IV.D.1., an interim performance-based maximum daily limitation of 43 µg/L was calculated.

Section 2.1 of the SIP provides that: "*Based on an existing discharger's request and demonstration that it is infeasible for the discharger to achieve immediate compliance with a CTR criterion, or with an effluent limitation based on a CTR criterion, the RWQCB may establish a compliance schedule in an NPDES permit.*" Section 2.1, further states that compliance schedules may be included in NPDES permits provided that the following justification has been submitted: …"*(a) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (b) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable*." The Discharger provided this information on 15 February 2007. The new water quality-based effluent limitations for dichlorobromomethane become effective on **18 May 2010**.

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

k. **Electrical Conductivity. (see Subsection s. Salinity)**

l. **Mercury.** The current USEPA Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion (of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 CFR Part 131, USEPA acknowledges that the human health criteria may not be protective

of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through use of the State's narrative criterion.*" In the CTR, USEPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. The MEC for mercury was 0.0059 µg/L. The northwestern portion of the Delta, which includes Ulatis Creek downstream of the discharge has been listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act because of mercury. Mercury bioaccumulates in fish tissue and, therefore, discharge of mercury to the receiving water is likely to contribute to exceedances of the narrative toxicity objective and impacts on beneficial uses. Because the northwestern portion of the Delta, which contains Ulatis creek downstream of the discharge has been listed as an impaired water body for mercury, the discharge must not cause or contribute to increased mercury levels. The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the receiving stream background water quality exceeds an applicable criterion or objective. This Order carries forward the interim performance-based mass Effluent Limitation of 2.1 lbs/year for mercury from the previous Order No. 5-01-044. This limitation is based on maintaining the mercury loading at the current level until a total maximum daily load (TMDL) can be established and/or USEPA develops mercury standards that are protective of human health.

m. **Nitrite and Nitrate.** Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Nitrate and nitrite are known to cause adverse health effects in humans. The California DHS has adopted Primary MCLs at Title 22 of the California Code of Regulations (CCR), Table 64431-A, for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22 CCR, Table 64431-A, also includes a primary MCL of 10mg/L for the sum of nitrate and nitrite, measured as nitrogen.

USEPA has developed a primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, USEPA has developed Drinking Water Standards (10 mg/L as Primary Maximum Contaminant Level) and Ambient Water Quality Criteria for protection of human health (10 mg/L for non-cancer health effects).

Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to cause or contribute to an in-stream excursion above the Primary MCLs for nitrite and nitrate. However, the MEC for nitrite was <0.050 mg/L, based on 18 samples , and the MEC for nitrate was 27 mg/L, based on 36 samples. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the MCL for nitrate, but not nitrite.

The minimum available dilution credit of 1.1 was used in developing the end-of-pipe effluent limitation for nitrate for the protection of the applicable MUN use at New Alamo Creek. Additionally, nitrate was detected at a concentration of 3.9 mg/L in New Alamo Creek upstream from the discharge. Therefore, some assimilative capacity is available. An AMEL of 17 mg/L for nitrate is included in this Order based on protection of the Basin Plan's narrative chemical constituents objective to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply. Based on the sample results in the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for nitrate are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after July 1, 2000. Therefore, a compliance time schedule for compliance with the nitrate effluent limitations is established in TSO No. R5-2007-0056 in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.

n. **Pathogens**. The beneficial uses of Old Alamo Creek include, water contact recreation, and agricultural irrigation supply, and the downstream flow of Old Alamo Creek from the Facility is typically dominated by the treated wastewater discharge, absent the discharge, is an ephemeral stream. There is relatively little, if any, dilution provided from the upstream flow during the dry season, certainly most of the time, less than 20:1 dilution. Further downstream, Old Alamo Creek runs into New Alamo Creek. The beneficial uses of New Alamo Creek include MUN, AGR, and REC-1 and REC-2. Based on dilution studies conducted in November 2003, March 2004, and July 2004, the minimum dilution available in New Alamo Creek on July 2004, when the beneficial uses of AGR and REC-1 or REC-2 would be more prevalent, was found to be 3.3:1, and on November 2003 and March 2004 the available minimum dilutions were even less, 1.1:1 and 1.4:1 respectively**.** To protect these beneficial uses, the Regional Water Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to Title 22 tertiary standards (filtered), or equivalent, from 1 May to 31 October to protect contact recreational and food crop irrigation uses.

The California Department of Health Services (DHS) has developed reclamation criteria, CCR, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title

22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. As coliform organisms are living and mobile, it is impracticable to quantify an exact number of coliform organisms and to establish weekly average limitations. Instead, coliform organisms are measured as a most probable number and regulated based on a 7-day median limitation.

Title 22 also requires that recycled water used as a source of water supply for non-restricted recreational impoundments be disinfected tertiary recycled water that has been subjected to conventional treatment. A non-restricted recreational impoundment is defined as "*…an impoundment of recycled water, in which no limitations are imposed on body-contact water recreational activities.*" Title 22 is not directly applicable to surface waters; however, the Regional Water Board finds that it is appropriate to apply an equivalent level of treatment to that required by DPH's reclamation criteria because the receiving water is used seasonally for irrigation of agricultural land and for contact recreation purposes, generally from 1 May to 31 October. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops and/or for body-contact water recreation. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is capable of reliably meeting a turbidity limitation of 2 nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system such that virus removal is impaired would normally result in increased particles in the effluent, which result in higher effluent turbidity. Turbidity has a major advantage for monitoring filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations. Therefore, to ensure compliance with the DHS recommended Title 22 disinfection criteria, weekly average effluent limitations are impracticable for turbidity.

The Discharger evaluated the public health risks of its wastewater effluent and presented the revised final report, "Evaluation of Public Health Risks Concerning Infectious Disease Agents Associated with Exposure to Treated Wastewater Discharged by the City of Vacaville, Easterly Wastewater Treatment Plant", August 2001 (Revised January 2002). Based on a review and the report, the Department of Public Health, North Coastal Region, Drinking Water Field

Operations Branch, Division of Drinking Water and Environmental Management, in a letter dated 22 March 2002, concluded tertiary filtration is appropriate and necessary during the dry weather period for public health protection. However, during winter months when the beneficial uses of agricultural irrigation and contact recreational activities do not occur, secondary treatment with disinfection to 23 MPN is adequate for public health protection. Therefore, Title 22 disinfection criteria for a peak hourly dry weather flow (27 mgd) is required to protect agricultural irrigation and contact recreation during the dry weather period. The Department of Health Services (now the Department of Public Health) decided the dry months for the Vacaville area are May 1 through October 31st. From November 1 through April 30th, secondary treatment to 23 MPN/100mL monthly median is adequate protection of the beneficial uses.

This Order contains effluent limitations and a tertiary level of treatment, or equivalent, from 1 May – 31 October, to protect the beneficial uses of the receiving water. In accordance with CWC section 13241, the Regional Water Board has considered the following:

i. The past, present and probable future beneficial uses of the receiving streams (Old and New Alamo Creeks) which include, agricultural irrigation, agricultural stock watering, industrial process water supply, industrial service supply, body contact water recreation, other non-body contact water recreation, warm freshwater aquatic habitat, warm fish migration habitat, warm spawning habitat, and wildlife habitat. And the following additional uses for New Alamo Creek, municipal and domestic supply, cold freshwater aquatic habitat, and cold fish migration habitat.

ii. The environmental characteristics of the hydrographic unit, including the quality of the available water, will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities that would otherwise be unsafe according to recommendations from the California Department of Public Health (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 Discharger has estimated that the increased level of treatment will cost approximately $40 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, which includes prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary

treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment specific for those pollutants.

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

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

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

The establishment of tertiary limitations has been previously required for this discharge; however, the State Board stayed the compliance schedule. Therefore, a new schedule for compliance with the tertiary treatment requirements is included in Special Provisions VI.C.7.a. of this Order. This Order provides interim effluent limitations for BOD, TSS, and total coliform, which the Discharger is currently capable of meeting. Full compliance with the final effluent limitations for BOD, TSS, total coliform, and turbidity are not required by this Order until **1 May 2015**.

o. **pH.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "…*pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*" Effluent Limitations for pH are included in this Order based on the Basin Plan objectives for pH.

p. **Salinity.** The discharge contains total dissolved solids (TDS), chloride, sulfate, and electrical conductivity (EC). These are water quality parameters that are indicative of the salinity of the water. Their presence in water can be growth limiting to certain agricultural crops and can affect the taste of water for human

consumption. There are no USEPA water quality criteria for the protection of aquatic organisms for these constituents. The Basin Plan contains a chemical constituent objective that incorporates State MCLs, contains a narrative objective, and contains numeric water quality objectives for EC, TDS, Sulfate, and Chloride.

Table F-4. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal[1]	Secondary MCL[3]	Effluent	
			Avg	Max
EC (µmhos/cm)	Varies[2]	900, 1600, 2200	992	1320
TDS (mg/L)	Varies[2]	500, 1000, 1500	636	690
Sulfate (mg/L)	N/A	250, 500, 600	89	101
Chloride (mg/L)	Varies[2]	250, 500, 600	102	122

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

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

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

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

   Chloride concentrations in the effluent ranged from 82 mg/L to 122 mg/L, with an average of 102 mg/L, for 18 samples collected by the Discharger. The effluent exceeds the agricultural water quality goal of 106 mg/L.

ii. **Electrical Conductivity (EC)**. The secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum. The agricultural water quality goal, that would apply the narrative chemical constituents objective, is 700 µmhos/cm as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 700 µmhos/cm agricultural water quality goal is intended to prevent reduction in crop yield, i.e. a restriction on use of water, for salt-sensitive crops, such as beans, carrots, turnips, and strawberries. These

crops are either currently grown in the area or may be grown in the future. Most other crops can tolerate higher EC concentrations without harm, however, as the salinity of the irrigation water increases, more crops are potentially harmed by the EC, or extra measures must be taken by the farmer to minimize or eliminate any harmful impacts.

The average effluent EC was 992 µmhos/cm, with a range from 647 µmhos/cm to 1320 µmhos/cm for 1095 samples. The discharge exceeds the applicable water quality objectives for EC.

The City completed a Salinity Source Control Study Phase I Report, dated 1 December 2002 and a Salinity Source Control Study Final Effectiveness Assessment Report, dated 1 March 2006, as required by NPDES Order No. 5-01-044. The City uses three sources of municipal drinking water; the North Bay Aqueduct, Lake Berryessa, and groundwater. The weighted average EC of the municipal source water since 2001 is 402 µmhos/cm. The City's studies show that the greatest contributor of salt is residential use, followed by industry and commercial facilities. The City estimates that approximately 6000 pounds/day of salt is discharged to the WWTP from residential water softeners.

To reduce salinity, the City has examined and implemented the following:

1) Public education - Public education actions included information sheets and surveys distributed to residents, meetings with water softener vendors & dentists, and presentations to community groups and high school students. After 3 years there is no statistically significant change in the salinity from residential wastewater.
2) Local Ordinance development - Local ordinance development evaluated restricting residential use of water softeners. AB 334 amends state law on water softeners and restricts local agencies from developing ordinances to eliminate water softeners without salinity requirements in its NPDES permit. The City cannot take action on a local ordinance until the Regional Water Board adopts salinity requirements.
3) Alternative Water Source - The City plans to decrease use of groundwater and increase use of Delta water for source water. Eventually, salinity would decrease. No formal actions have been taken toward this goal.
4) Source identification and Control Studies. The major discharging industries are pharmaceutical, California Medical Facility for inmates, and California State Prison. All of these industries conducted source control and process analyses to reduce salts. Additional reduction from industries is not expected.

The effluent EC has not statistically decreased since implementing the source reduction plan. The City is required to evaluate and update the implementation plan and continue efforts to reduce salinity.

iii. **Sulfate**. The secondary MCL for sulfate is 250 mg/L as recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. Sulfate concentrations in the effluent ranged from 72 mg/L to 101 mg/L, with an average of 89 mg/L, for 18 samples collected by the Discharger. The effluent does not exceed the secondary MCL recommended level of 250 mg/L.

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

The average TDS effluent concentration was 636 mg/L and a ranged from 570 mg/L to 690 mg/L for 36 samples collected by the Discharger. These concentrations exceed the applicable water quality objectives.

v. **Salinity Effluent Limitations.** TDS, chloride, sulfate, and EC are all measures of the salt content (salinity) in the water. The effluent has a reasonable potential to cause or contribute to an in-stream excursion of the recommended agricultural water quality goal for EC, TDS, and chloride. The salinity level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. An EC level of 700 µmhos/cm is generally considered to present no risk of salinity impacts to crops. However, many crops are grown successfully with higher salinities. This Order requires the discharger to conduct a study that recommends site-specific numeric values for EC that provide reasonable protection for the agricultural supply use designation in Old and New Alamo Creek and Ulatis Creek. In the interim, this Order includes a performance-based effluent limitation for EC of 1,320 µmhos/cm, as a monthly average, to maintain the salinity of the discharger at current levels. Compliance with the effluent limitation for EC will adequately control chloride and TDS , therefore, no effluent limitations are included for chloride and TDS. However, monitoring is required for these constituents to ensure that EC is a satisfactory indicator parameter for salinity. The performance-based interim effluent limitation was calculated as indicated in Section IV.E.1 below. Furthermore, this Order

encourages the Discharger develop measures to reduce the salinity of its discharge with a salinity goal of water supply EC plus 500 µmhos/cm and a requirement to submit annual progress reports. Finally, this Order requires that the Discharger update and implement its pollution prevention plan for salinity in accordance with CWC section 13263.3(d)(3).

q. **Settleable Solids.** For inland surface waters, the Basin Plan states that "[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses." This Order contains average monthly and average daily effluent limitations for settleable solids.

Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order. A daily maximum effluent limitation for settleable solids is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities.

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

MUN is a designated beneficial use of New Alamo and Ulatis Creeks. However, there are no known active drinking water intakes in Old Alamo, New Alamo and Ultais Creeks for several miles downstream of the discharge, and chloroform is a non-conservative pollutant. Therefore, to protect the MUN use of the receiving waters, the Regional Water Board finds that, in this specific circumstance, application of the USEPA MCL for total THMs for the effluent is appropriate, as long as the receiving water does not exceed the OEHHA cancer potency factor's equivalent receiving water concentration at a reasonable distance from the outfall. Although chloroform can be volatized, traces are found 12 miles below

the discharge at the abandoned Vallejo Pumping Station in Cache Slough, once the drinking water supply for the City of Vallejo, at levels of 2.4 µg/L according to a draft August 2007 report titled, *Technical Memorandum No. 4 Water Quality Characteristics of Alamo Creek, Ulatis Creek and Cache Slough*. Typically, in NPDES permits, the OEHHA public health goal is not used to base effluent limitations when there are no active drinking water intakes in the vicinity of the discharge, because chloroform is a volatile organic constituent that will degrade in the environment. If there are no intakes near the discharge, the MCL for total THMs is used with receiving water monitoring for chloroform to determine if the constituent is degrading in the environment before reaching any drinking water intakes.

The MEC for total THMs was 113 µg/L, based on 36 samples. Chloroform samples collected over the same period contained a maximum concentration of 79 µg/L and an average concentration of 45 µg/L. Therefore, total THMs in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above the USEPA primary MCL for total THMs. No chloroform has been detected in the background receiving water (New Alamo Creek). The lowest detection level of the receiving water chloroform concentrations at RSW-003 is <0.5 µg/L; therefore, some assimilative capacity for chloroform is available. The minimum available dilution credit of 1.1 was used in developing of the WQBEL for total THMs for the protection of the applicable MUN use at New Alamo Creek, resulting in a WQBEL of 167 µg/L as an average annual effluent limitation for total THMs. However, the Regional Water Board finds that based on Facility performance, the Discharger can reliably meet a more stringent performance-based effluent limit. Therefore, granting of the dilution credit could allocate an unnecessarily large portion of the receiving water's assimilative capacity for human health water quality criteria and could violate the Antidegradation Policy. For this reason, a performance-based effluent limitation is included in this order that is calculated in the same way that interim limits are calculated (see Section IV.E.1 below). A maximum daily effluent limitation for total THMs of 122 µg/L is included in this Order.

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

4. WQBEL Calculations

a. Effluent limitations for CTR constituents cyanide, chlorodibromomethane, and dichlorobromomethane were calculated in accordance with section 1.4 of the SIP. Effluent limitations for non-CTR constituents ammonia, trihalomethanes, and nitrate, were also calculated following the same procedures as prescribed in the SIP. The following paragraphs describe the methodology used for calculating effluent limitations. Effluent limitations for organochlorine pesticides and chlorine residual were calculated equal to the applicable water quality objectives.

b. **Effluent Limitation Calculations.** In calculating maximum effluent limitations, the effluent concentration allowance (ECA) is calculated as follows:

$$ECA_{acute} = CMC + D(CMC - B)$$
$$ECA_{chronic} = CCC + D(CCC - B)$$

For the human health, agriculture, or other long-term criterion/objective, the ECA is calculated as follows:

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

where:

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

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

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

CMC = criteria maximum concentration (one-hour average)

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

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

D = dilution credit

B = maximum receiving water concentration

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).

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

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

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

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

Water quality-based effluent limitations were calculated for CTR constituents: cyanide, chlorodibromomethane, dichlorobromomethane, as shown in Table F-5. The calculations for the WQBELs for ammonia are shown in Table F-6.

Table F-5. WQBEL calculations for CTR constituents

Description	Cyanide		Chlorodibromomethane	Dichlorobromomethane
Effluent Concentrations				
Sample Dates - Begin	Dec-05		Dec-05	Dec-05
Sample Dates - End	Nov-07		Nov-07	Nov-07
At least 80% of data ND?	No		No	No
Sample Count	37		36	36
MEC (µg/l)	17		14	43
Mean (µg/l)	6.30		3.9	17.4
Std. Deviation (µg/l)	4.4		2.6	6.0
Coeff of Variation (CV) (µg/l)	0.69		0.67	0.34
Background Concentrations				
Sample Dates - Begin	None		Jan 2004	Jan 2004
Sample Dates - End	None		Jul-07	Jul-07
Sample Count	0		25	25
Max Background (µg/l)	None		0.5	0.5
Avg Background (µg/l)	None		0.5	0.5
Criteria	acute	chronic	HH(w+org)	HH(w+org)
NTR/CTR Criteria (µg/l)	22	5.2	0.41	0.56
Basin Plan Objective (µg/l)	N/A	N/A	N/A	N/A
Translator	1.000	1.000	N/A	N/A
Criteria (µg/l, total recoverable)	22	5.2	0.41	0.56
Effluent Limit Calculations				
Dilution Credit	0	0	0[7]	1.1
ECA[(1)](µg/l)	22	5.2	0.41	0.626
σ^2	0.40		0.37	0.11
σ_4^2	0.12		0.11	0.03
ECA Multiplier [(2)]	0.282	0.481	N/A	N/A
Long-Term Average (LTA)	6.2	2.5	N/A	N/A
AMEL Multiplier [(3)(4)]	6	1.65	1.62	1.31
AMEL	**6**	**4.1**	**0.41**	**0.63**
MDEL Multiplier [(5)]	6	3.55	3.14	2.06
MDEL	**6**	**8.9**	**0.86**	**0.99**

(1) ECA calculated per Section 1.4.B, Step 2 of SIP. This allows for the consideration of dilution.
(2) Acute and Chronic ECA Multipliers calculated at 99th percentile per Section 1.4.B, Step 3 of SIP.
(3) Assumes sampling frequency n is equal or less than 4.
(4) The probability basis for AMEL is 95th percentile per Section 1.4.B, Step 5 of SIP
(5) The probability basis for MDEL is 99th percentile per Section 1.4.B, Step 5 of SIP
(6) Not applicable as chronic criterion LTA is more stringent
(7) No assimilative capacity = no dilution

Table F-6. WQBEL calculations for Ammonia

	Acute	Chronic (30-day)	Chronic (4-day)
Criteria (mg/L) [1]	3.20	2.56	6.40
Dilution Credit	No Dilution	No Dilution	No Dilution
ECA[3]	3.20	2.56	6.40
ECA Multiplier	0.23	0.70	0.41
LTA	0.72	1.78	2.61
AMEL Multiplier (95th%)	1.4	(2)	(2)
AMEL (mg/L)[4][5]	**1.3**	(2)	(2)
MDEL Multiplier (99th%)	4.4	(2)	(2)
MDEL (mg/L)[6]	**3.2**	(2)	(2)

(1) USEPA Ambient Water Quality Criteria
(2) Limitations based on acute LTA [Acute LTA < Chronic (30-day) LTA < Chronic (4-day)]
(3) ECA calculated per Section 1.4.B, Step 2 of SIP. This allows for the consideration of dilution.
(4) Assumes sampling frequency n is equal or less than 4.
(5) The probability basis for AMEL is 95th percentile per Section 1.4.B, Step 5 of SIP
(6) The probability basis for MDEL is 99th percentile per Section 1.4.B, Step 5 of SIP

Summary of Water Quality-based Effluent Limitations
Discharge Point 001

Table F-7. Summary of Water Quality-based Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Ammonia (as N) (total recoverable)	mg/L	1.3	--	3.2	--	--
	lbs/day	163	--	400	--	--
Cyanide (total recoverable)	µg/L	4.1	--	8.9	--	--
Chlorodibromomethane	µg/L	0.41	--	0.86	--	--
Total Trihalomethanes[2]	µg/L	167[3]	--	--	--	--
Dichlorobromomethane	µg/L	0.63	--	0.99	--	--
Nitrate (as N) (total recoverable)	mg/L	17	--	--	--	--
Turbidity[4] 1 May – 31 October	NTU	--	--	2	--	10
Total Coliform 1 May – 31 October	MPN/100mL	--	2.2[5]	23[6]	--	240
Total Coliform 1 November – 30 April	MPN/100mL	23[7]	--	--	--	240
Acute Toxicity[8]	% Survival					

1 Based upon a design treatment capacity of 15 mgd) ADWF
2 The total of bromoform, chloroform, dichlorobromomethane and chlorodibromomethane.
3 Annual average. More stringent performance-based effluent limitation included in this Order.

4 Effluent turbidity shall not exceed 2 NTU, as a daily average; 5 NTU, more than 5% of the time within a 24-hour period, and 10 NTU at any time. No turbidity effluent limits from 1 November – 30 April.
5 Expressed as a 7-day median.
6 Not to be exceeded more than one time in any 30-day period.
7 Expressed as a 30-day median.
8 Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than 70%, minimum for any one bioassay; and 90%, median for any three consecutive bioassays.

5. Whole Effluent Toxicity (WET)

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

a. **Acute Aquatic Toxicity.** The Basin Plan 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). The Basin Plan also states that, "…*effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate*…". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUc."* Accordingly effluent limitations for acute toxicity have been included in this Order as follows:

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

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

b. **Chronic Aquatic Toxicity.** Based on quarterly whole effluent chronic toxicity testing performed by the Discharger from January 2004 through July 2007, the discharge has reasonable potential to cause or contribute to an to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

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

Numeric chronic WET effluent limitations have not been included in this order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[2] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012*, "In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits."* The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

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

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

perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if a pattern of effluent toxicity has been demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations.

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

Mass-based effluent limitations were calculated based upon the permitted average dry weather flow allowed in Section IV.A.1.g of the Limitations and Discharge Requirements.

2. Averaging Periods for Effluent Limitations.

Title 40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable. However, for toxic pollutants and pollutant parameters in water quality permitting, the US EPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order utilizes maximum daily effluent limitations in lieu of average weekly effluent limitations for ammonia, cyanide, chlorodibromomethane, and dichlorobromomethane, and a 1-hr average and 4-day average for chlorine residual as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD, TSS, pH, 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.

3. Satisfaction of Anti-Backsliding Requirements.

Some effluent limitations and monitoring requirements in this Order are not as stringent as the previous Order. As discussed below this relaxation is consistent with the anti-backsliding requirements of the CWA and federal regulations.

Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD). Order No. 5-01-044 established WQBELs for DO and BOD, which were more stringent than technology based requirements and equivalent to tertiary treatment because of the need to comply with receiving water limitations for DO protective of the COLD beneficial use in Old Alamo Creek. A Basin Plan amendment was subsequently adopted removing the beneficial uses of COLD and MUN from Old Alamo Creek. This change in beneficial uses changed the applicable DO receiving water limitation and thus removed the need for such stringent limitations of BOD and the need for an effluent limitation for DO since the Discharger also demonstrated that it can comply with the new applicable receiving water DO objective.

Copper, Antimony, and Arsenic. Order No. 5-01-044 established effluent limitations for copper, antimony, and arsenic. The facility has gone through an expansion and a new treatment plant has been in operation since December 2005. Review of monthly monitoring data from 2004 thru 2007 shows that the effluent does not have reasonable potential to cause or contribute to an exceedance of the water quality objectives for copper, antimony, and arsenic. These previous effluent limitations are not included in this Order based on new information.

Chloroform. Order No. 5-01-44 required effluent limitation for chloroform based on the National Ambient Water Quality Criteria for water and fish consumption (5.7 µg/L). However, a typographical error was made in the permit with the effluent limit stated as 0.57 µg/L, rather than 5.7 µg/L. USEPA has reserved the National Ambient Water Quality Criteria for water and fish for chloroform and is developing new criteria. Until criteria are developed specifically for chloroform, the federal MCL for total trihalomethanes (chloroform, bromoform, dichlorobromomethane and chlorodibromomethane) will be used to calculate the WQBEL for totlal trihalomethanes, which is an average annual effluent limitation of 167 µg/L, using the minimum available dilution credit of 1.1:1. However, since the Facility is capable of meeting a more stringent performance-based effluent limitation for Total THMs, this Order includes a MDEL of 122 µg/L, to ensure compliance with antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16.

Dichlorobromomethane and Chlorodibromomethane. The MUN designation for Old Alamo has been removed and the City has since completed a dilution evaluation for compliance in New Alamo Creek. Based on the Discharger's dilution study, the minimum dilution in New Alamo Creek at the confluence with Old Alamo Creek is 1.1:1. This dilution credit has been used when calculating the new effluent limitation for dichlorobromomethane and chlorodibromomethane, which has resulted in less stringent effluent limitations.

Oil and Grease. Monitoring data since March 2001 has consistently shown results of non-detect for Oil and Grease. Based on the consistent non-detect results no effluent limit for Oil and Grease is required and the monitoring frequency for Oil and Grease has been reduced from a weekly basis to a monthly basis.

Thallium Monitoring Requirements. The previous Order required that thallium be monitored on a monthly basis. The monitoring requirement for thallium has been removed from this Order, because thalium in the effluent does not have reasonable potential to cause or contribute to an exceedance of the water quality objective for thalium.

These changes have been made based on new information and are consistent with the antibacksliding regulations. The changes are also consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Any impact on existing water quality will be insignificant.

4. Satisfaction of Antidegradation Policy

Section 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality 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.

Surface Water. This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with water quality-based effluent limits (WQBELs) where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards.

This Order includes effluent limitations that will require Title 22 tertiary treatment or equivalent to achieve compliance, which is a high level of treatment that is considered best practicable treatment or control (BPTC) for most constituents in the wastewater and will result in attaining water quality standards applicable to the discharge. The Order includes less stringent effluent limitations for some constituents. However, as discussed in detail in Section IV.D.3., above, the new limitations are fully protective of the beneficial uses of the receiving water and are in compliance with federal anti-backsliding regulations.

Groundwater. Groundwater limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The Basin Plan designates all groundwater, including the shallow groundwater in the vicinity of the

Facility, to have the beneficial uses of MUN, AGR, IND and PRO. The Discharger utilizes a lined aerated lagoon for storage of stabilized solids from the anaerobic digesters and a lined filtrate storage pond for storage of all the water removed from the biosolids by the belt presses. The Facility's impact to groundwater quality was one of the issues associated with the previous Order and the State Water Board's subsequent water quality Order No. 2002-0015. As part of its order, the State Water Board stated that "…*without more information on well location and some explanations of the changes in nitrate-N, TDS, and pH concentrations…"* it was *"…unable to draw meaningful conclusions from the monitoring data.*" As a result of the uncertainty, the State Water Board remanded the issue back to the Regional Water Board for further clarification and to give the Discharger the opportunity to respond. The Discharger in response to this directive, hired the services of Luhdorff & Scalmanini to conduct a shallow groundwater quality investigation. Based on the results of the investigation, submitted as part of the Report of Waste Discharge, it appears that groundwater was minimally impacted due to the facility's operation and that operational changes, like decommissioning of old storage ponds and the lining of any new storage ponds, have resulted in a steady decline in impact. However, the groundwater is also influenced by Old Alamo Creek where the discharge is located. An August 2005 shallow groundwater evaluation by Luhdorff and Scalmanini concluded Old Alamo Creek influences groundwater quality. Groundwater monitoring wells #3 and #5 show nitrate concentrations above the primary MCL of 10 mg/l since 2002. The report indicates the rising nitrate concentrations in monitoring well #3 are the result of temporary mobilization of soil nitrate from nearby construction excavation work and most recent data shows a decrease in nitrate concentration. The nitrate concentrations may also be the result of nitrifying the wastewater and increasing nitrate concentration in the effluent. Regardless, the nitrate concentrations are above both water quality objectives and background groundwater monitoring wells. Therefore, the City must immediately and definitely determine if the nitrate in the groundwater is the result its actions or inactions. Best Practical Treatment Control (BPTC) will be required if the increased groundwater nitrate concentrations are due to the City.

Appropriate groundwater limitations have been included in this order at the water quality objective for protection of the MUN and AGR beneficial uses of groundwater.

The permitted surface water and groundwater discharges are consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution 68-16. Compliance with the requirements of this Order will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

Summary of Final Effluent Limitations
Discharge Point 001

Table F-8. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
BOD 5-day 20°C 1 May – 31 October	mg/L	10	15	20	--	--
	lbs/day[1]	1252	1878	2504	--	--
Total Suspended Solids 1 May – 31 October	mg/L	10	15	20	--	--
	lbs/day[1]	1252	1878	2504	--	--
BOD 5-day 20°C 1 November – 30 April	mg/L	20	25	30	--	--
	lbs/day[1]	2504	3129	3755	--	--
Total Suspended Solids 1 November – 30 April	mg/L	30	45	50	--	--
	lbs/day[1]	3755	5633	6259	--	--
Turbidity[4] 1 May – 31 October	NTU	--	--	2	--	10
Total Coliform 1 May – 31 October	MPN/100mL	--	2.2[5]	23[6]	--	240
Total Coliform 1 November – 30 April	MPN/100mL	23[7]	--	--	--	240
Settleable Solids	ml/L	0.1	--	0.2	--	--
pH	std units	--	--	--	6.5	8.5
Ammonia (as N) (total recoverable)	mg/L	1.3	--	3.2	--	--
	lbs/day[1]	163	--	400	--	--
Cyanide (total recoverable)	µg/L	4.1	--	8.9	--	--
Chlorodibromomethane	µg/L	0.41	--	0.86	--	--
Total Trihalomethanes[3]	µg/L	--	--	122	--	--
Dichlorobromomethane	µg/L	0.63	--	0.99	--	--
Nitrate (as N) (total recoverable)	mg/L	17	--	--	--	--
Acute Toxicity[8]	% Survival					

1 Based upon a design treatment capacity of 15 mgd (ADWF).
2 Non Detect
3 Total Trihalomethanes include chlorodibromomethane, bromoform, dichlorobromomethane and chloroform.
4 Effluent turbidity shall not exceed 2 NTU, as a daily average; 5 NTU, more than 5% of the time within a 24-hour period, and 10 NTU at any time. No turbidity effluent limits from 1 November – 30 April.
5 Expressed as a 7-day median.
6 Not to be exceeded more than one time in any 30-day period.
7 Expressed as a 30-day median.
8 Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than 70%, minimum for any one bioassay; and 90%, median for any three consecutive bioassays.

E. Interim Effluent Limitations

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

   The interim limitations for cyanide, chlorodibromomethane, and dichlorobromomethane, and the final effluent limitations for total trihalomethanes, in this Order are based on the current treatment plant performance. In developing the performance-based effluent limitations, 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 performance-based effluent limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. However if the MEC is greater than this calculated interim limitation then the MEC becomes the applicable performance-based effluent 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, performance-based effluent limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum performance-based effluent limitation (TSD, Table 5-2).

   The Regional Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

   Table 6 summarizes the calculations of the interim effluent limitations for cyanide, chlorodibromomethane, and dichlorobromomethane:

Table F-9. Interim Effluent Limitation Calculation Summary

Parameter	Units	MEC	Mean	Std. Dev.	# of Samples	Calculated Interim Limitation	Interim Limitation
Cyanide	µg/L	17	6.3	4.4	37	21	21
Chlorodibromomethane	µg/L	14	3.9	2.6	36	12	14
Dichlorobromomethane	µg/L	43	16.7	5.8	36	27	43
Electrical Conductivity	µmhos/cm	1320	992	57	1095	1180	1320

2. **BOD, TSS, Turbidity, and Total Coliform Organisms.** The establishment of tertiary limitations was previously required for this discharge; however, this requirement was stayed in State Water Board WQO 2002-0015, therefore, a schedule for compliance with the tertiary treatment requirements is included in this Order. This Order provides interim effluent limitations for BOD, TSS, and total coliform based on the existing effluent limitations required by Order No. 5-01-044, which the Discharger is currently capable of meeting. Full compliance with the final effluent limitations for BOD, TSS, total coliform, and turbidity are not required by this Order until 1 May 2015.

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

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

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Regional Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "*[t]he numerical and narrative water quality objectives*

define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses." The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains Receiving Surface Water Limitations based on the Basin Plan numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, and electrical conductivity.

Numeric Basin Plan objectives for bacteria, dissolved oxygen, pH, temperature, and turbidity are applicable to this discharge and have been incorporated as Receiving Surface Water Limitations. Rational for these numeric receiving surface water limitations are as follows:

a. ***Bacteria.** The Basin Plan includes a water quality objective that "*[I]n water designated for contact recreation (REC-1), the fecal coliform concentration based on a minimum of not less than five samples for any 30-day period shall not exceed a geometric mean of 200/100 ml, nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400/100 ml*." Numeric Receiving Water Limitations for bacteria are included in this Order and are based on the Basin Plan objective.

b. ***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."* Receiving Water Limitations for biostimulatory substances are included in this Order and are based on the Basin Plan objective.

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."* Receiving Water Limitations for color are included in this Order and are based on the Basin Plan objective.

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."* Receiving Water Limitations for chemical constituents are included in this Order and are based on the Basin Plan objective.

e. ***Dissolved Oxygen.** The Old Alamo Creek has been designated as having the beneficial use of warm freshwater aquatic habitat (WARM). For water bodies found outside the legal boundaries of the Delta and designated as having WARM as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 5.0 mg/L of dissolved oxygen. Since the beneficial use of WARM applies to Old Alamo Creek, a receiving water limitation of 5.0 mg/L for dissolved oxygen is included in this Order applicable to Old Alamo Creek.

The New Alamo Creek has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies found outside the legal boundaries of the Delta and designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/L of dissolved oxygen. Since the beneficial use of COLD applies to New Alamo Creek, a receiving water limitation of 7.0 mg/L for dissolved oxygen is included in this Order.

For surface water bodies outside of the Delta, the Basin Plan includes the water quality objective that "…*the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95 percentile concentration shall not fall below 75 percent of saturation.*" This objective was included as a receiving water limitation in this Order.

f. ***Floating Material**. The Basin Plan includes a water quality objective that *"[W]ater shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses."* Receiving Water Limitations for floating material are included in this Order and are based on the Basin Plan objective.

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."* Receiving Water Limitations for oil and grease are included in this Order and are based on the Basin Plan objective.

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. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses*" This Order includes receiving water limitations for both pH range and pH change for New Alamo Creek but only pH range for Old Alamo Creek because due to site specific conditions of Old Alamo Creek (no upstream natural background water), a pH change would not be appropriate.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream (New Alamo Creek). Since there is no technical information available that indicates that aquatic organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and an annual averaging period for determining compliance with the 0.5 receiving water pH limitation is included in this Order.

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…"* Receiving Water Limitations for radioactivity are included in this Order and are based on the Basin Plan objective.

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"* Receiving Water Limitations for suspended sediments are included in this Order and are based on the Basin Plan objective.

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."* Receiving Water Limitations for settleable material are included in this Order and are based on the Basin Plan objective.

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."* Receiving Water Limitations for suspended material are included in this Order and are based on the Basin Plan objective.

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."* Receiving Water Limitations for taste- or odor-producing substances are included in this Order and are based on the Basin Plan objective.

o. ***Temperature.** Old Alamo Creek has designated the beneficial use WARM. New Alamo Creek has the beneficial uses of both COLD and 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 5ºF above natural receiving water temperature*." The 2006 "Characterization of Water Body and Reach-specific Seasonal Temperature Regimes Within the Alamo Creek Watershed and Recommended Temperature Limitations for the City of Vacaville's Easterly Wastewater Treatment Plant" reported adult Fall-run Chinook salmon occasionally stray into New Alamo Creek. The adult salmon are

constrained by physical barriers from continuing up-stream and the lack of suitable habitat precludes successful spawning and reproduction in the lower reaches. The study recommended seasonal temperatures that are protective of adult salmon. Thus for New Alamo Creek, this Order includes receiving water limitation based on the Basin Plan objective and additional proposed seasonal receiving water temperature limitations based on the temperature study conducted by the Discharger, which was approved by National Marine Fisheries Services on 20 November2006, to be protective of New Alamo Creek beneficial uses of COLD and MIGR.

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."* Receiving Water Limitations for toxicity are included in this Order and are based on the Basin Plan objective.

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*."

A numeric Receiving Water Limitation for turbidity is included in this Order but only for New Alamo Creek and is based on the Basin Plan objective for turbidity. Due to site-specific conditions at Old Alamo Creek (no upstream natural background water), a turbidity receiving water limitation is not appropriate.

B. Groundwater

1. The Discharger utilizes a lined aerated lagoon for storage of stabilized solids from the anaerobic digesters and a lined filtrate storage pond for storage of the filtrate removed from the biosolids by the belt presses. Although these facilities are lined, they have the potential to impact groundwater. Furthermore, an August 2005 shallow groundwater evaluation by Luhdorff and Scalmanini concluded Old Alamo Creek influences groundwater quality. The 2005 report states, "*Treated effluent wastewater is discharged to Old Alamo Creek and flows eastward along the northern facility boundary. The creek was identified as a major source of groundwater recharge and contributor to near-surface groundwater levels in the area*

(Investigation of Shallow Groundwater, Elmira Project Final Report, August 1988 [LSCE, 1988]). The EWWTP's wastewater effluent discharge constitutes the greatest flow component of the creek;" The Discharger has been collecting quarterly groundwater samples in accordance with the previous Order. A summary of the groundwater data from May 2006 – October 2007 (7 samples) is provided below in Table F-10.

Table F-10. Shallow Groundwater Monitoring

Groundwater Monitoring Well	Fecal Coliform (MPN/100 mL)	pH (Std Units) Min – Max	TDS (mg/L) Min – Max (Avg)	Nitrate as N (mg/L) Min – Max (Avg)	Depth to GW (ft) Min – Max (Avg)
MW-1	<2	7.1-7.4	482-578 (526)	1.9-3.7 (2.7)	8.8-13.6 (11.4)
MW-2	<2	7.2-7.4	570-616 (594)	0.3-0.7 (0.55)	11.4-15.4 (13.4)
MW-3	<2	7.0-7.3	968-1090 (1033)	8.0-15.7 (12.0)	11.2-14.6 (13.2)
MW-4	<2	7.4-7.7	576-606 (590)	5.1-8.3 (6.3)	2.8-5.8 (5.0)
MW-5	<2	7.3-7.6	862-1030 (972)	7.2-10.1 (9.1)	3.6-8.9 (7.6)

2. The beneficial uses of the underlying ground water are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.

3. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective 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 also 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 some other beneficial use.

4. Total dissolved solids, which were found to be present in the wastewater at an average concentration of 623 mg/L, have the potential to degrade groundwater quality at this site because there is little ability for attenuation in the shallow permeable vadose zone beneath this facility. According to Ayers and Westcot, dissolved solids can cause yield or vegetative growth reductions of sensitive crops if present in excess of 450 mg/L in irrigation water, thereby impairing agricultural use of the water resource. The applicable water quality objective to protect the agricultural use from discharges of total dissolved solids is the narrative Chemical

Constituents objective, which is applied following the "Policy of Application of Water Quality Objectives" in the Basin Plan. A numerical groundwater limitation of 450 mg/L for total dissolved solids, based on Ayers and Westcot, is appropriate to apply the narrative Chemical Constituents objective to protect the unrestricted agricultural use of groundwater in the absence of information to support a less protective limit.

5. Nitrate, which was found to be present in the wastewater at an average concentration of up to 27 mg/L as nitrogen, has the potential to degrade groundwater quality because there is little ability for attenuation in the shallow permeable vadose zone beneath the Facility. Furthermore, groundwater monitoring data show nitrate concentrations above the primary MCL of 10 mg/L in monitoring wells MW-3 and MW-5. The Chemical Constituents objective prohibits concentrations of chemical constituents in excess of California MCLs in groundwater that is designated as municipal or domestic supply. The California primary MCL for nitrate is equivalent to 10 mg/L as nitrogen, and groundwater beneath the facility is designated as municipal or domestic supply. It is therefore appropriate to adopt a numerical groundwater limitation of 10 mg/L for nitrate as nitrogen to implement the Chemical Constituents objective to protect the municipal and domestic use of groundwater.

6. pH, which ranged 6.4-7.9 standard units in the domestic wastewater, has the ability to degrade groundwater quality at this site because there is little potential for buffering in the shallow permeable vadose zone. According to Ayers and Westcot, pH less than 6.5 or greater than 8.4 can cause yield or vegetative growth reductions of sensitive crops if present in irrigation water, thereby impairing agricultural use of the water resource. The applicable water quality objective to protect the agricultural use from discharges of substances that affect pH is the narrative Chemical Constituents objective, which is applied following the "Policy of Application of Water Quality Objectives" in the Basin Plan. A numerical groundwater limitation range of 6.5 to 8.4 for pH, based on Ayers and Westcot, is relevant and appropriate to apply the narrative Chemical Constituents objective to protect unrestricted agricultural use of groundwater in the absence of information to support a less protective limit.

7. Ammonia has the potential to degrade groundwater quality because there is little ability for ammonia attenuation in the shallow permeable vadose zone at this site. According to Amoore and Hautala[3], who evaluated odor of ammonia in water, the odor threshold for ammonia in water is 1.5 mg/L (as NH_4). These authors studied the concentration of chemicals in air that caused adverse odors and then calculated the concentration in water that would be equivalent to that amount in air. Therefore, it is appropriate to use the data contained therein to apply the narrative Tastes and Odors water quality objective. Concentrations that exceed this value can impair the municipal or domestic use of the resource by causing adverse odors. The applicable water quality objective to protect the municipal and domestic use from discharges of

[3] Amoore, J.E. and E. Hautala, *Odor as an Aid to Chemical Safety: Odor Thresholds Compared with Threshold Limit Values and Volatilities for 214 Industrial Chemicals in Air and Water Dilution*, Journal of Applied Toxicology, Vol. 3, No. 6, (1983).

odor producing substances is the narrative Tastes and Odors objective, which is applied following the "Policy of Application of Water Quality Objectives" in the Basin Plan. A numerical groundwater limitation of 1.5 mg/L for ammonia (as NH_4), based on Amoore and Hautala, is relevant and appropriate to apply the narrative Tastes and Odors objective to protect the municipal and domestic use of groundwater.

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

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Section 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

1. 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).

Previous required monitoring of antimony, arsenic, thallium, 4,4'-DDD, and 303(d) pesticides in the influent was only necessary to determine if any of these constituents had reasonable potential to exceed a water qualtiy objective and if so how much source control would be necessary. Substantial data has been collected and this monitoring is no longer necessary except as part of priority pollutants monitoring, thus it was removed from the influent monitoring requirements.

B. Effluent Monitoring

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

2. The previous Order required monitoring of antimony, arsenic, thallium, and copper in the effluent and has been removed because monitoring data collected since 2002 shows that these constituents do not have a reasonable potential to exceed a water quality objective and thus there are not effluent limitations for these constituents. Monitoring for these constituents is still required by the constituent study. Limits for cyanide, dichlorobromomethane, chlorodibromomethane, and total trihalomethanes

dictate these constituents be monitored on a monthly basis. Additionally, bis(2-ethylhexyl) phthalate is required to be monitored quarterly using clean techniques to confirm there is no reasonable potential to violate any water quality criteria.

3. Effluent Oil & Grease monitoring has been changed from a weekly frequency to a monthly frequency. The discharger asked for a reduction in monitoring frequency, because monitoring for this parameter since 2001 has consistently been non-detect.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** 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

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

2. Groundwater

a. Section 13267 of the California Water Code states, in part, *"(a) A Regional Water Board, in establishing…waste discharge requirements… may investigate the quality of any waters of the state within its region*" and *"(b) (1) In conducting an investigation…, the Regional Water Board may require that any person who… discharges… waste…that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the Regional Water Board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports*." The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the Regional Water Board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports. The Monitoring and Reporting Program (Attachment E) is issued pursuant to California Water Code Section 13267. The groundwater monitoring and reporting program required by this Order and the Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.

b. Monitoring of the groundwater must be conducted to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring must, at a minimum, require a complete assessment of groundwater impacts including the vertical and lateral extent of degradation, an assessment of all wastewater-related constituents which may have migrated to groundwater, an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution No. 68-16. Economic analysis is only one of many factors considered in determining best practicable treatment or control. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater above background, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality has been or may be degraded by the discharge, this Order may be reopened and specific numeric limitations established consistent with Resolution 68-16 and the Basin Plan.

c. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program. The groundwater monitoring reports are necessary to evaluate impacts to waters of the State to assure protection of beneficial uses and compliance with Regional Board plans and policies, including Resolution 68-16. Evidence in the record includes effluent monitoring data that indicates the presence of constituents that may degrade groundwater and surface water.

E. Other Monitoring Requirements

1. Biosolids Monitoring

Biosolids monitoring is required to ensure compliance with the biosolids disposal requirements (Special Provisions VI.C.6.a.). Biosolids disposal requirements are imposed pursuant to 40 CFR Part 503 to protect public health and prevent groundwater degradation.

2. Water Supply Monitoring

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

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

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

Section 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with section 123.25, this Order omits federal conditions that address enforcement authority specified in sections 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

a. **New or revised Water Quality Standards and/or new information**. This Order may be reopened based on new or revised water quality standards and/or new information as described in 40 CFR section 122.62.

b. **Mercury.** If a TMDL program is adopted, this Order shall be reopened and the total mercury interim mass effluent limitation modified (higher or lower) or an effluent concentration limitation for total and/or methyl mercury imposed.

c. **Pollution Prevention.** This Order requires the Discharger prepare and implement pollution prevention plans following CWC section 13263.3(d)(3) for cyanide, chlorodibromomethane, dichlorobromomethane, salinity, and mercury. This reopener provision allows the Regional Water Board to reopen this Order for addition and/or modification of effluent limitations and requirements for these constituents based on a review of the pollution prevention plans.

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. **TMDLs.** TMDLs may be established for mercury, diazinon, chloropyrifos and EC for the northwestern Delta. Should TMDLs with waste allocations be established for any of these constituents, this Order may be reopened to include final numeric limitations.

f. **EC and pH Study.** This Order requires that the Discharger conduct a study to evaluate numeric site-specific water quality objectives for EC and pH that are adequately protective of the AGR beneficial use. This Order may be reopened based on the results of the study.

g. **Basin Plan Amendments.** If the Regional Water Board adopts a Basin Plan amendment that removes or redefines the MUN beneficial use for the lower segments of New Alamo Creek and Ulatis Creek and/or adopts site-specific objectives for one or more human health constituents, this Order may be reopened to modify or remove effluent limitations consistent with any water quality standards refinements adopted and approved for lower New Alamo Creek and Ulatis Creek.

h. Cyanide Study. This Order requires the Discharger to conduct a study of the analytical procedures for laboratory analyses of cyanide. This Order may be reopened pending the results of these studies and establish new limitations.

i. Chlorodibromomethane and Dichlorobromomethane. The Discharger has applied for a case-by-case exception from the CTR for chlorodibromomethane and dichlorobromomethane. Upon approval of this exception this Order may be reopened and effluent limitations may be modified or eliminated.

j. Bis(2-ethylhexyl)phthalate. This Order requires the Discharger to collect and analyze effluent bis(2-ethylhexyl)phthalate samples using a clean technique. Should the results of that sampling show bis(2-ethylhexyl)phthalate in concentrations that exceed the applicable water quality criteria, this Order may be reopened to establish new effluent limitations.

k. Human Heath Criteria Dilution Study. This Order requires the Discharger to conduct a Human Health Criteria Dilution Study to determine the available dilution for human health criteria in New Alamo Creek. Based on the findings of the study, this Order may be reopened to modify the effluent limitations that may receive a human health dilution credit.

l. Litigation-related issues. The Discharger and the State Water Board are under litigation in the Contra Costa County Superior Court, *City of Vacaville v. State Water Resources Control Board* (Contra Costa County Case No. CIV MSN 03-0956). Issues relating to this litigation may affect this Order. This Order will be reopened as necessary to ensure compliance with any final, non-appealable decision in that case.

2. Special Studies and Additional Monitoring Requirements

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at III-8.00.) Based on quarterly whole effluent chronic toxicity testing performed by the Discharger from January 2004 through July 2007, the discharge has reasonable potential to cause or contribute to an to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

This provision requires the Discharger to develop a Toxicity Reduction Evaluation (TRE) Work Plan in accordance with EPA guidance. In addition, the provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if a pattern of toxicity has been demonstrated.

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

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is a pattern of toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

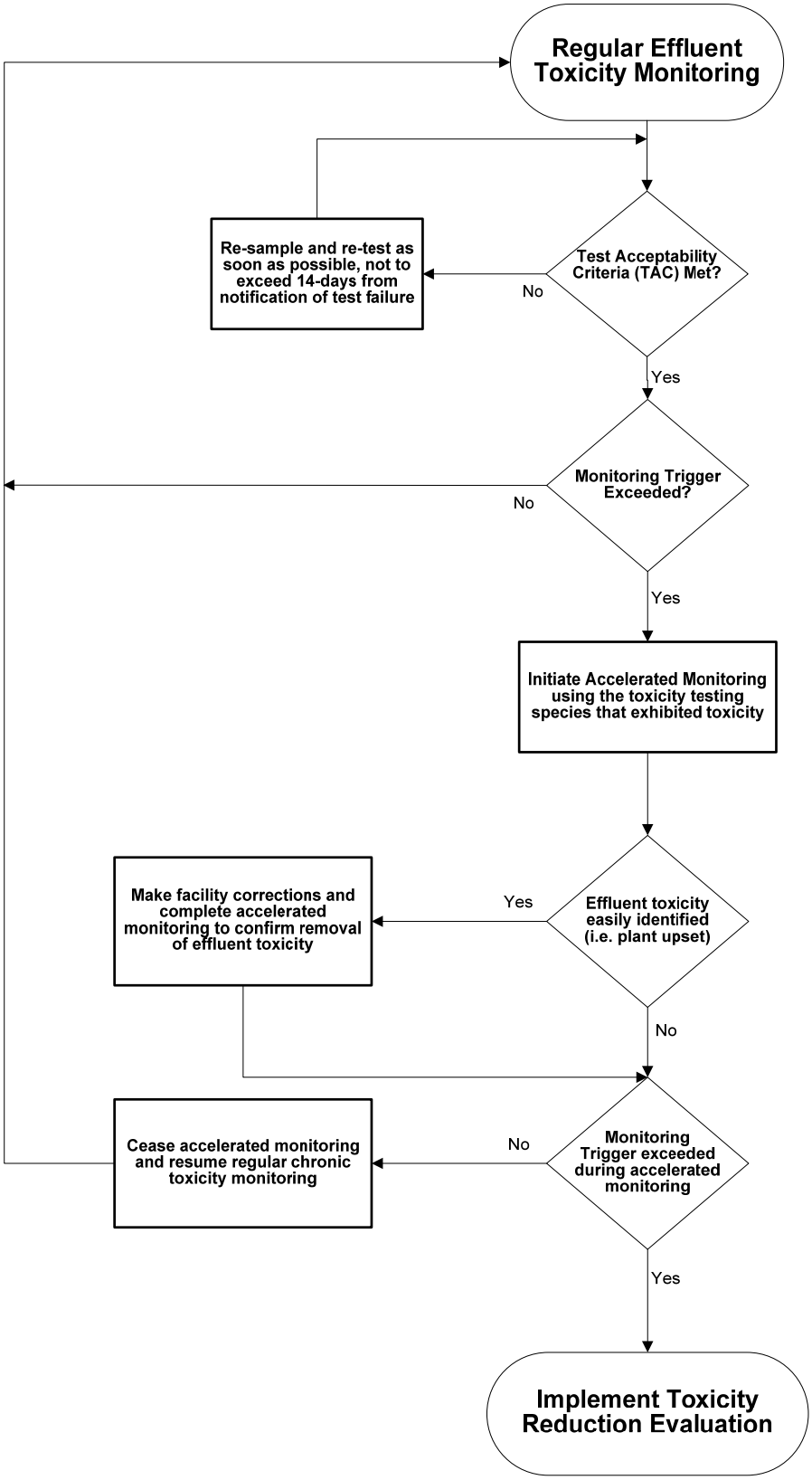
The provision requires accelerated monitoring consisting of four chronic toxicity tests every two weeks using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991* (TSD). The TSD at page 118 states, "EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required." Therefore, four accelerated monitoring tests are required in this provision. If 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-1
WET Accelerated Monitoring Flow Chart



b. **Electrical Conductivity (EC) and pH Study (Special Provisions VI.C.2.b.)**. The discharge exceeds the screening levels for EC, TDS, and chloride recommended in 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) (UN Report) for irrigation of crops. However, the salinity level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. Therefore, this Order requires the Discharger complete and submit a report on the results of a site-specific investigation of appropriate EC levels to protect the beneficial use of agricultural supply for the most salt sensitive crops in areas irrigated with Old Alamo Creek, New Alamo Creek, and Ulatis Creek waters in the vicinity of the discharge under reasonable worst-case conditions. The study shall determine the sodium adsorption ratio of soils in the affected area, the alkalinity of soils to whether site specific conditions would reduce fluoride impacts, the effects of rainfall and flood-induced leaching, and background water quality (Old Alamo, New Alamo and Ulatis Creeks and groundwater). The study shall evaluate how climate, soil chemistry, background water quality (surface water and groundwater), rainfall, and flooding affect salinity (EC) requirements. Based on these factors, as well as economic and environmental impacts (such as increased irrigation water usage, groundwater hydraulics and degraded water quality), the study shall recommend site-specific numeric values for EC that provide reasonable protection for the agricultural supply use designation in Old and New Alamo Creek and Ulatis Creek. The Order also requires TDS and pH groundwater limits based on the UN Report for protection of the agricultural water supply beneficial use of the groundwater. As part of the EC site-specific study, the Discharger shall evaluate the appropriate pH levels that are protective of the agricultural water supply beneficial use of the groundwater, which may be used to irrigate crops in the area.

Several developments pertaining to salinity are currently underway regarding approaches to determining applicable salinity standards in Central Valley receiving waters. The developments include the CV-SALTS efforts initiated by the Central Valley Water Board, and the State Water Board's reevaluation of salinity standards in the South Delta as described in the report by Dr. Hoffman, "Salt Tolerance of Crops in the Southern Sacrament-San Joaquin Delta." To ensure that the Discharger's study is consistent with the approaches that are being developed under these two efforts, an extended period is allowed for submittal of the final EC and pH Study. The final Study is required by 1 April 2015.

The Regional Water Board will evaluate the recommendations, select appropriate values, re-evaluate reasonable potential for EC, including consideration of the secondary MCL for EC for the protection of MUN in New Alamo Creek and Ulatis Creek and reopen the Order, as necessary, to revise effluent limitations for EC. Furthermore, the Regional Water Board will re-evaluate the groundwater

limitations for TDS and pH, based on the results of the study and may reopen to modify the groundwater limitations, as appropriate.

c. **Groundwater Monitoring (Special Provisions VI.C.2.c.).** To determine compliance with Groundwater Limitations V.B., the Discharger is required to evaluate the adequacy of its groundwater monitoring network. This provision requires the Discharger to evaluate its groundwater monitoring network to ensure there are one or more background monitoring wells and a sufficient number of designated monitoring wells downgradient of every treatment, storage, and disposal unit that does or may release waste constituents to groundwater. Currently, there are no groundwater monitoring wells downgradient of the asphalt-lined sludge drying beds and lined aerated lagoons. Additionally, the background monitoring wells may have been influence by previous disposal or treatment practices or influenced by the effluent discharge to Old Alamo Creek. The Discharger must install new groundwater monitoring wells, if necessary, collect two years of monitoring data, and submit a report evaluating the underlying groundwater . If the monitoring shows that any constituent concentrations are increased above background water quality, the Discharger shall submit a technical report describing the groundwater evaluation report results and critiquing each evaluated facility component with respect to BPTC and minimizing the discharge's impact on groundwater quality.

d. **Human Health Criteria Dilution Study.** A dilution credit of 1.1:1 has been allowed in this Order for developing water quality-based effluent limitations based on human health criteria. The dilution credit is based on a worst-case dilution during low flow periods in New Alamo Creek and may not be appropriate for long-term human health criteria. This Order requires the Discharger to conduct a dilution study to evaluate the available dilution in New Alamo Creek, based on the harmonic mean flow in New Alamo Creek.

3. Best Management Practices and Pollution Prevention

a. **Salinity Reduction Goal.** A salinity goal has been established in this Order to provide a measurable goal for effluent salinity reductions to demonstrate that the Discharger is making reasonable progress in the reduction of salinity in its discharge to Old Alamo Creek and downstream waters. An annual average effluent salinity of 864 µmhos/cm as electrical conductivity (EC) has been established as a reasonable goal for this permit term. In the Tulare Lake Basin Plan (Page IV-10), the Regional Water Board adopted a maximum allowable effluent limitation for publicly owned wastewater treatment works discharging to navigable water: "*The maximum electrical conductivity (EC) of a discharge shall not exceed the quality of the source water plus 500 micromhos per centimeter….*" Although not directly applicable to the Facility's discharge to Old Alamo Creek, the Tulare Lake Basin Plan salinity effluent limit indicates what constitutes a reasonable incremental increase above the Discharger's water supply (i.e. water supply EC plus 500 µmhos/cm). Based on water supply

monitoring performed by the Discharger in 2006, the EC of the water supply averaged 364 µmhos/cm. Reducing the annual average effluent salinity to 864 µmhos/cm as EC is an achievable goal that would demonstrate a reasonable measure of progress in the reduction of salinity discharged to Old Alamo Creek.

b. **Pollution Prevention Plans for salinity and mercury.** The Discharger shall update and implement pollution prevention plans for salinity and mercury in accordance with CWC section 13263.3(d)(3). The PPP's are necessary for salinity and mercury to ensure that the discharge of these pollutants does not increase pending the development of TMDLs or, in the case of salinity, the development of a site-specific study.

c. **CWC section 13263.3(d)(3) Pollution Prevention Plans.** The pollution prevention plans required for salinity, mercury, cyanide, chlorodibromomethane, and dichlorobromomethane shall, at minimum, meet the requirements outlined in CWC section 13263.3(d)(3). The minimum requirements for the pollution prevention plans include the following:

   i. An estimate of all of the sources of a pollutant contributing, or potentially contributing, to the loadings of a pollutant in the treatment plant influent.

   ii. An analysis of the methods that could be used to prevent the discharge of the pollutants into the Facility, including application of local limits to industrial or commercial dischargers regarding pollution prevention techniques, public education and outreach, or other innovative and alternative approaches to reduce discharges of the pollutant to the Facility. The analysis also shall identify sources, or potential sources, not within the ability or authority of the Discharger to control, such as pollutants in the potable water supply, airborne pollutants, pharmaceuticals, or pesticides, and estimate the magnitude of those sources, to the extent feasible.

   iii. An estimate of load reductions that may be attained through the methods identified in subparagraph ii.

   iv. A plan for monitoring the results of the pollution prevention program.

   v. A description of the tasks, cost, and time required to investigate and implement various elements in the pollution prevention plan.

   vi. A statement of the Discharger's pollution prevention goals and strategies, including priorities for short-term and long-term action, and a description of the Discharger's intended pollution prevention activities for the immediate future.

   vii. A description of the Discharger's existing pollution prevention programs.

viii. An analysis, to the extent feasible, of any adverse environmental impacts, including cross-media impacts or substitute chemicals that may result from the implementation of the pollution prevention program.

ix. An analysis, to the extent feasible, of the costs and benefits that may be incurred to implement the pollution prevention program.

4. Construction, Operation, and Maintenance Specifications

a. The emergency storage ponds will be operated such that there is no public contact with wastewater, mosquito breeding in prevented, erosion is controlled, weeds are minimized, debris doesn't accumulate on the water, freeboard is never less than two feet and no infiltration of wastewater into soils or groundwater.

b. The treatment plant expansion project included new headworks and influent monitoring flume. The flume did not correctly monitor influent flows for three years. To correct the influent monitoring structure a plywood platform has been installed on the bottom of the flume. The Discharger shall have the influent flow monitoring structure inspected and certified by a California licensed civil engineer that did not design the structure for flow metering accuracy and permanence of the structure.

c. The treatment facilities must be protected from a 100-year storm. Protection prevents facilities from washing out and is required to protect public health in the event of a 100-year storm.

d. **Bypass (blending) Requirements.** Effective immediately and until 30 April 2015, the bypass of the secondary treatment facilities may be allowed under conditions provided is Special Provisions Section VI.C.4.d. of this Order.

During dry weather operation, all influent wastewater is directed to the South Plant. The North Plant primary treatment system is only used during wet weather events producing high flows. Secondary treatment flows are split between the two parallel plants. The flow split is 40 percent (6 mgd) to the North Plant, and 60 percent (9 mgd) to the South Plant. During wet weather flows exceeding the capacity of the secondary treatment facilities (~40 mgd), the Discharger bypasses secondary treatment for a portion of the wastewater. A portion of the primary treated effluent is directed around the secondary treatment processes and blended with secondary treated effluent prior to passage through the disinfection system, then discharged to Old Alamo Creek.

The Clean Water Act (CWA) requires POTWs to meet secondary treatment performance-based requirements, as defined by 40 CFR 133.102 as achieving a BOD_5 30-day average of 30 mg/l, a 7-day average of 45 mg/l and a 30-day average percent removal of at least 85 percent. The combined effluent

described in this permit will be capable of meeting secondary effluent limitations contained in 40 CFR 133.102 as a technology based standard.

The Discharger has indicated that additional expansions, scheduled after 2020 and 2030, will phase out the bypass of the secondary treatment units during high flow conditions. The previous permits have allowed bypasses, however, the CWA, Section 402 prohibits sewage bypasses, which are defined in 40 CFR 122.41 (m) (1), as an "*intentional diversion of waste streams from any portion of a treatment facility*", except in certain circumstances specified in the regulations. The United States Environmental Protection Agency (USEPA) has previously provided guidance in interpreting the bypass prohibition and exceptions. USEPA has stated that peak wet weather discharges from POTWs routed around biological treatment units prior to discharge can be approved by an NPDES permit where all the following principles are met: (1) The discharge meets all effluent limitations; (2) The permit recognizes the specific treatment schemes for peak flow management; (3) Alternative flow routing scenarios are only used when flows exceed the capacity of storage/equalization units; (4) The treatment system is operated as it is designed to be operated; and (5) The permit requires permittees to properly design, operate and maintain its collection system. The exception to the bypass requirement of 40 CFR 122.41 (m) assumes generally accepted good engineering practices are utilized, such as storage/equalization units to provide initial capacity for peak wet weather flows to a reasonable extent. The Discharger has not provided information demonstrating that the bypass would meet the exceptions to the prohibition, including demonstrating that all generally accepted good engineering practices have been considered, such as the construction of storage/equalization units. Furthermore, the practice of bypassing secondary treatment facilities likely does not meet best practicable treatment or control requirements, as mandated by State Water Board Resolution 68-16. Therefore, this permit does not allow bypass of secondary treatment.

The State Water Board in Water Quality Order WQO 2002-0015 concluded that the Regional Water Board appropriately implemented the federal mandatory bypass prohibition in Order No. 5-01-044. If new information is submitted to the Regional Water Board that demonstrates that the bypass would meet the requirements for an exception under 40 CFR 122.41(m) consistent with USEPA's guidance, this permit may be reopened for further consideration of the bypass prohibition.

On 8 May 2003 the State Water Board and Regional Water Board agreed to Stay the bypass prohibition until the Contra Costa County Superior Court considered the Discharger's petition for Writ challenging the prohibition on bypass. Subsequently on 5 September 2003, the Regional Water Board adopted Resolution No. R5-2003-0129, amending Provision F.4 of Order No. 5-01-044, to stay the time schedule until the Court considers the Discharger's Petition for Writ. Therefore, Special Provisions VI.C.7.a of this Order includes a time schedule to discontinue the bypass practices, pending the resolution of the Court action.

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 Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 CFR Part 403.

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

b. **Biosolids.** The use and disposal of biosolids is regulated under federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR Part 503. The Discharger is required to comply with the standards and time schedules contained in 40 CFR Part 503.

Title 27, CCR, Division 2, Subdivision 1, section 20005 establishes approved methods for the disposal of collected screenings, residual sludge, biosolids, and other solids removed from liquid wastes. This Order includes requirements to ensure the Discharger disposes of solids in compliance with State and federal regulations.

c. **Collection System.** On 2 May 2006, the State Water Board adopted State Water Board Order No. 2006-0003, a Statewide General WDR for Sanitary Sewer Systems. The Discharger shall be subject to the requirements of Order No. 2006-0003 and any future revisions thereto. Order No. 2006-0003 requires that all public agencies that currently own or operate sanitary sewer systems apply for coverage under the General WDR. On 24 October 2006 **,** the Discharger applied for coverage under State Water Board Order No. 2006-0003 for operation of its wastewater collection system.

Regardless of the coverage obtained under Order No. 2006-0003, the Discharger's collection system is part of the treatment system that is subject to this Order. As such, pursuant to federal regulations, the Discharger must properly operate and maintain its collection system [40 CFR section 122.41(e)], report any non-compliance [40 CFR section 122.41(l)(6) and (7)], and mitigate any discharge from the collection system in violation of this Order [40 CFR. section 122.41(d)].

6. **Other Special Provisions**

a. **Effective 1 May 2015**, pursuant to CDPH reclamation criteria, Title 22 CCR, Division 4, Chapter 3, (Title 22), wastewater discharged to Old Alamo Creek from 1 May through 31 October, each year, must be oxidized, coagulated, filtered, and adequately disinfected; or equivalent. Special Provision VI.C.6.a requires that effluent discharges to Old Alamo Creek seasonally meet the requirements of Title 22, or equivalent, for the protection of the REC-1, REC-2, and AGR beneficial uses.

b. Sections 122.41(l)(3) and 122.61 of the Code of Federal Regulations establish requirements for the transfer of an NPDES permit. Special Provision VI.C.6.b of this Order requires the Discharger to comply with federal regulations for the transfer of NPDES permits in the event of a change of ownership.

7. **Compliance Schedules**

The use and location of compliances schedules in the permit or a separate enforcement order depends on the Discharger's ability to comply and the source of the applied water quality criteria/objectives. This Order includes several new requirements with which the Discharger cannot immediately comply. Table F-11 identifies the new requirements and the restrictions on compliance time schedules:

Table F-11: New Permit Requirements and Compliance Schedule Restrictions

New Requirement	Compliance Schedule Restrictions	Compliance Schedules Allowed
Title 22 Tertiary Treatment, or equivalent, requirements (Special Provisions VI.C.6.a.)	Basin Plan allows up to 10 years in the permit	Compliance Schedule in the permit with full compliance by 1 May 2015
Title 22 Tertiary Treatment, or equivalent, effluent limitations – BOD, TSS, turbidity, and total coliform organisms (Effluent Limitations IV.A.1.a., IV.A.1.e., IV.A.1.f.)	Basin Plan allows up to 10 years in the permit	Compliance Schedule in the permit with full compliance by 1 May 2015

New Requirement	Compliance Schedule Restrictions	Compliance Schedules Allowed
Bypass Prohibition (Discharge Prohibitions III.B.)	Basin Plan allows up to 10 years in the permit	Compliance Schedule in the permit with full compliance by 1 May 2015
New CTR effluent limitations – cyanide, chlorodibromomethane, and dichlorobromomethane (Effluent Limitations IV.A.1.a. and IV.A.2.a.)	SIP allows up to 18 May 2010 in the permit	Compliance Schedule in the permit with full compliance by 18 May 2010, future enforcement order may be necessary
New non-CTR effluent limitations – nitrate (Effluent Limitations IV.A.1.a. and IV.A.2.a.)	Basin Plan requires immediate compliance, time schedule required in separate enforcement order	Time Schedule Order with full compliance required by 1 May 2013
Groundwater limitations (Groundwater Limitations V.B.2.)	Basin Plan allows up to 10 years in the permit	Within 42 months of adoption of this Order or upon completion of the Groundwater Water Quality Characterization Study (see Section VI.C.2.d.), whichever is sooner

Compliance with these new requirements will require the Discharger to construct new or expanded treatment facilities. These new requirements are interrelated, therefore, it is cost effective for the Discharger to address the necessary upgrades in one comprehensive plan. Multiple overlapping construction schedules would not be efficient, due to the significant risk of poor coordination, likely resulting in process disruption, discharge violations, and contractual arguments. The construction of one project to comply with all of the new requirements is desirable. Consequently, it is prudent to require one compliance schedule and one final compliance date. However, as shown in Table F-11, due to differing restrictions on compliance schedules, it is not possible to include one compliance schedule in the permit for all of the new requirements. However, where possible the compliance schedules were combined.

The Discharger submitted a memorandum by West Yost and Associates, dated 24 January 2008, outlining a preliminary construction timeline for upgrades to the Facility for compliance with the new requirements. The timeline takes into consideration the efforts the Discharger is currently making in the development of site-specific objectives for THMs. The Discharger finds it is necessary to delay preliminary design until after the site-specific objective issues are resolved, because it will determine the Discharger's potential need to abandon or retain the chlorine disinfection system. Based on these considerations, the Discharger requested a seven year compliance schedule for meeting the new requirements. The schedule is a short as practicable and necessary to accommodate the many complexities associated with various permit requirements.

Due to the differing restrictions on compliance schedules, several compliance schedules are required. This Order includes two compliance schedules, one compliance schedule for the Title 22 disinfection requirements and the discontinuance of bypass (blending) practices, and one compliance schedule for the new CTR effluent limitations. A compliance schedule for the new nitrate limit is required in a separate enforcement order. The description of the compliance schedules for meeting each new requirement is shown in Table F-11, above.

The Discharger submitted a request, and justification, dated 15 February 2007, for compliance schedules cyanide, chlorodibromomethane, and dichlorobromomethane. The compliance schedule justification included all items specified in Paragraph 3, items (a) through (d), of Section 2.1 of the SIP. This Order establishes a compliance schedule for the new, final, water quality-based effluent limitations for cyanide, chlorodibromomethane, and dichlorobromomethane, and requires full compliance by 18 May 2010. The justification in the Discharger's Infeasibility Analysis provides for a time schedule for the Discharger to comply with the new limitations beyond 18 May 2010. Allowance of an additional compliance schedule beyond 18 May 2010 may be granted in a subsequent enforcement order, as the Regional Water Board deems necessary. The Discharger's Infeasibility Analysis also included a request for a compliance schedule for meeting the new effluent limitations for nitrate. As shown in Table F-11, the compliance schedule for nitrate must be included in a separate enforcement order. Due to state regulations regarding mandatory minimum penalty protection [CWC 13385(j)], the time schedule for nitrate has been limited to 5 years.

VIII. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the City of Vacaville Easterly Wastewater Treatment Facility. As a step in the WDR adoption process, the Regional Water Board staff has developed tentative WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through posting at the Elmira Post Office and City of Vacaville City Hall on 13 February 2008 and published 15 February 2008 in the Vacaville Reporter.

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 **17 March 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: 24/25 April 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 (916) 464-3281.

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 Kathleen Harder at (916) 464-4778.

REASONABLE POTENTIAL ANALYSIS FOR PRIORITY POLLUTANTS

Constituent, Unit CTR #	**Antimony, µg/L #1**	**Arsenic, µg/L #2**	**Be, µg/L #3**	**Cadmium, µg/L #4**	**Cr (III), µg/L # 5a**	**Cr (VI), µg/L # 5b**	**Cu,diss µg/L #6**	**Lead, µg/L #7**	**Hg, µg/L #8**	**Nickel, µg/L #9**	**Se, µg/L #10**	**Silver, µg/L #11**	**Thallium, µg/L #12**	**Zinc, µg/L #13**	**Cyanide, µg/L #14**	**Asb, MFL #15**
LEC, µg/L	<0.5	<0.5	<0.1	<0.1	<0.5	<0.2	1.2	<0.25	0.0014	2.5	<1	<0.1	<0.1	15	<3	<0.15
MEC, µg/L	0.7	3.8	0.1	0.1	1.4	0.3	9.2	0.85	0.0059	4.0	3.0	0.2	0.1	56	17	0.2
Maximum Background, µg/L																
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	**MCL 6**	**MCL 10 S-Spec 10**	**MCL 4**	MCL 5	**MCL 50**	MCL 50	MCL 1000 S-Spec 10	No MCL	MCL 2	MCL 100	MCL 50	MCL 50 S-Spec 10	MCL 2	MCL 5000 S-Spec **100**	MCL 200 S-Spec 10	MCL **7** MFL
Narrative Basin Plan Objective, µg/L							AL 1300	AL 15								
CMC (µg/L) Freshwater, Total @ 127 mg/L Hardness (as $CaCO_3$)	None est.	340 i,m,w	None est.	5.9 e,l,m,w,x	2112 e.i,m,o	16.3 i,m,w	17.5 e,l,m,w,x	111 e,l,m	None est.	574 e,l,m,w		**6.1** e,l,m	None est.	147 e,l,m,w,x	22 o	None Est.
CCC (µg/L) Freshwater, Total @ 127 mg/L Hardness (as $CaCO_3$)	None est.	150 i,m,w	None est.	**3.0** e,l,m,w	252 e,l,m,o	**11.4** i,m,w	11.4 e,l,m,w	4.3 e,l,m	None est.	**64** e,l,m,w	**5** q	None est.	None est.	147 e,l,m,w,x	**5.2** o	None Est.
Human Health, µg/L Water + Org.	14 a,s	None Est.	n	n	n	n	1300	n	0.050 a	610 a	n	None Est.	1.7 a,s	None Est.	700 a	**7** MFL k,s
Human Health, µg/L Organisms Only	4300 a,t	None Est.	n	n	n	n	None Est.	n	0.051 a	4600 a	n	None Est.	6.3 a,t	None Est.	220,000 a,j	None Est.
Other factors (303d listing, bioaccum)									**303d**							
Reasonable Potential	N	N	N	N	N	N	N	N	**Y**	N	N	N	N	**N**	**Y**	N

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations. **MFL=** Million fibers per Liter, **LEC=** Lowest Effluent concentration; **MEC=** Maximum effluent concentration. (**based on last 4 years of data Jan 2002-Jul 2006)**

Reasonable Potential: (Y) when MEC>most stringent criterion or Max Background concentration >most stringent criterion (and the pollutant is detected in the effluent).
Reasonable Potential: (I) when there is no available/adequate effluent and background data.
Reasonable Potential: (N) when both MEC and Max Background concentration are < most stringent criterion.

REASONABLE POTENTIAL ANALYSIS-FOR PRIORITY POLLUTANTS

Constituent, Unit CTR #	**2, 3, 7, 8-TCDD (Dioxin), µg/L # 16**	**Acrolein, µg/L # 17**	**Acrylonitrile, µg/L # 18**	**Benzene, µg/L # 19**	**Bromoform, µg/L # 20**	**Carbon Tetrachloride, µg/L # 21**	**Chlorobenzene (Monochloro-benzene), µg/L # 22**	**Chlorodibromo-methane, µg/L # 23**	**Chloroethane, µg/L # 24**	**2-Chloro- ethylvinyl Ether, (chloroalkylether), µg/L # 25**
LEC, µg/L	<.0016 E-06	<5	<2	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<1
MEC, µg/L	1.06 E-06	5	2	0.5	0.5	0.5	0.5	14	0.5	1
Maximum Background, µg/L					0			0.37		
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	MCL 3.0E-08	No MCL	No MCL	MCL **1**	MCL THMs 80	MCL 0.5	MCL **70**	MCL THMs 80	No MCL	No MCL
Narrative Basin Plan Objective, µg/L										
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	**1.3E-08** c	**320** s	**0.059** a,c,s	1.2 a,c	**4.3** a,c	**0.25** a,c,s	680 a,s	**0.41** a,c	None Est.	None Est.
Human Health, µg/L Org Only	1.4E-08 c	780 t	0.66 a,c,t	71 a,c	360 a,c	4.4 a,c,t	21,000 a,j,t	34 a,c	None Est.	None Est.
Other factors										
Reasonable Potential	I	N	I	N	N	**I**	N	**Y**	N	N

Constituent, Unit CTR #	**Chloroform, µg/L # 26**	**Dichlorobromo-methane, µg/L # 27**	**1,1-Dichloroethane, µg/L # 28**	**1,2-Dichloro-ethane, µg/L # 29**	**1,1-Dichloro-ethylene, µg/L # 30**	**1,2-Dichloro-propane, µg/L #31**	**1,3-Dichloro-propylene, µg/L # 32**	**Ethylbenzene, µg/L # 33**	**Methyl Bromide (Bromomethane), µg/L # 34**	**Methyl Chloride (Chloromethane), µg/L # 35**
LEC, µg/L	18	1.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MEC, µg/L	79	43	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maximum Background, µg/L	9.1	1.6								
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	MCL THMs 80	MCL THMs 80	MCL 5	MCL 0.5	MCL 6	MCL 5	MCL **0.5**	MCL **700**	No MCL	No MCL
Narrative Basin Plan Objective, µg/L	OEHHA **1.1**									
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	(CTR reserved)USEPA 5.7	**0.56** a,c	None Est.	0.38 a,c,s	0.057 a,c,s	**0.52** a	10 a,s	3,100 a,s	**48** a	n
Human Health, µg/L Org Only	(CTR reserved)USEPA 470	46 a,c	None Est.	99 a,c,t	3.2 a,c,t	39 a	1,700 a,t	29,000 a,t	4,000 a	n
Other factors										
Reasonable Potential	**Y**	**Y**	N	I	I	N	N	N	N	N

REASONABLE POTENTIAL ANALYSIS FOR PRIORITY POLLUTANTS

Constituent, Unit CTR #	**Methylene Chloride, µg/L # 36**	**1,1,2,2-Tetra-chloroethane, µg/L # 37**	**Tetrachloro-ethylene, µg/L # 38**	**Toluene, µg/L # 39**	**1,2-Trans- Dichloro ethylene, µg/L # 40**	**1,1,1 -Trichloro-ethane, µg/L # 41**	**1,1,2-Trichloro-ethane, µg/L # 42**	**Trichloro- ethylene, µg/L # 43**	**Vinyl Chloride, µg/L # 44**	**2-Chloro- phenol, µg/L # 45**
LEC, µg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
MEC, µg/L	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2
Maximum Background, µg/L										
Numeric BP Objective, µg/L (Site Specific, MCL)	MCL, 5	MCL, 1	MCL, 5	MCL, 150	MCL, 10	MCL, 200	MCL, 5	MCL, 5	MCL, 0.5	No MCL
Narrative Basin Plan Objective, µg/L										
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	**4.7** a,c	**0.17** a,c,s	**0.8** c,s	6,800 a	700 a	n	**0.60** a,c,s	2.7 c,s	2 c,s	120 a
Human Health, µg/L Org Only	1,600 a,c	11 a,c,t	8.85 c,t	200,000 a	140,000 a	n	42 a,c,t	81 c,t	525 c,t	400 a
Other factors										
Reasonable Potential	N	I	N	N	N	N	N	N	N	N

Constituent, Unit CTR #	**2, 4 Dichlorophenol, µg/L # 46**	**2,4-Dimethyl – phenol, µg/L # 47**	**2-Methyl 4,6-Di-nitrophenol, µg/L # 48**	**2,4-Dinitrophenol, µg/L # 49**	**2-Nitrophenol, µg/L # 50**	**4-Nitro–phenol, µg/L # 51**	**4-chloro-3-methyl phenol, µg/L # 52**	**Pentachloro-phenol, µg/L # 53**	**Phenol, µg/L # 54**
LEC, µg/L	<1	<1	<5	<1	<5	<5	<1	<1	<1
MEC, µg/L	1	1	5	1	5	5	1	1	1
Maximum Background, µg/L									
Numeric BP Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL	MCL, 1	No MCL
Narrative Basin Plan Objective, µg/L									
CMC Freshwater, µg/L At pH=6.5	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	5 f,w	None Est.
CCC Freshwater, µg/L At pH=6.5	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	4 f,w	None Est.
Human Health, µg/L Water +Org Only	93 a,s	540 a	13.4 s	70 a,s	None Est.	None Est.	None Est.	**0.28** a,c	21,000 a
Human Health, µg/L Org Only	790 a,t	2,300 a	765 t	14,000 a,t	None Est.	None Est.	None Est.	8.2 a,c,j	4,600,000 a,j,t
Other factors									
Reasonable Potential	N	N	N	N	N	N	N	I	N

REASONABLE POTENTIAL ANALYSIS-FOR PRIORITY POLLUTANTS

Constituent, Unit CTR #	**2, 4, 6 Trichloro-phenol, µg/L # 55**	**Acenaphthene, µg/L # 56**	**Acenaphthylene, µg/L # 57**	**Anthracene, µg/L # 58**	**Benzidine, µg/L # 59**	**Benzo(a) anthracene, µg/L # 60**	**Benzo(a) Pyrene, µg/L # 61**	**Benzo(b) fluoranthene, µg/L # 62**	**Benzo(ghi) perylene, µg/L # 63**
LEC, µg/L	<5	<0.3	<0.2	<0.3	<5	<0.3	<0.1	<0.3	<0.1
MEC, µg/L	5	0.3	0.2	0.3	5	0.3	0.1	0.3	0.1
Maximum Background, µg/L									
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL	MCL, 0.2	No MCL	No MCL
Narrative Basin Plan Objective, µg/L									
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	**2.1** a,c	**1,200** a	None established	**9,600** a	**0.00012** a,c,s	**0.0044** a,c	**0.0044** a,c	0.0044 a,c	None established
Human Health, µg/L Org Only	6.5 a,c	2,700 a	None established	110,000 a	0.00054 a,c,t	0.049 a,c	0.049 a,c	0.049 a,c	None established
Other factors									
Reasonable Potential	I	N	N	N	I	I	I	I	N

Constituent, Unit CTR #	**Benzo(k) fluoranthene, µg/L # 64**	**Bis (2-Chloro-ethoxy) Methane, µg/L # 65**	**Bis (2-Chloroethyl) Ether, µg/L # 66**	**Bis (2-Chloroiso-propyl) Ether, µg/L # 67**	**Bis (2-Ethylhexyl) Phthalate, µg/L # 68**	**4-Bromo- phenyl Phenyl Ether, µg/L # 69**	**Butyl benzyl Phthalate, µg/L # 70**	**2-Chloro-naphthalene, µg/L # 71**	**4-Chlorophenyl Phenyl Ether, µg/L # 72**
LEC, µg/L	<0.3	<5	<1	<2	<3	<5	<5	<5	<5
MEC, µg/L	0.3	5	1	2	53	5	5	5	5
Maximum Background, µg/L									
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	No MCL	No MCL	MCL, 4	No MCL	No MCL	No MCL	No MCL
Narrative Basin Plan Objective, µg/L									
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	**0.0044** a,c	None est	**0.031** a,c,s	**1,400** a	**1.8** a,c,s	None est	**3,000** a	**1,700** a	None Est.
Human Health, µg/L Org Only	0.049 a,c	None est	1.4 a,c,t	170,000 a,t	5.9 a,c,t	None est	5,200 a	4,300 a	None Est.
Other factors									
Reasonable Potential	I	N	I	N	I (1)	N	N	N	N

(1) See Attachment F, Section IV.C.3.f. for discussion of RPA for bis(2-ethylhexyl)phthalate.

REASONABLE POTENTIAL ANALYSIS-FOR PRIORITY POLLUTANTS

Constituent, Unit CTR #	**Chrysene, µg/L # 73**	**Dibenzo (ah) anthracene, µg/L # 74**	**1,2 Dichloro-benzene, µg/L # 75**	**1, 3 Dichloro-benzene, µg/L # 76**	**1, 4 Dichloro-benzene, µg/L # 77**	**3,3-Dichloro-benzidine, µg/L # 78**	**Diethyl Phthalate, µg/L # 79**	**Dimethyl Phthalate, µg/L # 80**	**Di-n-Butyl Phthalate, µg/L # 81**
LEC, µg/L	<0.3	<0.1	<0.5	<0.5	<0.5	<5	<2	<2	<5
MEC, µg/L	0.3	0.1	0.5	0.5	0.5	5	2	2	5
Maximum Background, µg/L									
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	MCL, **600**	No MCL	MCL, 5	No MCL	No MCL	No MCL	No MCL
Narrative Basin Plan Objective, µg/L									
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	**0.0044** a,c	**0.0044** a,c	2,700 a	**400**	400	**0.04** a,c,s	**23,000** a,s	**313,000** s	**2,700** a,s
Human Health, µg/L Org Only	0.049 a,c	0.049 a,c	17,000 a	2,600	2,600	0.077 a,c,t	120,000 a,t	2,900,000 t	12,000 a,t
Other factors									
Reasonable Potential	I	I	N	N	N	I	N	N	N

Constituent, Unit CTR #	**2,4-Dinitro–toluene, µg/L # 82**	**2,6-Dinitro-toluene, µg/L # 83**	**Di-n-Octyl Phthalate, µg/L # 84**	**1,2-Diphenyl – hydrazine, µg/L # 85**	**Fluoranthene, µg/L # 86**	**Fluorene, µg/L # 87**	**Hexachloro-benzene, µg/L # 88**	**Hexachloro – butadiene, µg/L # 89**	**Hexachloro – cyclopentadiene, µg/L # 90**
LEC, µg/L	<5	<5	<5	<1	<0.05	<0.1	<1	<1	<1
MEC, µg/L	5	5	5	1	0.05	0.1	1	1	1
Maximum Background, µg/L									
Numeric Basin Plan Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL	**MCL, 1**	No MCL	**MCL, 50**
Narrative Basin Plan Objective, µg/L									
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	**0.11** c,s	None Est.	None Est.	**0.040** a,c,s	**300** a	**1,300** a	0.00075 a,c	**0.44** a,c,s	240 a,s
Human Health, µg/L Org Only	9.1 c,t	None Est.	None Est.	0.54 a,c,t	370 a	14,000 a	0.00077 a,c	50 a,c,t	17,000 a,j,t
Other factors									
Reasonable Potential	I	N	N	I	N	N	I	I	N

REASONABLE POTENTIAL ANALYSIS FOR PRIORITY POLLUTANTS

Constituent, Unit CTR #	**Hexachloro–ethane, µg/L # 91**	**Indeno (1,2,3-cd) pyrene, µg/L # 92**	**Isophorone, µg/L # 93**	**Naphthalene, µg/L # 94**	**Nitrobenzene, µg/L # 95**	**N-Nitrosodimethyl-amine, µg/L # 96**	**N-Nitrosodi-n-Propylamine, µg/L # 97**	**N-Nitrosodiphenyl-amine, µg/L # 98**
LEC, µg/L	<1	<0.05	<1	<0.2	<1	<5	<5	<1
MEC, µg/L	1	0.05	1	0.2	1	5	5	1
Maximum Background, µg/L								
Numeric BP Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL
Narrative Basin Plan Objective, µg/L								
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.
Human Health, µg/L Water +Org Only	**1.9** a,c,s	**0.0044** a,c	**8.4** c,s	None Est.	**17** a,s	**0.00069** a,c,s	**0.005** a	**5.0** a,c,s
Human Health, µg/L Org Only	8.9 a,c,t	0.049 a,c	600 c,t	None Est.	1,900 a,j,t	8.1 a,c,t	1.4 a	16 a,c,t
Other factors								
Reasonable Potential	N	I	N	N	N	I	I	N

Constituent, Unit CTR #	**Phenanthrene, µg/L # 99**	**Pyrene, µg/L # 100**	**1,2,4-Trichloro-benzene, µg/L # 101**	**Aldrin, µg/L # 102**	**α-BHC, µg/L # 103**	**β-BHC, µg/L # 104**	**γ-BHC (Lindane), µg/L # 105**	**δ-BHC, µg/L # 106**	**Chlordane, µg/L # 107**	**4,4' DDT, µg/L # 108**
LEC, µg/L	<0.05	<0.05	<0.5	<0.005	<0.01	<0.005	<0.01	<0.05	<0.02	<0.01
MEC, µg/L	0.05	0.05	0.5	0.005	0.01	0.005	0.01	0.005	0.02	0.01
Maximum Background, µg/L										
Numeric BP Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	**MCL 5**	No MCL	No MCL	No MCL	MCL 0.2	No MCL	MCL 0.1	No MCL
Narrative Basin Plan Objective, µg/L				**ND, <0.005**	**ND, <0.01**	**ND, <0.014**	**ND, <0.019**	**ND, <0.005**	**ND, <0.1**	**ND, <0.01**
CMC Freshwater, µg/L	None Est.	None Est.	None Est.	3 g	None Est.	None Est.	0.95 w	None Est.	2.4 g	1.1 g
CCC Freshwater, µg/L	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	None Est.	0.0043 g	0.001 g
Human Health, µg/L Water +Org Only	None established	**960** a	None established	0.00013 a,c	0.0039 a,c	0.014 a,c	0.019 c	None established	0.00057 a,c	0.00059 a,c
Human Health, µg/L Org Only	None established	11,000 a	None established	0.00014 a,c	0.013 a,c	0.046 a,c	0.063 c	None established	0.00059 a,c	0.00059 a,c
Other factors				303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest
Reasonable Potential	N	N	N	I	I	N	N		I	I

REASONABLE POTENTIAL ANALYSIS FOR PRIORITY POLLUTANTS

Constituent, Unit CTR #	**4, 4'-DDE, µg/L # 109**	**4,4'-DDD, µg/L # 110**	**Dieldrin, µg/L # 111**	**alpha-Endo-sulfan, µg/L # 112**	**beta-Endo-sulfan, µg/L # 113**	**Endosulfan Sulfate, µg/L # 114**	**Endrin, µg/L # 115**	**Endrin Aldehyde, µg/L # 116**	**Heptachlor, µg/L # 117**	**Heptachlor Epoxide, µg/L # 118**	**PCBs, µg/L # 119-125**	**Toxaphene, µg/L # 126**
LEC, µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.1	<0.5
MEC, µg/L	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.1	0.5
Maximum Background, µg/L												
Numeric BP Objective, µg/L (Site Specific, MCL)	No MCL	No MCL	No MCL	No MCL	No MCL	No MCL	MCL 2	No MCL	MCL 0.01	MCL 0.01	MCL 0.5	MCL 3
Narrative Basin Plan Objective, µg/L	**ND, <0.05**	**ND, <0.05**	**ND, <0.01**	**ND, <0.02**	**ND, <0.01**	**ND, <0.05**	**ND, <0.01**	**ND, <0.01**	**ND, <0.01**	**ND, <0.01**		
CMC Freshwater, µg/L	None Est.	None Est.	0.24 w	0.22 g	0.22 g	None Est.	0.086 w	None Est.	0.52 g	0.52 g	None Est.	0.73
CCC Freshwater, µg/L	None Est.	None Est.	0.056 w	0.056 g	0.056 g	None Est.	0.036 w	None Est.	0.0038 g	0.0038 g	0.014u	0.0002
Human Health, µg/L Water +Org Only	0.00059 a,c	0.00083 a,c	0.00014 a,c	110 a	110 a	110 a	0.76 a	0.76 a	0.00021 a,c	0.00010 a,c	**0.00017**c,v	**0.00073**a,c
Human Health, µg/L Org Only	0.00059 a,c	0.00084 a,c	0.00014 a,c	240 a	240 a	240 a	0.81 a,j	0.81 a,j	0.00021 a,c	0.00011 a,c	**0.00017**c,v	**0.00075**a,c
Other factors			303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest	303d/OCPest		
Reasonable Potential	I	I	I	N	N	N	N	N	I	i	I	I

Notes: Footnotes, abbreviations, and other notations from Final Rule, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 40 CFR Part 131, FR/Vol. 65, No. 97, May 18, 2000/Rules and Regulations.
LEC= Lowest Effluent concentration; **MEC=** Maximum effluent concentration. (**based on last 3 years of data- Dec 2004-Nov 2007).**

Reasonable Potential: (Y) when MEC>most stringent criterion or Max Background concentration >most stringent criterion (and the pollutant is detected in the effluent).

Reasonable Potential: (I) when there is no available/adequate effluent and background data.
Reasonable Potential: (N) when both MEC and Max Background concentration < most stringent criterion.

REASONABLE POTENTIAL ANALYSIS-FOR OTHER POLLUTANTS OF CONCERN

Constituent, Unit	**Aluminum, µg/L**	**Ammonia as N, mg/L**	Barium, **µg/L**	**Boron, µg/L**	**Chloride, mg/L**	**Electrical Conductivity, µmhos/cm**	**Fluoride, µg/L**	**Iron, µg/L**	**Mn, µg/L**	**Nitrate as N, mg/L**	**Nitrite as N, mg/L**	Sodium, mg/L	**Sulfate, mg/L**	**TDS, mg/L**	**Tributyltin, µg/L**
LEC, µg/L	20	0.2	10	390	86	886	600	80	**4**	7.8	**<0.03**	**100**	**66**	**528**	**<0.0046**
MEC, µg/L	50	0.4	32	510	122	1340	900	270	19	27	**0.05**	**138**	**101**	**690**	**0.05**
Average Background, µg/L										**2.0**					
Maximum Background, µg/L										**6.4**					
Numeric Basin Plan Objective, µg/L (site specific, MCL)	MCL 200	No MCL	MCL 1000 S-Spec 100	No MCL	MCL 250 S-Spec 250	MCL 900	MCL 1000	MCL 300 S-Spec 300	MCL 50 S-Spec 50	MCL 10	MCL 1	No MCL	MCL 250	MCL 500	No MCL
Narrative Basin Plan Objective, µg/L	USEPA **87 CCC** 750 CMC	*USEPA **0.59 CCC** 2.14 CMC		Ag WQ Goal **700**		Ag WQ Goal **700**	Ag WQ Rome Paper 1,000							Ag WQ goal 450	USEPA 0.072 CCC 0.46 CMC
Other factors (303d listing, bioaccum)						303d list									
Reasonable Potential	N	**Y***	N	N	Y	Y	**N**	**N**	**N**	**Y**	**N**	N	N	Y	N

Constituent, Unit	**Alachlor, µg/L**	**Atrazine, µg/L**	**Bentazon, µg/L**	**Carbofuran, µg/L**	**Chlorpyrifos, µg/L**	**Cis-1,2-dichloro-ethene, µg/L**	**Dalapon, µg/L**	**Di(2-ethylhexyl) adipate, µg/L**	**Diazinon, µg/L**	**1,2-Dibromo-3-chloro-propane (DBCP µg/L**	**Dinoseb, µg/L**	**Diquat, µg/L**	Endothal, **µg/L**	**Ethylene Dibromide, µg/L**
LEC, µg/L	<0.3	<0.1	<2	**<5**	**<0.05**	<0.5	**<10**	**<3**	**<0.05**	**<0.01**	**<2**	**<4**	**<45**	**<0.02**
MEC, µg/L	<1	<1	<2	**<5**	**0.05**	<0.5	**<10**	**<3**	**0.05**	**<0.01**	**<2**	**<4**	**<45**	**<0.02**
Average Background, µg/L														
Maximum Background, µg/L														
Numeric BP Objective, µg/L (site specific, MCL)	MCL 2	MCL 1	MCL 18	MCL 18	No MCL	MCL 6	MCL 200	MCL 400	No MCL	MCL 0.2	MCL 7	MCL 20	MCL 100	MCL 0.05
Narrative Basin Plan Objective, µg/L					USEPA **0.041 CCC** 0.083 CMC				USEPA **0.17 CCC 0.17 CMC**					
Other factors (303d list, bioaccum)					303d list				303d list					
Reasonable Potential	N	N	N	N	N	N	N	N	N	N	N	N	N	N

REASONABLE POTENTIAL ANALYSIS FOR OTHER POLLUTANTS OF CONCERN

Constituent, Unit	**Foaming Agents (MBAS), µg/L**	**Glyphosate, µg/L**	**Methoxy-chlor, µg/L**	**Methyl-tert-butyl ether (MTBE), µg/L**	**Molinate (Ordram), µg/L**	**Oxamyl, µg/L**	**Picloram, µg/L**	**Simazine, µg/L**	**Styrene, µg/L**	**Trichloro-fluoro methane, µg/L**	**1,1,2-Trichloro-1,2,2-Trifluor-ethane, µg/L**	2,4,5-TP (Silvex), **µg/L**	**2,4-D, µg/L**	**Thiobencarb, µg/L**	**Xylenes, µg/L**
LEC, µg/L	50			<0.5											
MEC, µg/L	110			0.9											
Average Background, µg/L															
Maximum Background, µg/L															
Numeric Basin Plan Objective, µg/L (site specific, MCL)	MCL 500	MCL 700	MCL 30	MCL 5	MCL 20	MCL 50	MCL 500	MCL 4	MCL 100	MCL 150	MCL 1200	MCL 50	MCL 70	MCL 1	MCL 1750
Narrative Basin Plan Objective, µg/L															
Other factors (303d list, bioaccumulative)															
Reasonable Potential	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

LEC= Lowest Effluent concentration; **MEC=** Maximum effluent concentration. (**based on last 3 years of data (Dec 2004-Nov 2007)**

Ammonia's USEPA criteria based on a maximum effluent pH of 8.5 and a monthly average effluent temperature of 24 ^{0}C.

Reasonable Potential: (Y) when MEC or projected MEC>most stringent criterion.
Reasonable Potential: (I) when there is no available/adequate effluent data.
Reasonable Potential: (N) when MEC and projected MEC < most stringent criterion
Highlighted data is from 2002 because no other data is available
* - Ammonia does not show reasonable potential, however, since ammonia is in raw wastewater a limit is required to keep the WWTP nitrifying.

Attachment H - Constituents to be monitored

			Controlling Water Quality Criterion for Surface Waters			
CTR #	Constituent	CAS Number	Basis	Criterion Concentration (ug/L or noted) (1)	Criterion Quantitation Limit (ug/L or noted)	Suggested Test Methods
VOLATILE ORGANICS						
28	1,1-Dichloroethane	75343	Primary MCL	5	0.5	EPA 8260B
30	1,1-Dichloroethene	75354	National Toxics Rule	0.057	0.5	EPA 8260B
41	1,1,1-Trichloroethane	71556	Primary MCL	200	0.5	EPA 8260B
42	1,1,2-Trichloroethane	79005	National Toxics Rule	0.6	0.5	EPA 8260B
37	1,1,2,2-Tetrachloroethane	79345	National Toxics Rule	0.17	0.5	EPA 8260B
75	1,2-Dichlorobenzene	95501	Taste & Odor	10	0.5	EPA 8260B
29	1,2-Dichloroethane	107062	National Toxics Rule	0.38	0.5	EPA 8260B
	cis-1,2-Dichloroethene	156592	Primary MCL	6	0.5	EPA 8260B
31	1,2-Dichloropropane	78875	Calif. Toxics Rule	0.52	0.5	EPA 8260B
101	1,2,4-Trichlorobenzene	120821	Public Health Goal	5	0.5	EPA 8260B
76	1,3-Dichlorobenzene	541731	Taste & Odor	10	0.5	EPA 8260B
32	1,3-Dichloropropene	542756	Primary MCL	0.5	0.5	EPA 8260B
77	1,4-Dichlorobenzene	106467	Primary MCL	5	0.5	EPA 8260B
17	Acrolein	107028	Aquatic Toxicity	21	2	EPA 8260B
18	Acrylonitrile	107131	National Toxics Rule	0.059	2	EPA 8260B
19	Benzene	71432	Primary MCL	1	0.5	EPA 8260B
20	Bromoform	75252	Calif. Toxics Rule	4.3	0.5	EPA 8260B
34	Bromomethane	74839	Calif. Toxics Rule	48	1	EPA 8260B
21	Carbon tetrachloride	56235	National Toxics Rule	0.25	0.5	EPA 8260B
22	Chlorobenzene (mono chlorobenzene)	108907	Taste & Odor	50	0.5	EPA 8260B
24	Chloroethane	75003	Taste & Odor	16	0.5	EPA 8260B
25	2- Chloroethyl vinyl ether	110758	Aquatic Toxicity	122 (3)	1	EPA 8260B
26	Chloroform	67663	OEHHA Cancer Risk	1.1	0.5	EPA 8260B
35	Chloromethane	74873	USEPA Health Advisory	3	0.5	EPA 8260B
23	Dibromochloromethane	124481	Calif. Toxics Rule	0.41	0.5	EPA 8260B
27	Dichlorobromomethane	75274	Calif. Toxics Rule	0.56	0.5	EPA 8260B
36	Dichloromethane	75092	Calif. Toxics Rule	4.7	0.5	EPA 8260B
33	Ethylbenzene	100414	Taste & Odor	29	0.5	EPA 8260B
88	Hexachlorobenzene	118741	Calif. Toxics Rule	0.00075	1	EPA 8260B
89	Hexachlorobutadiene	87683	National Toxics Rule	0.44	1	EPA 8260B
91	Hexachloroethane	67721	National Toxics Rule	1.9	1	EPA 8260B
94	Naphthalene	91203	USEPA IRIS	14	10	EPA 8260B
38	Tetrachloroethene	127184	National Toxics Rule	0.8	0.5	EPA 8260B
39	Toluene	108883	Taste & Odor	42	0.5	EPA 8260B
40	trans-1,2-Dichloroethylene	156605	Primary MCL	10	0.5	EPA 8260B
43	Trichloroethene	79016	National Toxics Rule	2.7	0.5	EPA 8260B
44	Vinyl chloride	75014	Primary MCL	0.5	0.5	EPA 8260B
	Methyl-tert-butyl ether (MTBE)	1634044	Secondary MCL	5	0.5	EPA 8260B
	Trichlorofluoromethane	75694	Primary MCL	150	5	EPA 8260B
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	Primary MCL	1200	10	EPA 8260B
	Styrene	100425	Taste & Odor	11	0.5	EPA 8260B
	Xylenes	1330207	Taste & Odor	17	0.5	EPA 8260B

SEMI-VOLATILE ORGANICS						
60	1,2-Benzanthracene	56553	Calif. Toxics Rule	0.0044	5	EPA 8270C
85	1,2-Diphenylhydrazine	122667	National Toxics Rule	0.04	1	EPA 8270C
45	2-Chlorophenol	95578	Taste and Odor	0.1	2	EPA 8270C
46	2,4-Dichlorophenol	120832	Taste and Odor	0.3	1	EPA 8270C
47	2,4-Dimethylphenol	105679	Calif. Toxics Rule	540	2	EPA 8270C
49	2,4-Dinitrophenol	51285	National Toxics Rule	70	5	EPA 8270C
82	2,4-Dinitrotoluene	121142	National Toxics Rule	0.11	5	EPA 8270C
55	2,4,6-Trichlorophenol	88062	Taste and Odor	2	10	EPA 8270C
83	2,6-Dinitrotoluene	606202	USEPA IRIS	0.05	5	EPA 8270C
50	2-Nitrophenol	25154557	Aquatic Toxicity	150 (5)	10	EPA 8270C
71	2-Chloronaphthalene	91587	Aquatic Toxicity	1600 (6)	10	EPA 8270C
78	3,3'-Dichlorobenzidine	91941	National Toxics Rule	0.04	5	EPA 8270C
62	3,4-Benzofluoranthene	205992	Calif. Toxics Rule	0.0044	10	EPA 8270C
52	4-Chloro-3-methylphenol	59507	Aquatic Toxicity	30	5	EPA 8270C
48	4,6-Dinitro-2-methylphenol	534521	National Toxics Rule	13.4	10	EPA 8270C
51	4-Nitrophenol	100027	USEPA Health Advisory	60	5	EPA 8270C
69	4-Bromophenyl phenyl ether	101553	Aquatic Toxicity	122	10	EPA 8270C
72	4-Chlorophenyl phenyl ether	7005723	Aquatic Toxicity	122 (3)	5	EPA 8270C
56	Acenaphthene	83329	Taste and Odor	20	1	EPA 8270C
57	Acenaphthylene	208968	No Criteria Available		10	EPA 8270C
58	Anthracene	120127	Calif. Toxics Rule	9,600	10	EPA 8270C
59	Benzidine	92875	National Toxics Rule	0.00012	5	EPA 8270C
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
63	Benzo(g,h,i)perylene	191242	No Criteria Available		5	EPA 8270C
64	Benzo(k)fluoranthene	207089	Calif. Toxics Rule	0.0044	2	EPA 8270C
65	Bis(2-chloroethoxy) methane	111911	No Criteria Available		5	EPA 8270C
66	Bis(2-chloroethyl) ether	111444	National Toxics Rule	0.031	1	EPA 8270C
67	Bis(2-chloroisopropyl) ether	39638329	Aquatic Toxicity	122 (3)	10	EPA 8270C
68	Bis(2-ethylhexyl) phthalate	117817	National Toxics Rule	1.8	3	EPA 8270C
70	Butyl benzyl phthalate	85687	Aquatic Toxicity	3 (7)	10	EPA 8270C
73	Chrysene	218019	Calif. Toxics Rule	0.0044	5	EPA 8270C
81	Di-n-butylphthalate	84742	Aquatic Toxicity	3 (7)	10	EPA 8270C
84	Di-n-octylphthalate	117840	Aquatic Toxicity	3 (7)	10	EPA 8270C
74	Dibenzo(a,h)-anthracene	53703	Calif. Toxics Rule	0.0044	0.1	EPA 8270C
79	Diethyl phthalate	84662	Aquatic Toxicity	3 (7)	2	EPA 8270C
80	Dimethyl phthalate	131113	Aquatic Toxicity	3 (7)	2	EPA 8270C
86	Fluoranthene	206440	Calif. Toxics Rule	300	10	EPA 8270C
87	Fluorene	86737	Calif. Toxics Rule	1300	10	EPA 8270C
90	Hexachlorocyclopentadiene	77474	Taste and Odor	1	1	EPA 8270C
92	Indeno(1,2,3-c,d)pyrene	193395	Calif. Toxics Rule	0.0044	0.05	EPA 8270C
93	Isophorone	78591	National Toxics Rule	8.4	1	EPA 8270C
98	N-Nitrosodiphenylamine	86306	National Toxics Rule	5	1	EPA 8270C
96	N-Nitrosodimethylamine	62759	National Toxics Rule	0.00069	5	EPA 8270C
97	N-Nitrosodi-n-propylamine	621647	Calif. Toxics Rule	0.005	5	EPA 8270C
95	Nitrobenzene	98953	National Toxics Rule	17	10	EPA 8270C
53	Pentachlorophenol	87865	Calif. Toxics Rule	0.28	0.2	EPA 8270C
99	Phenanthrene	85018	No Criteria Available		5	EPA 8270C
54	Phenol	108952	Taste and Odor	5	1	EPA 8270C
100	Pyrene	129000	Calif. Toxics Rule	960	10	EPA 8270C

INORGANICS						
	Aluminum	7429905	Ambient Water Quality	87	50	EPA 6020/200.8
1	Antimony	7440360	Primary MCL	6	5	EPA 6020/200.8
2	Arsenic	7440382	Ambient Water Quality	0.018	0.01	EPA 1632
15	Asbestos	1332214	National Toxics Rule/ Primary MCL	7 MFL	0.2 MFL >10um	EPA/600/R-93/116(PCM)
	Barium	7440393	Basin Plan Objective	100	100	EPA 6020/200.8
3	Beryllium	7440417	Primary MCL	4	1	EPA 6020/200.8
4	Cadmium	7440439	Public Health Goal	0.07	0.25	EPA 1638/200.8
5a	Chromium (total)	7440473	Primary MCL	50	2	EPA 6020/200.8
5b	Chromium (VI)	18540299	Public Health Goal	0.2	0.5	EPA 7199/ 1636
6	Copper	7440508	National Toxics Rule	4.1 (2)	0.5	EPA 6020/200.8
14	Cyanide	57125	National Toxics Rule	5.2	5	EPA 9012A
	Fluoride	7782414	Public Health Goal	1000	0.1	EPA 300
	Iron	7439896	Secondary MCL	300	100	EPA 6020/200.8
7	Lead	7439921	Calif. Toxics Rule	0.92 (2)	0.5	EPA 1638
8	Mercury	7439976	TMDL Development		0.0002 (11)	EPA 1669/1631
	Manganese	7439965	Secondary MCL/ Basin Plan Objective	50	20	EPA 6020/200.8
9	Nickel	7440020	Calif. Toxics Rule	24 (2)	5	EPA 6020/200.8
10	Selenium	7782492	Calif. Toxics Rule	5 (8)	5	EPA 6020/200.8
11	Silver	7440224	Calif. Toxics Rule	0.71 (2)	1	EPA 6020/200.8
12	Thallium	7440280	National Toxics Rule	1.7	1	EPA 6020/200.8
	Tributyltin	688733	Ambient Water Quality	0.063	0.002	EV-024/025
13	Zinc	7440666	Calif. Toxics Rule/ Basin Plan Objective	54/ 16 (2)	10	EPA 6020/200.8
PESTICIDES - PCBs						
110	4,4'-DDD	72548	Calif. Toxics Rule	0.00083	0.02	EPA 8081A
109	4,4'-DDE	72559	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
108	4,4'-DDT	50293	Calif. Toxics Rule	0.00059	0.01	EPA 8081A
112	alpha-Endosulfan	959988	National Toxics Rule	0.056 (9)	0.02	EPA 8081A
103	alpha-Hexachlorocyclohexane (BHC)	319846	Calif. Toxics Rule	0.0039	0.01	EPA 8081A
	Alachlor	15972608	Primary MCL	2	1	EPA 8081A
102	Aldrin	309002	Calif. Toxics Rule	0.00013	0.005	EPA 8081A
113	beta-Endosulfan	33213659	Calif. Toxics Rule	0.056 (9)	0.01	EPA 8081A
104	beta-Hexachlorocyclohexane	319857	Calif. Toxics Rule	0.014	0.005	EPA 8081A
107	Chlordane	57749	Calif. Toxics Rule	0.00057	0.1	EPA 8081A
106	delta-Hexachlorocyclohexane	319868	No Criteria Available		0.005	EPA 8081A
111	Dieldrin	60571	Calif. Toxics Rule	0.00014	0.01	EPA 8081A
114	Endosulfan sulfate	1031078	Ambient Water Quality	0.056	0.05	EPA 8081A
115	Endrin	72208	Calif. Toxics Rule	0.036	0.01	EPA 8081A
116	Endrin Aldehyde	7421934	Calif. Toxics Rule	0.76	0.01	EPA 8081A
117	Heptachlor	76448	Calif. Toxics Rule	0.00021	0.01	EPA 8081A
118	Heptachlor Epoxide	1024573	Calif. Toxics Rule	0.0001	0.01	EPA 8081A
105	Lindane (gamma-Hexachlorocyclohexane)	58899	Calif. Toxics Rule	0.019	0.019	EPA 8081A
119	PCB-1016	12674112	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
120	PCB-1221	11104282	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082

121	PCB-1232	11141165	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
122	PCB-1242	53469219	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
123	PCB-1248	12672296	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
124	PCB-1254	11097691	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
125	PCB-1260	11096825	Calif. Toxics Rule	0.00017 (10)	0.5	EPA 8082
126	Toxaphene	8001352	Calif. Toxics Rule	0.0002	0.5	EPA 8081A
	Atrazine	1912249	Public Health Goal	0.15	1	EPA 8141A
	Bentazon	25057890	Primary MCL	18	2	EPA 643/ 515.2
	Carbofuran	1563662	CDFG Hazard Assess.	0.5	5	EPA 8318
	2,4-D	94757	Primary MCL	70	10	EPA 8151A
	Dalapon	75990	Ambient Water Quality	110	10	EPA 8151A
	1,2-Dibromo-3-chloropropane (DBCP)	96128	Public Health Goal	0.0017	0.01	EPA 8260B
	Di(2-ethylhexyl)adipate	103231	USEPA IRIS	30	5	EPA 8270C
	Dinoseb	88857	Primary MCL	7	2	EPA 8151A
	Diquat	85007	Ambient Water Quality	0.5	4	EPA 8340/ 549.1/HPLC
	Endothal	145733	Primary MCL	100	45	EPA 548.1
	Ethylene Dibromide	106934	OEHHA Cancer Risk	0.0097	0.02	EPA 8260B/ 504
	Glyphosate	1071836	Primary MCL	700	25	HPLC/ EPA 547
	Methoxychlor	72435	Public Health Goal	30	10	EPA 8081A
	Molinate (Ordram)	2212671	CDFG Hazard Assess.	13	2	EPA 634
	Oxamyl	23135220	Public Health Goal	50	20	EPA 8318/ 632
	Picloram	1918021	Primary MCL	500	1	EPA 8151A
	Simazine (Princep)	122349	USEPA IRIS	3.4	1	EPA 8141A
	Thiobencarb	28249776	Basin Plan Objective/ Secondary MCL	1	1	HPLC/ EPA 639
16	2,3,7,8-TCDD (Dioxin)	1746016	Calif. Toxics Rule	1.30E-08	5.00E-06	EPA 8290 (HRGC) MS
	2,4,5-TP (Silvex)	93765	Ambient Water Quality	10	1	EPA 8151A
	Diazinon	333415	CDFG Hazard Assess.	0.05	0.25	EPA 8141A/ GCMS
	Chlorpyrifos	2921882	CDFG Hazard Assess.	0.014	1	EPA 8141A/ GCMS

OTHER CONSTITUENTS						
	Ammonia (as N)	7664417	Ambient Water Quality	1500 (4)		EPA 350.1
	Chloride	16887006	Agricultural Use	106,000		EPA 300.0
	Flow			1 CFS		
	Hardness (as $CaCO_3$)			5000		EPA 130.2
	Foaming Agents (MBAS)		Secondary MCL	500		SM5540C
	Nitrate (as N)	14797558	Primary MCL	10,000	2,000	EPA 300.0
	Nitrite (as N)	14797650	Primary MCL	1000	400	EPA 300.0
	pH		Basin Plan Objective	6.5-8.5	0.1	EPA 150.1
	Phosphorus, Total (as P)	7723140	USEPA IRIS	0.14		EPA 365.3
	Specific conductance (EC)		Agricultural Use	700 umhos/cm		EPA 120.1
	Sulfate		Secondary MCL	250,000	500	EPA 300.0
	Sulfide (as S)		Taste and Odor	0.029		EPA 376.2
	Sulfite (as SO_3)		No Criteria Available			SM4500-SO3
	Temperature		Basin Plan Objective	^{o}F		
	Total Disolved Solids (TDS)		Agricultural Use	450,000		EPA 160.1

FOOTNOTES:

(1) - The Criterion Concentrations serve only as a point of reference for the selection of the appropriate analytical method. They do not indicate a regulatory decision that the cited concentration is either necessary or sufficient for full protection of beneficial uses. Available technology may require that effluent limits be set lower than these values.

(2) - Freshwater aquatic life criteria for metals are expressed as a function of total hardness (mg/L) in the water body. Values displayed correspond to a total hardness of 40 mg/L.

(3) - For haloethers

(4) - Freshwater aquatic life criteria for ammonia are expressed as a function of pH and temperature of the water body. Values displayed correspond to pH 8.0 and temperature of 22 C.

(5) - For nitrophenols.

(6) - For chlorinated naphthalenes.

(7) - For phthalate esters.

(8) - Basin Plan objective = 2 ug/L for Salt Slough and specific constructed channels in the Grassland watershed.

(9) - Criteria for sum of alpha- and beta- forms.

(10) - Criteria for sum of all PCBs.

(11) - Mercury monitoring shall utilize "ultra-clean" sampling and analytical methods. These methods include:

Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels, US EPA; and

Method 1631: Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluoresence, US EPA

Dioxin and Furan Sampling

Section 3 of the State Implementation Plan requires that each NPDES discharger conduct sampling and analysis of dioxin and dibenzofuran congeners. Dioxin and Furan sampling shall be conducted in the effluent and receiving water once during dry weather and once during wet weather.

Each sample shall be analyzed for the seventeen congeners listed in the table below. High Resolution GCMS Method 8290, or another method capable of individually quantifying the congeners to an equivalent detection level, shall be used for the analyses.

For each sample the discharger shall report:

- The measured or estimated concentration of each of the seventeen congeners
- The quantifiable limit of the test (as determined by procedures in Section 2.4.3, No. 5 of the SIP)
- The Method Detection Level (MDL) for the test

The TCDD equivalent concentration for each analysis calculated by multiplying the concentration of each congener by the Toxicity Equivalency Factor (TEF) in the following table, and summing the resultant products to determine the equivalent toxicity of the sample expressed as 2,3,7,8-TCDD.

Congener	TEF
2,3,7,8TetraCDD	1
1,2,3,7,8-PentaCDD	1.0
1,2,3,4,7,8-HexaCDD	0.1
1,2,3,6,7,8-HexaCDD	0.1
1,2,3,7,8,9-HexaCDD	0.1
1,2,3,4,6,7,8-HeptaCDD	0.01
OctaCDD	0.0001
2,3,7,8-TetraCDF	0.1
1,2,3,7,8-PentaCDF	0.05
2,3,4,7,8-PentaCDF	0.5
1,2,3,4,7,8-HexaCDF	0.1
1,2,3,6,7,8-HexaCDF	0.1
1,2,3,7,8,9-HexaCDF	0.1
2,3,4,6,7,8-HexaCDF	0.1
1,2,3,4,6,7,8-HeptaCDF	0.01
1,2,3,4,7,8,9-HeptaCDF	0.01
OctaCDF	0.0001

ATTACHMENT I

REQUIREMENTS FOR MONITORING WELL INSTALLATION WORK PLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a work plan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the work plan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All work plans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Work plan and Groundwater Sampling and Analysis Plan

The monitoring well installation work plan shall contain the following minimum information:

A. General Information:
   Purpose of the well installation project
   Brief description of local geologic and hydrogeologic conditions
   Proposed monitoring well locations and rationale for well locations
   Topographic map showing facility location, roads, and surface water bodies
   Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:
   On-site supervision of drilling and well installation activities
   Description of drilling equipment and techniques
   Equipment decontamination procedures
   Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):
   Diagram of proposed well construction details
   - Borehole diameter
   - Casing and screen material, diameter, and centralizer spacing (if needed)
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
   - Anticipated depth of well, length of well casing, and length and position of perforated interval
   - Thickness, position and composition of surface seal, sanitary seal, and sand pack
   - Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):
   Method of development to be used (i.e., surge, bail, pump, etc.)

Parameters to be monitored during development and record keeping technique
Method of determining when development is complete
Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey
Datum for survey measurements
List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. **Appendix: Groundwater Sampling and Analysis Plan (SAP)**
The Groundwater SAP shall be included as an appendix to the work plan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
  - General sampling techniques
  - Record keeping during sampling (include copies of record keeping logs to be used)
  - QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved work plan.

A. General Information:
Purpose of the well installation project
Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells
Number of monitoring wells installed and copies of County Well Construction Permits
Topographic map showing facility location, roads, surface water bodies

Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):

On-site supervision of drilling and well installation activities
Drilling contractor and driller's name
Description of drilling equipment and techniques
Equipment decontamination procedures
Soil sampling intervals and logging methods

Well boring log

- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):

Well construction diagram, including:

- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:

Date(s) and method of development
How well development completion was determined
Volume of water purged from well and method of development water disposal
Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):

Identify the coordinate system and datum for survey measurements
Describe the measuring points (i.e. ground surface, top of casing, etc.)
Present the well survey report data in a table
Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix