

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2007-XXXX

NPDES NO. CA0079197

WASTE DISCHARGE REQUIREMENTS
FOR
CITY OF ATWATER
WASTEWATER TREATMENT FACILITY
MERCED COUNTY

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

BACKGROUND

1. The City of Atwater (hereafter City) submitted a Report of Waste Discharge (RWD) dated 30 July 1999, and additional information dated 11 May 2000 to complete the RWD, and applied for a permit renewal to discharge wastewater under the National Pollutant Discharge Elimination System (NPDES) from the City Wastewater Treatment Facility (WWTF).
2. The City owns and operates a wastewater collection, treatment, and disposal system, and provides municipal sewerage service to the City of Atwater (population 25,700), Castle Aviation and Development Center, and the unincorporated community of Winton (population 11,000). The City's WWTF is on property owned by the City in Section 12, T7S, R12E, MDB&M, as shown on Attachment A, a part of this Order. Disinfected secondary-treated municipal wastewater is discharged under a NPDES permit to the Atwater Drain, a water of the United States, at the point, latitude North 37° 20' 28" and longitude West 120° 36' 20".
3. Waste Discharge Requirements Order No. 95-034 (NPDES Permit No. CA 0079197), adopted by the Regional Water Board on 24 February 1995, regulates the WWTF and its discharge to the Atwater Drain of up to six million gallons per day (mgd).
4. The City contracts with Veolia Water North America – West, LLC to operate and maintain the WWTF. The WWTF includes headworks, two primary clarifiers, two aeration basins, four secondary clarifiers, and three parallel chlorine contact chambers. The WWTF is currently operated in extended aeration mode. Preliminary treatment includes a conical grit chamber, cyclone grit classifiers, a 3/8-inch bar screen and a screenings compactor. Treated wastewater is disinfected with chlorine gas and dechlorinated with calcium thiosulfate and sodium bisulfite. Two anaerobic digesters process sludge from the primary clarifiers and waste activated sludge that has been partially dewatered via gravity belt thickeners. A concrete lined sludge holding basin contains sludge from the anaerobic digesters. During the summer months, solids are pumped from the sludge holding basin to ten unlined one-acre drying beds. The WWTF produces approximately 600 dry tons of sludge annually. With the exception of leachate from the unlined sludge drying beds, liquid wastes from solids handling operations (i.e., digester supernatant, sludge holding basin decant, sludge drying bed decant, and gravity belt thickener filtrate) are returned to the aeration basins for treatment. The WWTF's process flow diagram is depicted in Attachment B, a part of this Order.

5. The RWD describes the discharge as follows:

Parameter	Units	Value	
		Mean	Max
Design Flow	mgd	6.0	
Current Dry Weather Flow	mgd	3.0	3.7
Summer Temperature	°C	23.2	30.4
Winter Temperature	°C	19	24.8
BOD ₅ ¹	mg/L	5.3 ²	24
TSS ³	mg/L	6.3 ²	20
Ammonia (as N)	mg/L	2.85 ⁴	15
Nitrate plus nitrite (as N)	mg/L	19.6	53.1
Phosphorus	mg/L	2.9	3.1
Chlorine Residual	mg/L	<0.1	0.2
Total Dissolved Solids (TDS)	mg/L	388.8 ⁴	440
Chloroform	µg/L	13.4	13.4
Fecal Coliform Bacteria	MPN ⁶ /100 mL	2 ⁴	70
Total Coliform Bacteria	MPN ⁵ /100 mL	13 ⁷	

- ¹ Five-day biochemical oxygen demand at 20°C
- ² Annual average of 156 analyses at a sampling frequency of 3/week
- ³ Total suspended solids
- ⁴ Annual average of 104 analyses at a sampling frequency of 2/week
- ⁵ 762 values from 1 July 2002 - 30 June 2004 (from self-monitoring data, not RWD)
- ⁶ Most probable number
- ⁷ Highest 7-sample median value in any one month based on 156 analyses at a sampling frequency of 3/week.

- 6. The City submitted daily effluent conductivity at 25°C (EC) readings for 1 June 2002 through 30 April 2006. The average is 549 µmhos/cm, the standard deviation is 58, the maximum 30-day moving average value is 641 µmhos/cm, and the maximum value is 782 µmhos/cm.
- 7. The RWD estimates that, for each one-inch of precipitation, less than 500,000 gallons per day flow into the WWTF from inflow and infiltration.
- 8. The WWTF lies within the San Joaquin River and Sacramento River Basin, specifically within Hydrologic Area No. 535.80, the Merced Hydrologic Area of the San Joaquin Valley Floor Hydrologic Unit, as depicted on interagency hydrologic maps prepared by the California Department of Water Resources (DWR) in 1986.
- 9. The WWTF is in a semi-arid area. Average annual precipitation is 11 inches and evapotranspiration is about 63 inches according to information published by DWR.
- 10. The WWTF is outside of the 100-year flood hazard according to maps published by the Federal

Emergency Management Agency.

11. Areal topography indicates a slope of about 2 feet per 1,000 feet toward the southwest. Surface water drainage from areas outside the WWTF enters the Atwater Drain.
12. Soil types in the WWTF vicinity are principally silty clay loams that exhibit moderate to low permeabilities according to the National Resource Conservation Service.
13. Regional groundwater flows southeast and occurs about 40 to 45 feet below ground surface, according to information in *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2004. The City does not monitor groundwater quality in the WWTF vicinity.
14. The City obtains drinking water from a network of wells. In 2000, concentrations in the City's source water of TDS, EC, hardness, and alkalinity averaged 214 mg/L, 301 μ mhos/cm, 63 mg/L, and 111 mg/L, respectively.
15. The City disposes of grit and screenings in the Merced County Highway 59 Solid Waste Landfill, which is regulated by Waste Discharge Requirements Order No. R5-2006-0022. The City disposes of sludge to Brisco Enterprises' Silva Ranch in El Nido, California, which is regulated by a permit issued by Merced County.

APPLICABLE LAWS, REGULATIONS, POLICIES AND PLANS

16. The federal Clean Water Act (CWA) Sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) and amendments thereto establish the basis for the effluent limitations, pretreatment requirements, and certain sludge disposal requirements in this Order.
17. California Water Code (CWC) Division 7 and its implementing regulations in Title 23 California Code of Regulations (Title 23) establish the water quality protection, permitting and enforcement requirements in this Order.
18. CWC section 13263.6(a) requires that:

...the regional board shall prescribe effluent limitations as part of the waste discharge requirements of a publicly owned treatment works (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 1987 (42 U.S.C. Sec. 11023)(EPCKRA) indicate as discharged into the POTW, for which the state board or the regional board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective.

The U.S. Environmental Protection Agency's (USEPA) 2002 Toxics Release Inventory database

released 23 June 2004 lists no compounds as being discharged to the Atwater WWTF.

19. USEPA adopted the National Toxics Rule (NTR) on 5 February 1993, the California Toxics Rule (CTR) on 18 May 2000, and amendments to the CTR on 13 February 2001. These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board (State Water Board) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy—SIP), which contains Policy on implementing the NTR, CTR, and other criteria for priority toxic pollutants.
20. Federal Clean Water Act regulations at 40 CFR 131.12 establish a federal antidegradation policy that applies to the discharge subject to this Order. In addition, State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Water in California (hereafter Resolution 68-16), requires the Regional Water Board in regulating discharge of waste to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board’s policies (e.g., quality that exceeds water quality objectives). Resolution 68-16 requires that the discharge be regulated to meet best practicable treatment or control (BPTC) to assure that pollution or nuisance will not occur and the highest water quality consistent with the maximum benefit to the people of the State is maintained. This Order implements Resolution 68-16 consistent with the federal policy. This Order requires the City to comply with technology-based standards consistent with federal regulations and more stringent standards necessary to meet State water quality limitations.
21. The *Water Quality Control Plan; Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives (WQO), and contains implementation programs and policies to achieve those objectives for all waters of the Basin.
22. State Water Board Resolution No. 88-63, Adoption of Policy Entitled “Sources of Drinking Water,” states:

All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply...with the exception of:

* * *

2. Surface Waters Where:

- a. The water is in systems designed or modified to collect...storm water runoff, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards...

As recommended by Resolution 88-63, the Basin Plan designates all unlisted waters as MUN

and establishes that a Basin Plan amendment is necessary to remove MUN as a beneficial use.

23. California Business and Professions Code (CBPC) Division 3, Chapters 7 and 12.5 and implementing regulations in Title 16 CCR (Title 16) provide the bases for qualification requirements applicable to technical work and technical report preparation as specifically stated in this Order.

RECEIVING WATER DESCRIPTION AND BENEFICIAL USES

24. According to Merced Irrigation District (MID) records, the Atwater Drain is a storm drain constructed to serve the City of Atwater. The easements were recorded beginning in 1918; construction was completed in the 1920s. Merced County and Merced Irrigation District entered into an agreement for construction, easements, ownership, and maintenance of the Atwater Drain on 6 April 1922. MID maintains the Atwater Drain under a contract with the City of Atwater. Attachment A shows the location of the drain. Its alignment parallels several major roads and is accessible to the public. Historically, it terminated with discharge to Bear Creek, a tributary to the San Joaquin River. About thirteen miles downstream from the discharge, the flows in the Atwater Drain entered a siphon under the East Side Canal prior to discharging to Bear Creek. Today, the Atwater Drain terminates approximately 0.6 miles upstream from the old siphon on the Arena Plains Unit of the Merced National Wildlife Refuge (Refuge), which is owned and operated by the U. S. Fish & Wildlife Service. The drain channel between its current terminus and the old siphon is filled with earth.
25. The Atwater Drain feeds wetland habitat on the Refuge. Natural surface water channels convey water from the wetland habitat to the southwest corner of the Refuge, which is bounded by a levee. A breach in the levee allows the Refuge to exchange water with the East Side Canal. Water in the East Side Canal is periodically diverted to the San Joaquin River just south of its confluence with the Merced River.
26. The Atwater Drain begins approximately 800 feet upstream of the WWTF discharge. Two pipe outfalls exist at the head of the Atwater Drain. Historically, Sun Garden - Gangi Canning Company (Sun Garden) (formerly Atwater Canning Co.) used one outfall to discharge non-contact cooling water. Sun Garden no longer possesses an NPDES permit to discharge non-contact cooling water. The sources of water in the other outfall include storm water from the City of Atwater and miscellaneous discharges (e.g., landscape irrigation runoff, wash water, etc.) from residential and industrial areas within the City of Atwater. The City's Self Monitoring Reports (SMRs) show that there is little to no upstream flow (typically around 0.08 cubic feet per second) within the Atwater Drain except during occasional storm events.
27. Given the situation described in Findings 24 and 26, there is no natural background water in the Atwater Drain. The Atwater Drain itself is man-made and the background water originates from human activities and backwater from the discharge except during storm events when it results from man-made storm drainage controls. This unnatural, artificial background water does not

have a natural temperature or natural turbidity.

28. Approximately ½ mile downstream of the Atwater WWTF discharge, Bloss Lateral and Parriera Drain, which both carry surface water flows and occasional excess irrigation canal flows, empty into the Atwater Drain.
29. The main use of the Atwater Drain water is irrigation by Joseph Gallo Farms (also known as Gallo Ranch). Gallo Ranch has access to water in the drain beyond the 5-mile point of Highway 140 and Bert Crane Road. Gallo Ranch mixes water from the Atwater Drain with Merced Irrigation District water and pumped groundwater for irrigation of fodder crops (e.g., corn and wheat) and sweet potatoes. According to a foreman at Gallo Ranch, it does not discharge any irrigation tail water. The City and the owners of Gallo Ranch entered into an agreement wherein Gallo Ranch granted the City an easement to flow its WWTF effluent over Gallo Ranch in exchange for the right to all the WWTF effluent (up to the design flow) in the Atwater Drain. Any WWTF effluent not extracted for use by Gallo Ranch flows to the Refuge.
30. During a 12 June 2001 inspection, Regional Water Board staff observed humans harvesting crayfish and frogs from the Atwater Drain. On a 29 June 2005 reconnaissance inspection of the Atwater Drain, Regional Water Board staff observed crayfish, catfish, carp, and other unidentified fish species. The City's SMRs for 2004 through April 2006 noted frogs, tadpoles, crayfish, minnows, fish, birds, ducks, and aquatic insects in the Atwater Drain.
31. The State Water Board adopted Order No. WQO 2002-0015 on 3 October 2002 concerning the WDRs for Vacaville's Easterly Wastewater Treatment Plant. This precedential decision provides guidance on implementing the Basin Plan, particularly the protection of beneficial uses as designated in an effluent dominated water body where some actual and probable uses may warrant re-evaluation. Some of the issues addressed by the State Water Board Order may be relevant to the Atwater WWTF discharge.
32. The existing and beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1 of the Basin Plan. The beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan notes that it is impractical to list every surface water body in the Region, and the Basin Plan does not specifically identify the Atwater Drain.
33. It is not appropriate to use the tributary rule to determine the beneficial uses of the Atwater Drain because the Atwater Drain is a man-made storm drain (described in Finding 24). Given the flow conditions, the beneficial uses actually attained in the Atwater Drain since 1975, information in the case file, and information submitted by the City, the following beneficial uses are applicable to the Atwater Drain:
 - a. *Municipal and Domestic Supply (MUN)*. In accordance with the Basin Plan, water bodies that do not have beneficial uses designated in Table II-1 are assigned MUN designations. As described in Findings 22 and 24, the Atwater Drain meets the criteria set forth for an

exemption in accordance with Resolution 88-63, Item 2.a. Until an exemption is made by an amendment to the Basin Plan, MUN applies.

- b. *Agricultural Supply (AGR)*. As described in Finding 29, water in the Atwater Drain is diverted to the Gallo Ranch for irrigation use. The beneficial use category of agricultural supply includes irrigation of crops for direct human consumption, otherwise known as unrestricted irrigation use.
- c. *Wildlife Habitat (WILD)*. The Atwater Drain provides water that supports wetland ecosystems and wildlife within its reaches and in the Refuge.
- d. *Warm Freshwater Habitat (WARM)*. As established in Finding 30, the Atwater Drain supports warm freshwater aquatic life.
- e. *Water Contact Recreation (REC-1)*. The Basin Plan definition for REC-1 includes “uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, ...and... fishing ...” This beneficial use is applicable to the Atwater Drain sections accessible to the public, as the people who harvest aquatic life such as frogs and crayfish from the drain (Finding 30) have body contact with the water.
- f. *Groundwater Recharge (GWR)*. In areas where groundwater elevations are below the invert of the Atwater Drain, water conveyed in the drain will percolate to groundwater.

Year-round beneficial uses are all subject to whether Gallo Ranch continues to obtain wastewater for reuse from the Atwater Drain and not directly from the WWTF.

- 34. The beneficial uses controlling the most stringent effluent limitations of this Order are the potential MUN, and existing AGR, REC-1, and WARM. Other designated beneficial uses are less sensitive and do not control the effluent limitations of this Order. As this Board has previously reviewed and determined that AGR, REC-1, and WARM exist or are probable beneficial uses, as described in Findings 29, 30, and 33, only MUN has no recent evidence or documentation of beneficial use in the Atwater Drain.
- 35. If the City has or wishes to acquire information to establish that MUN does not exist and is unlikely to be attained in the future in the Atwater Drain, it may provide such to the Regional Water Board for full analysis through a Use Attainability Analysis (UAA). If the UAA establishes that the dedesignation of this beneficial use is appropriate, this Board will process and consider a Basin Plan amendment with support from the City. As State Water Board Order WQO 2002-0015 makes clear, where a Regional Water Board has evidence that a use neither exists nor likely can be feasibly attained, the Regional Water Board must expeditiously initiate appropriate basin plan amendments to consider dedesignating the use and the discharger bears the responsibility for providing the information to support the UAA. Given the information in Findings 22, 24 and 33, it is also appropriate to delay implementation of interim and final effluent limitations, described

below in Findings 43.e. and 43.f., for bromodichloromethane and chlorodibromoethane. The delay can extend until the Board confirms the limitations as necessary or as unnecessary by a UAA. It is appropriate to include in this Order a time schedule(s) requiring the City to provide this Board with the technical information necessary to complete a UAA or a commitment to a project ensuring compliance with the proposed limitations.

GROUNDWATER BENEFICIAL USES

36. The Basin Plan designates the beneficial uses of local groundwater as MUN, industrial service supply, industrial process supply, and AGR.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL ANALYSIS

37. 40 CFR 133.102 requires a minimum of secondary treatment for BOD₅, TSS, and pH.
38. 40 CFR 122.44(d) requires water quality-based effluent limitations (WQBELs) for all pollutants that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above any State water quality standard, including State narrative criteria (or objectives) for water quality. Clean Water Act 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 Basin Plan beneficial uses and narrative and numeric water quality objectives, State Water Board adopted standards, and federal standards, including the NTR and the CTR. The Basin Plan contains numeric and narrative water quality objectives, including objectives for bacteria, chemical constituents, dissolved oxygen, pH, toxicity, salinity, and suspended materials. The narrative toxicity objective states: "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at III-8.00). For determining whether there is reasonable potential for an excursion above a narrative objective, the regulations prescribe three discrete methods (40 CFR 122.44(d)(vi)). This Board often relies on the second method because the USEPA's water quality criteria have been developed using methodologies that are subject to public review, as are the individually recommended criteria guidance documents. USEPA's ambient water quality criteria are used as means of supplementing the integrated approach to toxics control, and in some cases deriving numeric limitations to protect receiving waters from toxicity as required in the Basin Plan's narrative toxicity objective.
39. As described in Finding 26, occasional storm water events provide the only significant flow in the Atwater Drain upstream of the WWTF. Beneficial uses must be protected during low and no upstream flow so no credit for receiving water dilution is available and limitations must be "end of pipe" without any benefit of dilution. The lack of dilution results in more stringent effluent limitations to protect water contact recreational uses, agricultural water quality goals, and aquatic life.

40. This Order establishes numeric effluent limits for the following parameters: BOD₅, TSS, ammonia, nitrite, nitrate, pH, settleable solids, EC, total coliform organisms, total residual chlorine, oil and grease, and acute whole effluent toxicity.
- a. **BOD₅ and TSS.** BOD₅ and TSS limits are set in accordance with the secondary treatment standards found at 40 CFR 133.102, which state that the effluent BOD₅ and TSS shall not exceed a 30-day average of 30 mg/L and a 7-day average of 45 mg/L, and that the average BOD₅ and TSS percent removal rate shall be no less than 85%. These limits will continue until the City must comply with tertiary treatment requirements set forth herein. Subsequent to adding coagulation and filtration, the BOD₅ and TSS limitations will be 10 mg/L, 15 mg/L, and 20 mg/L, respectively, for the monthly average, weekly average, and daily maximum.
 - b. **Ammonia.** Untreated domestic wastewater contains ammonia, which is toxic to aquatic life. Nitrification is a biological process that converts ammonia to nitrate. Wastewater treatment plants commonly use nitrification to remove ammonia from the waste stream. The WWTF is currently operated in a nitrifying mode. The USEPA publication, *1999 Update of Ambient Water Quality Criteria for Ammonia (1999 Ammonia Update)* contains acute criteria (1-hour average) based on pH and chronic criteria (30-day average) based on pH and temperature. The 1999 Ammonia Update also specifies a maximum four-day average concentration of 2.5 times the chronic criteria. The acute criteria developed for the Atwater Drain are based upon the pH measured in the downstream receiving water from 1998-2006. The chronic criteria developed for the Atwater Drain are based on the pH and temperature measured in the downstream receiving water from 1998-2006. Effluent monitoring data indicates the discharge has a reasonable potential to cause an excursion of the ammonia criteria. Water quality based seasonal effluent limitations for ammonia have been included in this Order. Effluent monitoring data indicates the City cannot consistently comply with the final effluent limitations. Therefore, this Order contains seasonal interim effluent limitations expressed as daily maximums and includes a compliance schedule to comply with the final ammonia effluent limitations.
 - c. **pH.** The Basin Plan requires that the pH of receiving waters not be depressed below 6.5 or raised above 8.5 standard units. As the discharge, except for storm events, is the only significant flow in the Atwater Drain, these limits are applied directly to the discharge.
 - d. **Settleable Solids.** Effluent limits for settleable solids are based on limitations from the previous permit and were developed to attain the Basin Plan narrative WQO for settleable matter.
 - e. **Electrical Conductivity (EC).** The Basin Plan requires that surface waters not contain constituents in concentrations that adversely affect beneficial uses. The Basin Plan's "Policy for Application of Water Quality Objectives" specifies that in implementing narrative WQOs this Board must consider numeric criteria and guidelines developed by other agencies and

organizations as well as all material and relevant information submitted by the discharger and other interested parties. This application of the Basin Plan is consistent with 40 CFR 122.44(d)(1)(vi)(A).

For EC, Ayers R.S. and D.W. Westcott, *Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)*, reports EC levels above 700 $\mu\text{mhos/cm}$ may reduce crop yields for sensitive plants without special irrigation management. According to 1995 and 2002 California Department of Water Resources land use maps, salt sensitive crops such as beans and strawberries were grown within a four-mile radius of the Gallo Ranch, some as close as one-half mile from the ranch.

A monthly average EC effluent limitation of 700 $\mu\text{mhos/cm}$ is a constraint based on preserving the ability to irrigate, without restriction, these sensitive crops. Further, it has been demonstrated historically to be achievable. The City's SMRs for 1 June 2002 through 30 April 2006 indicate that the maximum 30-day moving average EC was 641 $\mu\text{mhos/cm}$.

Accordingly, the EC limitation for this Order is set at 700 $\mu\text{mhos/cm}$ as a monthly average. As the City needs to do nothing differently to comply consistently with this level of EC, and as it is a limit fully protective of all identified beneficial uses, this effluent limitation is reasonable and appropriate.

Nonetheless, the effluent limitation is more restrictive than the "source water plus 500 $\mu\text{mhos/cm}$ " considered elsewhere by this Regional Water Board to be a reasonable increment of EC added through use, provided that effluent EC does not cause exceedance of a water quality objective in receiving water. The numeric limitation that implements the water quality objective for EC in a particular receiving water may be adjusted if determined to be consistent with Resolution 68-16. The process, in general, requires that a discharger demonstrate, up to "source water plus 500 $\mu\text{mhos/cm}$," that it has implemented best efforts to control the EC and that the EC will not cause an unreasonable impact on any beneficial use. The City may pursue a detailed, site-specific investigation of whether an EC greater than 700 $\mu\text{mhos/cm}$ represents its best efforts and is reasonably protective of AGR. Provision 18 specifies the information that must be included in such an investigation. Pending an Executive Officer decision that any investigation result warrants reconsideration of the EC effluent limitation, this Order will be reopened for consideration of a revised EC effluent limitation.

- f. ***Total Coliform Organisms.*** The effluent limitations for total coliform organisms will continue until tertiary treatment limitations become effective.
- g. ***Total Residual Chlorine.*** The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. The City uses chlorine to disinfect the effluent. Chlorine can cause toxicity to aquatic organisms when discharged to surface waters. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic

concentrations. The USEPA recommends, in its *Ambient Water Quality Criteria for the Protection of Fresh Water Aquatic Life*, a maximum chlorine concentration (1-hour average) of 0.019 mg/L and a continuous chlorine concentration (4-day average) of 0.011 mg/L for protection of aquatic life. Using the methodology in the USEPA's *Technical Support Document for Water Quality Based Toxics Control (1991)* (TSD), the average monthly effluent limitation (AMEL) is 0.01 mg/L and the maximum daily effluent limitation (MDEL) is 0.02 mg/L for chlorine. Monitoring for this constituent occurs on a continuous basis, except for periodic occasions when the existing analyzer must be taken offline for calibration. The City is in the process of purchasing and installing a second analyzer so the effluent can be monitored continuously without interruption. This Order gives the City six months to install the second analyzer. In the interim, this Order requires continuous monitoring using the existing analyzer and grab samples every 15 minutes when the analyzer is taken offline for calibration.

- h. ***Acute Whole Effluent Toxicity.*** Regarding the narrative objective for toxicity, the Basin Plan requires that, at a minimum, compliance with this objective shall be evaluated with a 96-hour bioassay. This Order carries over the requirement established in Order No. 95-034 to conduct quarterly whole effluent toxicity testing for acute toxicity. The Basin Plan further states that "...*effluent limits based upon acute biotoxicity tests of effluents will be prescribed...*" This Order carries over from Order No. 95-034 the following effluent limitations for acute toxicity: the median survival in undiluted effluent for any three or more consecutive 96-hour bioassays shall be at least 90%, with no single test having less than 70% survival.
- i. ***Nitrate and Nitrite.*** Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan's chemical constituents water quality objective requires that water designated MUN not contain chemical constituents in concentrations that exceed drinking water MCLs published in Title 22, CCR or that adversely affect beneficial uses. MUN currently applies to the Atwater Drain and local groundwater. The California DHS has adopted primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22, CCR, Table 64431-A, also includes a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen. Effluent data obtained from the City's SMRs from 2001 through April 2006 show nitrate concentrations (as nitrogen) ranging from 1.6-21 mg/L. The discharge from the WWTF has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for nitrite and nitrate based on the effluent data and given the WWTF is operated in a nitrifying mode. Effluent limits for nitrite and nitrate are based on the MCLs. To ensure the treatment process adequately denitrifies the waste stream to protect the beneficial uses of municipal and domestic supply and to limit the introduction of biostimulatory substances to the Atwater Drain, this Order contains average monthly effluent limitations for nitrite and nitrate of 1 mg/L and 10 mg/L, respectively (measured as nitrogen).

Sampling data indicate that the City is unable to comply with these limitations. Therefore, this Order contains an interim effluent limitation expressed as a daily maximum and includes

a compliance schedule to comply with the final nitrate and nitrite effluent limitations.

41. Section 1.3 of the SIP requires imposition of a water quality-based effluent limitation for a priority pollutant if (a) the maximum effluent concentration (MEC) is greater than the most stringent CTR criteria or applicable site-specific Basin Plan objective; (b) the ambient background concentration is greater than the CTR or NTR criterion or applicable site-specific Basin Plan objective and the pollutant is detected in the effluent; or (c) other information is available to determine that a water quality-based effluent limitation is necessary to protect beneficial uses.
42. The City was issued a CWC Section 13267 Order on 27 February 2001 requiring it to submit effluent and receiving water monitoring data meeting the requirements of the SIP to assist this Board in conducting the reasonable potential analyses (RPAs) pursuant to the SIP and 40 CFR 122.44(d). The City submitted effluent data and upstream receiving water data for priority pollutants. The priority pollutant monitoring reports indicated that samples were collected on 30 April 2001, 25 July 2001, 30 October 2001, and 31 January 2002, respectively. WWTF staff reported that the Atwater Drain had upstream flow on the 30 April 2001, 30 October 2001, and 31 January 2002 sampling events but no upstream flow on the 25 July 2001 sampling event. Upstream receiving water priority pollutant data were submitted for 30 April 2001, 30 October 2001, and 31 January 2002. Additional dioxin data was submitted for samples collected on 23 July 2002, 29 January 2003, and 24 July 2003. The results of the City's sampling and the water quality objectives for the pollutants are given in Fact Sheet Attachment A.
43. Based on analyses of effluent and receiving water samples collected by the City, and in accordance with the SIP, the following constituents require effluent limits:
 - a. **Copper (Cu).** The CTR Criterion Continuous Concentration (CCC) copper standard at 22 mg/L hardness (worst-case receiving water hardness) is 2.6 µg/L and the Criterion Maximum Concentration (CMC) is 3.4 µg/L for aquatic life protection. The City submitted results showing the effluent and receiving water above the discharge contained copper concentrations as high as 6.7 µg/L and 27 µg/L, respectively, thereby exceeding the CTR standards. According to calculations based upon the procedures set forth in section 1.4 of the SIP, the AMEL is 1.9 µg/L and the MDEL is 3.4 µg/L. Sampling data indicate that the City is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a discharger to achieve immediate compliance with a CTR criterion. Provision G.10 of this Order requires the City to propose a time schedule (including a justification for a time schedule) for compliance with the AMEL and MDEL. Full compliance with the effluent limitations will take effect in the shortest time possible, but in no case later than 18 May 2010. In the interim period, a maximum daily effluent limitation based on the WWTF past performance is established in this Order.
 - b. **Lead (Pb).** The CTR CCC lead standard at 22 µg/L hardness (worst-case receiving water hardness) is 0.46 µg/L and the CMC is 12 µg/L for aquatic life protection. The City submitted results showing the effluent and the receiving water upstream of the discharge

contained lead concentrations as high as 0.81 µg/L and 12.3 µg/L, respectively, thereby exceeding the CTR standards. According to calculations based upon the procedures set forth in section 1.4 of the SIP, the AMEL is 0.38 µg/L and the MDEL is 0.75 µg/L. Sampling data indicate that the City is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a discharger to achieve immediate compliance with a CTR criterion. Provision G.10 of this Order requires the City to propose a time schedule (including a justification for a time schedule) for compliance with the AMEL and MDEL. Full compliance with the effluent limitations will take effect in the shortest time possible, but in no case later than 18 May 2010. In the interim period, a maximum daily effluent limitation based on the WWTF past performance is established in this Order.

- c. **Zinc (Zn).** The CTR CCC and CMC zinc standards at 22 mg/L hardness (worst-case receiving water hardness) are 33 µg/L for aquatic life protection. The City submitted results showing the effluent and the receiving water upstream of the discharge contained zinc concentrations as high as 39.7 µg/L and 185 µg/L, respectively, thereby exceeding the CTR standards. According to calculations based upon the procedures set forth in section 1.4 of the SIP, the AMEL is 16 µg/L and the MDEL is 33 µg/L. Sampling data indicate that the City is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a discharger to achieve immediate compliance with a CTR criterion. Provision G.10 of this Order requires the City to propose a time schedule (including a justification for a time schedule) for compliance with the AMEL and MDEL. Full compliance with the effluent limitations will take effect in the shortest time possible, but in no case later than 18 May 2010. In the interim period, a maximum daily effluent limitation based on the WWTF past performance is established in this Order.
- d. **2,3,7,8-TCDD (Dioxin).** The CTR human health criterion is 0.013 pg/L for water and organisms and 0.014 pg/L for organisms only. In addition to 2,3,7,8-TCDD, several congeners exhibit toxic effects similar to those of 2,3,7,8-TCDD. The USEPA published toxic equivalency factors (TEFs) for 17 of the congeners, which were later revised in 1997 by participants in a World Health Organization expert meeting. The TEFs represent the relative toxicities of the congeners compared to 2,3,7,8-TCDD. Data provided by the City showed that the April 2001, July 2001, January 2002, July 2002 and January 2003 samples contained dioxin congeners whereas the October 2001 and July 2003 samples showed no dioxin or congeners. For each sampling event, each measured congener concentration was multiplied by its respective TEF and sum of the products were calculated and compared to the CTR human health criterion of 0.013 pg/L. The largest sum was 0.469 pg/L (January 2003 sampling event). According to calculations based upon the procedures set forth in section 1.4 of the SIP, the AMEL is 0.013 pg/L and the MDEL is 0.026 pg/L. Sampling data indicate that the City is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a discharger to achieve immediate compliance with a

CTR criterion. Provision G.10 of this Order requires the City to propose a time schedule (including a justification for a time schedule) for compliance with the AMEL and MDEL. Full compliance with the effluent limitations will take effect in the shortest time possible, but in no case later than 18 May 2010. In the interim period, a maximum daily effluent limitation based on the WWTF past performance is established in this Order.

e. ***Bromodichloromethane.*** The CTR establishes a human health limitation of 0.56 µg/L for water and organisms only and 46 µg/L for organisms only for bromodichloromethane. Effluent sampling results showed concentrations from 4.8 to 13 µg/L. According to calculations based upon the procedures set forth in section 1.4 of the SIP, the AMEL is 0.56 µg/L and the MDEL is 1.13 µg/L. Sampling data indicate that the City is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a discharger to achieve immediate compliance with a CTR criterion. Provision G.9 of this Order requires the City to propose a time schedule for compliance with the AMEL and MDEL or provide the information necessary for the Regional Water Board to conduct a UAA for MUN. This Order establishes an interim daily maximum effluent limitation and establishes a time schedule to achieve the AMEL and MDEL, should the City choose not to pursue a UAA.

f. ***Chlorodibromomethane.*** The CTR establishes a human health criterion of 0.40 µg/L for water and organisms only and 34 µg/L for organisms only for chlorodibromomethane. Effluent sampling results showed concentrations from 1.2 to 3.3 µg/L. According to calculations based upon the procedures set forth in section 1.4 of the SIP, the AMEL is 0.40 µg/L and the MDEL is 0.81 µg/L. Sampling data indicate that the City is unable to comply with these limitations. Section 2.1 of the SIP allows for compliance schedules within the permit for existing discharges where it is demonstrated that it is infeasible for a discharger to achieve immediate compliance with a CTR criterion. Provision G.9 of this Order requires the City to propose a time schedule for compliance with the AMEL and MDEL or provide the information necessary for the Regional Water Board to conduct a UAA for MUN. This Order establishes an interim daily maximum effluent limitation and establishes a time schedule to achieve the AMEL and MDEL, should the City choose not to pursue a UAA.

44. The reasonable potential analysis and effluent limitations for metals with hardness-dependent criteria are based on lowest observed hardness concentration (22 mg/L as CaCO₃) in the Atwater Drain upstream of the WWTF discharge. As described in Finding 26, the Atwater Drain at the WWTF outfall is effluent dominated the majority of the year. Under these conditions, the effluent hardness significantly influences downstream hardness concentrations. Thus, using the lowest observed upstream hardness concentration to perform a reasonable potential analysis and establish effluent limitations might be overprotective. No downstream hardness data is available. Provision G.17 of this Order requires the City to submit a receiving water hardness study work plan for Executive Officer approval. Upon full implementation of the approved work plan, the proposed receiving water hardness concentration will be subject to Executive Officer approval. Pending Executive Officer approval, this Order will be reopened for consideration of revised effluent limitations for metals with hardness-dependent criteria.

45. Forty-one organic compounds listed in the CTR and NTR have SIP established Minimum Levels (MLs) at concentrations greater than their water quality objectives. The City's reported method levels for 40 of the organic compounds were higher than the SIP required method levels. Continued monitoring of these pollutants is necessary and thus required by Monitoring and Reporting Program No. R5-2007-XXXX. At such time that additional data or information warrants, this permit may be reopened to establish effluent limitations for those compounds determined to have a reasonable potential in accordance with the provisions of this Order.
46. 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 a compliance schedule 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 identify 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 short as practicable.*" **Provisions G.9 and G.10** of this Order require that the City either provide this information by **7 June 2007** or WQBELs for CTR pollutants described in Finding 43 will take effect on that date. Otherwise, the WQBELs will take effect in the shortest time possible as approved by the Executive Officer, but in no case later than **18 May 2010**.

TERTIARY TREATMENT REQUIREMENT

47. The 1988 Memorandum of Agreement (MOA) between California Department of Health Services (DHS) and the State Water Board on the use of recycled water establishes basic principles relative to the agencies and the Regional Water Boards. In addition, the MOA allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to the use of recycled water in California.
48. DHS has promulgated water-recycling criteria for the protection of public health, Title 22, California Code of Regulations (CCR), Division 4, Chapter 3 (Title 22), for the reuse of wastewater. For direct irrigation of food crops where the edible portion of the crop may come in contact with treated wastewater, parks, playgrounds, schoolyards, and other areas of similar public access, Title 22 requires disinfected tertiary recycled water. DHS uses coliform as an indicator of the overall effectiveness of pathogen removal. Title 22, CCR, Section 60301.230 defines Disinfected Tertiary Recycled Water as filtered and subsequently disinfected wastewater that meets certain criteria, generally as follows:
 - a. The chlorine disinfection process provides a CT (residual chlorine concentration times modal contact time) value of not less than 450 milligram-minutes per liter at all times, with a modal

contact time of at least 90 minutes, based on peak dry weather design flow; and

- b. The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 mL, utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 mL in more than one sample in any 30-day period. No single sample should exceed an MPN of 240 per 100 mL for total coliform bacteria.
49. DHS water recycling criteria do not apply to discharges to surface water. This Board requested guidance from DHS on appropriate and reasonable measures to ensure protection of public health where relatively undiluted wastewater in agricultural drains or streams is used for REC-1 or diverted for irrigation of vegetable and fruit crops. DHS' letter dated 8 April 1999 recommended that discharge under these circumstances be restricted to disinfected tertiary recycled water.
 50. To protect the AGR and REC-1 beneficial uses of the receiving waters and the potential use of MUN, the wastewater must be adequately treated to prevent disease. It is appropriate to require disinfected tertiary recycled water for discharges to the Atwater Drain because the water in the drain is primarily wastewater, provides REC-1 (Finding 33), or can be used without restriction to irrigate crops. The treatment method is not prescribed by this Order, but discharges must be treated to a level equivalent to that recommended by DHS. If the City deems disinfected tertiary recycled water or equivalent treatment infeasible, it must develop alternative disposal methods that do not require this level of treatment to dispose of its wastewater.
 51. In addition to coliform testing, a turbidity effluent limitation is an appropriate indicator of treatment process filtration necessary to achieve reliable and effective disinfection. The treatment process, or equivalent, must be capable of reliably meeting a turbidity limitation of two (2) nephelometric turbidity units (NTU) as a daily average. Failure of the filtration system normally results in increased particles in the effluent and higher effluent turbidity, which may decrease disinfection. 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 complete and identify high coliform concentrations.
 52. Tertiary treatment technology can consistently achieve lower concentrations of BOD, TSS and settleable solids than secondary treatment technology. Based upon past experience with the performance of numerous operating tertiary treatment plants, the 30-day average BOD and TSS limitations of 10 mg/L, and the 0.1 mL/L maximum daily limitation of settleable solids reflect the capability of tertiary treatment technology.
 53. Tertiary treatment has not been previously prescribed for this discharge and requires the design and construction of treatment components. Thus, a schedule for compliance with this requirement is appropriate.

54. Pursuant to CWC Section 13263, the provisions of CWC Section 13241 were considered as follows:
- a. The Existing and Potential Future Beneficial Uses of Water. As found in the above findings, the past, present and potential future beneficial uses of the receiving stream include AGR, GWR, REC-1, WILD, and WARM.
 - b. The Environmental Characteristics of the Hydrographic Unit, Including the Quality of Water Available. The water downstream of the discharge is used by and benefits many people. Tertiary treatment is necessary to maintain the beneficial uses of the receiving water. As established in Finding 26, the Atwater Drain begins just upstream of the discharge. With the exception of storm events, there is little to no upstream flow. Flow downstream of the discharge is primarily dominated by WWTF effluent. The historical connection between the Atwater Drain and Bear Creek has been terminated, and water in the Atwater Drain not applied to Gallo Ranch reaches the Refuge and can reach the San Joaquin River via the East Side Canal. Atwater Drain water quality reflects effluent quality the majority of the time.
 - c. Water Quality Conditions that Could Reasonably be Achieved Through the Coordinated Control of All Factors that Affect Water Quality in the Area. The flow in the Atwater Drain upstream of the discharge primarily is storm runoff. Storm water entering the Drain upstream of the discharge will be regulated under the State Water Board's WDRs for storm water discharges from small municipal separate storm sewer systems (small MS4 permit). Compliance with the small MS4 permit should result in improvements in the quality of water entering the Atwater Drain. Within certain limits, the Regional Water Board has the authority and responsibility to regulate all of the discharges and their quality. Fishable, swimmable, and agricultural irrigation water quality conditions in the Atwater Drain can be reasonably achieved through upgrading the treatment to tertiary standards and treatment improvements. The existing WWTF (Finding 4) and operation does not comply with Title 22 due to lack of the required coagulation unit, filters, turbidity monitoring, and required process redundancies.
 - d. Economic Considerations. The economic impact of requiring an increased level of treatment has been carefully considered. The cost of providing tertiary treatment for a 6.0 mgd flow rate can be estimated using Table 29.18, "Estimated Capital Costs for Reclamation Treatment Facilities," from the chapter "The Cost of Wastewater Reclamation and Reuse," in *Water Reclamation and Reuse*, by Technomic Publishing Co., Inc., 1996. The calculated 1996 cost was \$6.2 million and the Engineering News Record (ENR) construction cost index was 5600. The October 2004 estimated cost, using an October 2004 ENR index of 7313, was \$8.10 million. The City's current monthly domestic sewer user fee is \$19.71. The economic impact from the capital improvement project would increase the monthly user fee by approximately \$2.67 based on 6,094 residential users and a 20-year amortization at a 2.7 percent interest rate. This would increase the monthly user fee to approximately \$22.38 if no costs were allocated to industrial, commercial, and institutional users, to Winton Water and Sanitary District, or to Merced County. The California average monthly domestic sewer user

fee is \$20.46. As the proposed increase in user fee is near the statewide average, the incremental difference is considered reasonable and necessary for the protection of beneficial uses. The loss of beneficial uses within downstream waters, without this Order's tertiary or advanced treatment requirements would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary or advanced treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for other additional treatment, although whether the extent of other pollutant removal will be sufficient is unknown. The loss of recreational and irrigation beneficial uses within downstream waters, without the tertiary treatment requirement, would require prohibiting public access for contact recreational purposes. The cost associated with the alternative loss of beneficial uses or illness among those that would utilize the receiving water was not assessed.

- e. The Need for Developing Housing in the Area. Population growth in Merced County in the City of Atwater and City of Merced areas is increasing demand for housing. Upgrading the WWTF to tertiary standards should not adversely affect areal development. Not upgrading could adversely affect housing availability or, alternatively, increase the period or magnitude of risk, as wastewater flow and beneficial use increases for these water uses.
- f. The Need to Develop and Use Recycled Water. State of California and Regional Water Board policy (Basin Plan, page IV-14.00, Policy 2) both encourage the reclamation and reuse of wastewater. Upgraded effluent quality increases opportunity for reuse. The City need not directly reuse the treated wastewater, as discharge into the Atwater Drain facilitates agricultural irrigation and public recreation. As treatment must be upgraded to the tertiary level, the City may adopt an alternative method for treating and disposing of the wastewater. A feasible alternative is direct reuse for agriculture without discharging to the Atwater Drain. In either case, the wastewater is being used for agriculture.

PRETREATMENT

- 55. Significant industrial users include Jim's Farm Meat Inc. and Sun Garden. Jim's Farm Meat Inc. is a meat processing facility in Winton that discharges approximately 0.003 mgd into the WWTF. Sun Garden, a fruit and vegetable processing facility, can discharge up to 2.0 mgd into the WWTF, but only discharged for three days during 2000 and none in 2001-2004. WDRs Order No. 89-122 currently regulates Sun Garden's discharge to land of food processing wastewater. According to Merced County Environmental Health, facilities within the WWTF service area, such as automotive garages, fully recycle products such as oil and antifreeze.
- 56. Provision E.9 of Order 95-034 required the City to submit a complete pretreatment program package with request for pretreatment program approval by 15 May 1995. On 23 July 2001, the City submitted its industrial pretreatment program (IPP) and draft ordinance amending its Municipal Code. The Regional Water Board and State Water Board Office of Chief Counsel provided comments on the City's IPP and draft ordinance. The City revised the IPP and amended

its ordinance on 14 July 2003 to address Regional Water Board and State Water Board comments.

57. The City finalized an agreement with Merced County that gives the City full authority over all industrial dischargers within Merced County that discharge to the WWTF. Merced County approved the agreement on 9 August 2004. Winton adopted the Atwater ordinance by reference and will enforce the ordinance. This Order approves the City's Industrial Pretreatment Program.

RECEIVING WATER LIMITATIONS—SURFACE WATER

58. Receiving water limitations in this Order are based on the WQOs in the Basin Plan and established to protect the beneficial uses of the receiving waters. Included are narrative and numeric limitations to prevent toxicity, to protect human health, to prevent nuisances as defined by CWC Section 13050, and to prevent degradation of the aquatic communities.
59. The Basin Plan includes narrative and maximum numeric water quality objectives for temperature and turbidity that limit the increase of each parameter over the natural background conditions in receiving waters. As found in Finding 27, there is no natural background water in the Atwater Drain; therefore, the numeric objectives for temperature and turbidity do not apply. The existing beneficial uses were established under the temperature and turbidity conditions created by the existing discharge. Most of the time, the beneficial uses applicable to the Atwater Drain exist because of the WWTF discharge. This Order includes turbidity effluent limitations based on the tertiary treatment requirements in Title 22, California Code of Regulations. As implementation of these new effluent limitations will improve the existing conditions, it is unnecessary to include a numeric receiving water limitation for turbidity; however, this Order includes a narrative receiving water limitation. This Order does not include a temperature effluent limitation that will improve existing conditions. Thus, to ensure protection of WARM, this Order requires the City to conduct a study in consultation with the California Department of Fish and Game to develop appropriate numeric receiving water limitations for temperature. In the interim, this Order includes a narrative receiving water limitation for temperature.
60. To protect MUN (See Finding 33), the waste constituents in the effluent must not cause the receiving water concentrations of those constituents to exceed the maximum contaminant levels in Title 22, CCR, Section 64431, Tables 64431-A and 64431-B; Section 64444, Table 64444-A; and Section 64449, Table 64449-A (Title 22 Maximum Contamination Levels) and the concentration of lead to exceed 0.015 mg/L.
61. Untreated domestic wastewater contains ammonia. Wastewater treatment plants commonly use nitrification, a biological process that converts ammonia to nitrate, to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. USEPA's *-1999 Ammonia Update* reflects ammonia concentrations protective of fish species, as ammonia is generally more toxic to wild fish than to other aquatic species. Limitations described in Finding 40.b will maintain the effluent and, therefore, the receiving water free of ammonia in toxic concentrations.

62. To protect WARM and WILD (See Finding 33), the Atwater Drain must be free of toxic substances in toxic concentrations. As chlorine is known to cause toxicity to aquatic organisms in surface waters, the discharge must be free of chlorine in toxic concentrations. Limitations identified in Finding 40.g will maintain the effluent free of chlorine in toxic concentrations.

RECEIVING WATER LIMITATIONS—GROUNDWATER

63. Basin Plan groundwater quality objectives to protect the beneficial uses in Finding 36 include a numeric objective for coliform bacteria and narrative objectives for chemical constituents in 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, or animals. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The Basin Plan establishes numeric water quality objectives that quantify maximum permissible concentrations for groundwaters designated as MUN. These include maximum contaminant levels (MCLs) in Title 22, CCR (i.e., sections 64431 (Inorganic Chemicals); 64431 (Fluoride); 64443 (Radioactivity); 64444 (Organic Chemicals); and 64449 (Secondary MCLs – Consumer Acceptance Limits).
64. The Basin Plan’s incorporation of MCLs by reference is prospective. The Basin Plan requires the application of objectives more stringent than MCLs as necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, or pesticides in concentrations that adversely affect agricultural supply, or some other beneficial use.
65. Domestic wastewater contains constituents such as oxygen demanding substances (i.e., BOD₅), salinity constituents, pathogens, nutrients (e.g., nitrate), organics, and metals. Because all WWTF effluent is discharged to the Atwater Drain, the effect on area groundwater from percolating effluent is expected to be less than significant because, in part, recharge from effluent occurs along a linear watercourse several miles in length. Effects that do occur will be likely obscured by non-point sources of groundwater recharge (e.g., precipitation, irrigated agriculture).
66. An important component of ensuring WWTF operation is optimized, is to monitor the effects of WWTF operation on groundwater, particularly in the area encompassed by the WWTF’s previous sludge handling and storage operations. The past use of unlined sludge drying beds has a reasonable potential for degrading groundwater for waste constituents and their decomposition by-products. To determine whether the City’s present and previous sludge handling and storage operations have degraded groundwater, it is appropriate for the City to implement monitoring of the groundwater to evaluate the impacts by the use of unlined sludge drying and storage beds.

GENERAL FINDINGS

67. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code sections 21000 et seq.), in accordance with CWC section 13389.
68. 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, CCR, section 20005 et seq. (hereafter Title 27). The exemption, pursuant to section 20090(a) of Title 27, 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.
69. The conditional discharge as permitted herein is consistent with the antidegradation provisions of 40 CFR 131.12 and Resolution 68-16 as discussed in the Fact Sheet. This Order does not authorize an increase in flow or mass emissions of pollutants over the existing Order (Order No. 95-034, NPDES Permit No. CA 0079197). Consequently, compliance with this Order will not result in water quality less than authorized in the existing Order. Compliance with these requirements will result in the best practicable treatment and control of the discharge, achieve water quality objectives, not create a condition of pollution or of nuisance, and ensure that the highest water quality consistent with maximum benefit to the people of the State will be maintained.
70. The State Water Board adopted the General Industrial Activities Storm Water Permit (General Permit) on 19 November 1991, and amended it on 17 September 1992 and 17 April 1997. The General Permit prescribes waste discharge requirements for discharges of storm water associated with industrial activities, excluding construction activities, and requires submittal of a Notice of Intent by industries to be covered under the permit. The City is not required to obtain coverage under the General Permit because all storm water runoff within the WWTF property is diverted to onsite storm water detention basins, the headworks or the aeration basins.
71. The State Water Board adopted the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order No. 2006-0003-DWQ) on 2 May 2006. The General Order prescribes waste discharge requirements for discharges from sanitary sewer systems greater than one mile in length that convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California. The City is required to obtain coverage under General Order No. 2006-0003-DWQ.
72. CWC section 13267(b)(1) states in part:
 - (a) A regional board, in establishing ...waste discharge requirements...may investigate the quality of any waters of the state within its region” and “(b)(1) In conducting an investigation specified in [Section 13267] subdivision (a), the regional board may require that any person who has discharged,

discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional 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.

73. CWC Section 13383 states:

(a) The state board or a regional board may establish monitoring, inspection, entry, reporting, and record keeping requirements, as authorized by Section 13377 or by subdivisions (b) and (c) of this section, for any person who discharges pollutants ... any person who owns or operates a publicly owned treatment works or other treatment works treating domestic sewage, or any person who uses or disposes of sewage sludge.

(b) The state board or the regional boards may require any person subject to this section to establish and maintain monitoring equipment or methods, including, where appropriate, biological monitoring methods, sample effluent as prescribed, and provide other information as may be reasonably required.

(c) The state board or a regional board may inspect the facilities of any person subject to this section pursuant to the procedure set forth in subdivision (c) of Section 13267.

74. The attached Monitoring and Reporting Program No. R5-2007-XXXX required by this Order is necessary to assess compliance with these waste discharge requirements.
75. Pursuant to CWC Section 13263(b), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.
76. The USEPA and this Board have classified this discharge as a major discharge.
77. The information in the attached Fact Sheet was considered in developing findings, terms, and conditions of this Order, and the Fact Sheet and all attachments are part of this Order.
78. The City and interested agencies and persons were notified of the intent to prescribe waste discharge requirements for this discharge and provided with an opportunity for a public hearing and an opportunity to submit written views and recommendations.
79. In a public meeting, all comments pertaining to the discharge were heard and considered.
80. This Order shall serve as waste discharge requirements pursuant to section 13263 of the CWC and serve as an NPDES permit pursuant to CWA Section 402 [Title 33, U.S.C. 1342(a)], and amendments thereto. This Order shall take effect upon the date of adoption, but shall not take effect if USEPA registers objections until the objections are resolved.

IT IS HEREBY ORDERED that Waste Discharge Requirements Order No. 95-034 is rescinded and, pursuant to CWC sections 13263, 13267, 13377, and 13383, the City of Atwater, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached “Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)” dated February 2004, hereafter “Standard Provisions.”]

A. Discharge Prohibitions

1. Discharge of wastewater at a location or in a manner different from that described in this Order is prohibited.
2. The by-pass or overflow of wastes is prohibited, except as allowed by Standard Provision A.13 [See attached Standard Provisions].
3. Objectionable odors originating at this facility shall not be perceivable beyond the limitations of the wastewater treatment and discharge areas.
4. Public contact with wastewater shall be precluded through such means as fences, signs, and other acceptable alternatives.
5. Discharge of waste classified as ‘hazardous’ as defined in section 2521(a) of Title 23, CCR, section 2510 et seq., or ‘designated’ as defined in CWC section 13173, is prohibited.

B. Effluent Limitations

1. The monthly average dry weather daily discharge flow shall not exceed 6.0 mgd.
2. The discharge shall not have a pH less than 6.5 standard units or greater than 8.5 standard units at any time.
3. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:
 - a. Minimum for any one bioassay.....70%
 - b. Median for any three or more consecutive bioassays90%
4. Effluent shall not exceed the following limitations:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Daily Maximum</u>
Chlorine residual	mg/L	0.01 ^{1,3}	0.02 ^{2,3}
EC	µmhos/cm	700	--

Oil and Grease	mg/L	10	15
	lbs/day	500	750

- ¹ Compliance shall be determined by calculating the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. Daily discharge is defined in footnote 2, below.
- ² Compliance shall be determined by comparing the effluent limit to the daily discharge. Daily discharge shall be defined as the arithmetic mean of all the readings recorded during the calendar day (i.e., 12:00 a.m. through 11:59 p.m.). All non-detects (ND) shall be converted to zero for averaging purposes. Prior to 7 June 2007, all readings below 0.05 mg/L shall be recorded as ND. Beginning 7 June 2007, all readings below 0.01 mg/L shall be recorded as ND.
- ³ If the City can demonstrate through data collected from the City's back-up monitoring system that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then the recorded spike will be considered and reported as a false positive.

5. The final and interim limitations listed below for CTR constituents shall be implemented in accordance with the conditions and dates set forth in **Provisions G.9 and G.10**.

a. Final CTR Effluent Limitations:

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u> ¹	<u>Daily Maximum</u> ¹
Copper	µg/L	1.9	3.4
Lead	µg/L	0.38	0.75
Zinc	µg/L	16	33
Bromodichloromethane	µg/L	0.56	1.13
Chlorodibromomethane	µg/L	0.40	0.81
2,3,7,8-TCDD (Dioxin)	pg/L	0.013 ²	0.026 ²
	lbs/day		
	y	6.5 x 10 ⁻¹⁰	1.3 x 10 ⁻⁹

¹ A daily maximum or monthly average value for a given constituent shall be considered non-compliant with the effluent limitations only if it exceeds the effluent limitation and the reported ML for that constituent. The MLs that the City's laboratory must achieve are indicated in the SIP Section 2.4.1.

² Compliance shall be determined by multiplying each measured or estimated congener concentration by its respective toxic equivalency factor (TEF) and calculating the sum of these products.

b. Interim CTR Effluent Limitations

<u>Constituents</u>	<u>Units</u>	<u>Daily Maximum</u> ¹
Copper	µg/L	8.1
Lead	µg/L	2.5

Zinc	µg/L	120
Bromodichloromethane	µg/L	40
Chlorodibromomethane	µg/L	10
2,3,7,8-TCDD (Dioxin)	pg/L	1.46 ²
	lbs/da	
	y	7.3 x 10 ⁻⁸

¹ A daily maximum or monthly average value for a given constituent shall be considered non-compliant with the effluent limitations only if it exceeds the effluent limitation and the reported ML for that constituent. The MLs that the City's laboratory must achieve are indicated in SIP Section 2.4.1.

² Compliance shall be determined by multiplying each measured or estimated congener concentration by its respective toxic equivalency factor (TEF) and calculating the sum of these products.

6. The final and interim effluent limitations for the constituents listed below shall be implemented in accordance with the conditions and final compliance dates set forth in **Provision G.11.**

a. Final Effluent Limitations

(1)

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>7-Day Median¹</u>	<u>Daily Average</u>	<u>Daily Maximum</u>
BOD ₅ ²	mg/L	10	15	--	--	20
	lb/day ³	500	750	--	--	1000
Settleable Solids	mL/L	0.1	--	--	--	0.2
TSS	mg/L	10	15	--	--	20
	lb/day ³	500	750	--	--	1000
Total Coliform	MPN ⁴ /100mL	--	--	2.2	--	23
Turbidity	NTU	--	--	--	2	10 ⁵
Nitrate (as N)	mg/L	10	--	--	--	--
Nitrite (as N)	mg/L	1	--	--	--	--
Ammonia, Total (as N) (1 April thru 31 October)	mg/L	1.8	--	--	--	6.6

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>7-Day Median¹</u>	<u>Daily Average</u>	<u>Daily Maximum</u>
Ammonia, Total (as N) (1 November thru 31 March)	mg/L	2.9	--	--	--	10.7

¹ Median value based on the results of the last seven days for which analyses have been completed.

² 5-day, 20°C biochemical oxygen demand (BOD)

³ Based upon a design flow of 6.0 mgd where lbs = x mg/L × 8.34 × 6.0

⁴ MPN = most probable number

⁵ This magnitude shall not be exceeded at any time; turbidity shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period.

- (2) The arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period shall not exceed 10 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (90 percent removal).
- (3) The CT (residual chlorine concentration times modal contact time) value shall be not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather flow.

b. Interim Effluent Limitations

<u>(1) Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>7-Sample Median¹</u>	<u>Daily Maximum</u>
BOD ₅ ²	mg/L	30	45	--	90
	lb/day ³	1500	2252	--	4504
Settleable Solids	mL/L	0.2	--	--	1.0
TSS	mg/L	30	45	--	90
	lb/day ³	1500	2252	--	4504
Ammonia, Total (as N) (1 April thru 31 October)	mg/L	--	--	--	9.2
Ammonia, Total (as N) (1 November thru 31 March)	mg/L	--	--	--	10.7

(1)		Monthly	Weekly	7-Sample	Daily
<u>Constituents</u>	<u>Units</u>	<u>Average</u>	<u>Average</u>	<u>Median¹</u>	<u>Maximum</u>
Total Coliform	MPN ⁴ /100 mL	--	--	23	240
Nitrate (as N)	mg/L	--	--	--	21

¹ Median value based on the last seven samples

² 5-day, 20°C biochemical oxygen demand (BOD)

³ Based upon a design flow of 6.0 mgd where lbs = x mg/L × 8.34 × 6.0

⁴ MPN = most probable number

- (2) The arithmetic mean of BOD₅ and TSS in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

C. Sludge Specifications

Sludge in this document means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTF. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and State regulations as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities.

1. Sludge and solid waste shall be removed from screens, sumps, ponds, clarifiers, etc. as needed to ensure optimal plant operation.
2. Treatment and storage of sludge generated by the WWTF shall be confined to the WWTF property and conducted in a manner that precludes infiltration of waste constituents into soils in a mass or concentration that will violate Groundwater Limitations.
3. Any storage of residual sludge, solid waste, and biosolids on property of the WWTF 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.
4. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer (EO) and consistent with Title 27. Removal for further treatment, disposal, or reuse at sites (i.e., landfill, WWTF, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by the State Water Board or a regional water quality control board will satisfy this specification.
5. Use and disposal of biosolids shall comply with the self-implementing federal regulations of Title 40, Code of Federal Regulations, Part 503, which are subject to enforcement by the

USEPA, not the Regional Water Board. If during the life of this Order the State accepts primacy for implementation of 40 CFR 503, the Regional Water Board may also initiate enforcement where appropriate.

D. Receiving Water Limitations

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. However, a receiving water condition not in conformance with the limitations is not necessarily a violation of this Order. The Regional Water Board may require an investigation to determine cause and culpability prior to asserting a violation has occurred. The discharge shall not cause or contribute to the following in the Atwater Drain:

1. Concentrations of dissolved oxygen to fall below 5.0 mg/L. The monthly median of the mean daily dissolved oxygen 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 saturation. The monthly median of the mean daily dissolved oxygen concentration and the 95-percentile concentration shall be determined as follows: (a) calculate the percent of saturation for each monitoring event during the month (based on the temperature for each monitoring event), (b) calculate the median of all the percent of saturation values computed during the month, and (c) calculate the 95th percentile of all the percent of saturation values computed during the month.
2. Oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the water surface or on objects in the water.
3. Chlorine to be detected.
4. Pesticides, individually or in combination with other pesticides, in concentrations in the water, bottom sediments or aquatic life that adversely affect beneficial uses.
5. Discoloration that creates nuisance or adversely affects beneficial uses.
6. Biostimulatory substances that promote aquatic growths in concentrations that create nuisance or adversely affect beneficial uses.
7. Deposition of material that causes nuisance or adversely affects beneficial uses.
8. Normal ambient pH to fall below 6.5 or exceed 8.5; or the monthly average pH change to exceed 0.5 units.
9. Turbidity that causes nuisance or adversely affects beneficial uses.
10. Temperatures that adversely affect beneficial uses.
11. Radionuclides to be present in concentrations that exceed maximum contaminant levels

specified in Title 22, CCR; that harm human, plant, animal or aquatic life; or 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.

12. Toxic substances to be present in the water that produce detrimental physiological responses in human, plant, animal, or aquatic life.
13. Taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or fish flesh or other edible products of aquatic origin or that cause nuisance, or otherwise adversely affect beneficial uses.
14. 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 MPN/100 mL nor shall more than 10 percent of total samples taken during any 30-day period exceed 400 MPN/100 mL.
15. Violation of any applicable water quality standard for receiving waters adopted by the Regional Water Board or the State Water Board pursuant to the CWA and regulations adopted thereunder.

E. Groundwater Limitations

Release of waste constituents from any storage, treatment, or disposal component associated with the WWTF shall not cause groundwater within influence of the WWTF to be degraded above naturally occurring background concentrations or, in combination with other sources of the waste constituents, to contain waste constituents in concentrations equal to or greater than that listed below (whichever is greater):

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

F. Pretreatment Requirements

1. The City shall implement its Industrial Pretreatment Program as hereby approved, as more completely set forth in 40 CFR 403.5, including the legal authorities, programs, and controls necessary to ensure that industrial discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction 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.
2. The City 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 (BOD₅, 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 pre-designated by the City.
3. The City shall enforce the requirements promulgated under CWA section 307(b), (c), and (d) and section 402(b). The City shall cause industrial users subject to federal categorical standards to achieve compliance no later than that date specified in those requirements, or in the case of a new industrial user, upon commencement of the discharge. The City shall perform the pretreatment functions required by 40 CFR Part 403 including but not limited to:
 - a. Implementing the necessary legal authorities as provided in 40 CFR 403.8(f)(1);
 - b. Enforcing the pretreatment requirements under 40 CFR 403.5 and 403.6;
 - c. Implementing the programmatic functions provided in 40 CFR 403.8(f)(2);
 - d. Providing the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR 403.8(f)(3); and
 - e. Publishing a list of industrial users which were in significant noncompliance and applicable pretreatment requirements as required by 40 CFR 403.8(f)(2)(vii).
 - f. Conducting inspections in accordance with provisions of 40 CFR 403.8(f)(1)(v) and 403.8(f)(2)(v) and ensure compliance with pretreatment standards and requirements by

(1) assessing and collecting, when appropriate, civil penalties and civil administrative penalties in accordance with Government Code sections 54740, 54740.5, and 54740.6, or (2) other equally effective means.

G. Provisions

1. The City shall comply with all the items of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)*, dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as *Standard Provision(s)*.
2. The City shall comply with Monitoring and Reporting Program (MRP) No. R5-2007-~~XXXX~~, a part of this Order, and any revisions thereto as ordered by the Executive Officer.
3. The City shall keep a copy of this Order, including its MRP, attachments and Standard Provisions, at the WWTF for reference by operating personnel. Key operating personnel shall be familiar with its contents.
4. 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 and regulations, 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.
5. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations.
6. **By 7 June 2007**, the City shall submit a Public Safety Notification Plan that identifies actions the City will take to notify the public that the water in the Atwater Drain is wastewater treatment plant effluent and that it does not meet the California Department of Health Services criteria for drinking or for full water contact recreation. The Public Safety Notification Plan shall contain a map depicting the locations of all signs that will be posted to comply with Provision G.7. Each sign depicted on the map shall be assigned a unique number to facilitate monitoring for compliance with this provision.
7. Prior to **7 September 2007**, signs with proper wording (shown below) of a size no less than four inches high by eight inches wide shall be placed and maintained at all areas of public access to the Atwater Drain downstream from the discharge point to alert the public that the Atwater Drain contains recycled water and is not suitable for drinking or public contact.

Signs warning of drinking hazard shall present the international symbol similar to that shown in Attachment C and present the following wording:

RECYCLED WATER - DO NOT DRINK

AGUA DE DESPERDICIO RECLAMADA - NO TOME

Signs advising the public to avoid contact shall remain posted until Provision G.11. Task c. is satisfied and shall present the following wording:

WARNING! ¡ADVERTENCIA!

TREATED MUNICIPAL WASTEWATER – SWIMMING, WADING NOT ADVISED
AGUA RESIDUAS DE MUNICIPAL - SE ADVISA NO NADAR, CAMINAR EN LA AGUA

8. For compliance with the Basin Plan's narrative toxicity objective, this Order requires the City to conduct chronic whole effluent toxicity testing, as specified in the Monitoring and Reporting Program. Furthermore, this Provision requires the City to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exceeds the toxicity numeric monitoring trigger established in this Provision, the City 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 City to develop and submit a TRE Work Plan and procedures for accelerated chronic toxicity monitoring and TRE initiation.
 - a. **Toxicity Reduction Evaluation (TRE) Work Plan.** By 7 June 2007, the City shall submit to the Regional Water Board a TRE Work Plan for approval by the Executive Officer. The TRE Work Plan shall outline the procedures for identifying the source(s) of, and reducing or eliminating effluent toxicity. The TRE Work Plan shall be developed in accordance with EPA guidance¹ and be of adequate detail to allow the City to immediately initiate a TRE as required in this Provision.
 - b. **Numeric Monitoring Trigger.** The numeric toxicity monitoring trigger is > 1 TUc (where TUc = 100/NOEC) for any test species. The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the City is required to perform accelerated monitoring to confirm effluent toxicity and initiate a TRE. The accelerated monitoring specifications are described in subsection c below.

¹ See the Fact Sheet for a list of EPA guidance documents that must be considered in development of the TRE Work Plan.

- c. **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 City shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications below. Whole effluent toxicity testing results exceeding the monitoring trigger during accelerated monitoring demonstrates a pattern of toxicity and requires the City to initiate a TRE to address the effluent toxicity.
 - d. **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 City shall initiate accelerated monitoring. Accelerated monitoring shall consist of three (3) monthly chronic toxicity tests using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:
 - (1) If the results of three (3) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the City 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 City initiate a TRE.
 - (2) If the source(s) of the toxicity is easily identified (i.e. temporary facility upset), the City shall make necessary corrections to the WWTF and shall continue accelerated monitoring until three (3) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the City may cease accelerated monitoring and resume regular chronic toxicity monitoring.
 - (3) If the result of any accelerated monitoring toxicity test exceeds the monitoring trigger, the City shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within sixty (60) days of notification by the laboratory of the test results exceeding the monitoring trigger during accelerated monitoring, the City shall submit a TRE Action Plan to the Regional Water Board including, at a minimum:.
 - i. Specific actions the City will take to investigate and identify the cause(s) of toxicity, including TRE WET monitoring schedule;
 - ii. Specific actions the City will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and
 - iii. A schedule for these actions.
9. **Compliance Schedule (*Bromodichloromethane, Chlorodibromomethane*):** By

7 June 2007, the City shall submit written certification of its decision to either: (1) comply with **Effluent Limitations B.5.a** for bromodichloromethane and chlorodibromoethane or (2) to provide the information/support necessary for the Regional Water Board to conduct a UAA for MUN for the Atwater Drain. If the City chooses option (1), it shall follow the compliance schedule in Provision G.10 for bromodichloromethane and chlorodibromoethane. If the City chooses option (2), both interim and final effluent limits for bromodichloromethane and chlorodibromoethane shall be stayed pending completion of the tasks in the following compliance schedule and further action by the Regional Water Board:

<u>Task</u>	<u>Compliance Date</u>
a. Submit a technical report in the form of a work plan and proposed time schedule to provide the information/support necessary to conduct a UAA for MUN for the Atwater Drain waters. The work plan must describe in detail the information/support the City intends to provide the Regional Water Board and, how this information/support will address the requirements of 40 CFR 131.3(g) and 131.10(g) and the criteria in State Water Board Resolution 88-63.	7 September 2007
b. Implement approved work plan and time schedule.	Within 30 days of approval of the technical report by the EO.
c. Provide the results of Task a.	By the deadline approved by the EO but no later than 7 December 2009.

Technical reports submitted pursuant to this Provision are subject to the requirements of **Provision G.4** and EO approval.

The City shall submit written letter monitoring reports on its progress on **1 February** and **1 August** of each year until notified by the Executive Officer that the reports are no longer necessary.

10. **CTR Pollutants Compliance Schedule (Copper, Lead, Zinc, Dioxins)**. The WWTF may be able to comply with Effluent Limitations B.5.a by making minor modifications or operational changes. The City shall evaluate its options and shall comply in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
-------------	------------------------

<u>Task</u>	<u>Compliance Date</u>
a. Either comply with Effluent Limitations B.5.a or submit a technical report containing a compliance schedule justification sufficient to satisfy SIP Section 2.1, paragraph 3. The report shall include: (1) documentation that diligent efforts have been made to quantify pollutant levels in the discharge and the sources of the pollutant in the waste stream; (2) documentation of source control measures and/or pollution minimization measures efforts currently underway or completed; (3) a proposal, including an implementation schedule, for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades or operational modifications); and (4) a demonstration that the proposed schedule is short as possible.	7 June 2007
b. If approved, begin implementation of the items identified in Task a above. If rejected, comply with Effluent Limitations B.5.a .	Within 30 days of approval or rejection of the technical report by the EO.
c. Comply fully with Effluent Limitations B.5.a .	By the deadline approved by the EO but no later than 18 May 2010.

Technical reports submitted pursuant to this Provision are subject to the requirements of **Provision G.4** and EO approval.

The City shall submit written letter monitoring reports on its progress on **1 February** and **1 August** of each year until the City achieves compliance with **Effluent Limitation B.5.a**.

11. **Tertiary Treatment, Ammonia, Nitrate, and Nitrite Compliance Schedule.** The City shall comply with **Effluent Limitation B.6.a**. or provide an alternative method of disposal for the WWTF effluent. The City shall evaluate its options and shall comply in accordance with the following time schedule:

<u>Task</u>	<u>Compliance Date</u>
a. Submit a technical report in the form of a work plan and implementation schedule for complying with Effluent Limitation B.6.a. or for fully implementing an alternative treatment and disposal method.	7 June 2007
b. Implement EO approved work plan.	60 days following EO written approval of Task. 11.a
c. Full Compliance.	By the deadline approved by the EO but no later than 7 December 2011

Technical reports submitted pursuant to this Provision are subject to the requirements of **Provision G.4** and EO approval.

The City shall submit written letter monitoring reports on its progress on **1 February** and **1 August** of each year until the City achieves compliance with **Effluent Limitation B.6.a.**

12. The City shall conduct a temperature study in accordance with the following schedule:

<u>Task</u>	<u>Compliance Date</u>
a. Submit a temperature study work plan and proposed time schedule for Regional Water Board and Department of Fish and Game review and comment. The work plan shall detail the steps and information necessary to develop numeric temperature receiving water limitations that are protective of the downstream beneficial uses.	7 June 2007
b. Implement EO approved work plan. Implementation shall include consultation with Department of Fish and Game.	30 days following EO written approval of a.
c. Submit proposed numeric temperature receiving water limitation(s) for Regional Water Board EO approval and Department of Fish and Game review and comment.	By the deadline approved by the EO but no later than 8 December 2008.

Pending EO approval of the proposed numeric temperature receiving water limitation(s), this Order shall be reopened for consideration of addition of appropriate numeric receiving water limitations.

13. **By 7 June 2007**, the City shall submit a sludge management plan that satisfies the information requirements of Attachment D *Information Needs for Sludge Management Plan*. The technical report shall be subject to the requirements of Provision G.4 and subject to Executive Officer approval.

14. **Groundwater Monitoring Tasks.** The City shall submit a technical report describing a proposed groundwater monitoring well network. The technical report shall consist of a monitoring well installation work plan that satisfies Attachment E, *Standard Monitoring Well Provisions for Waste Discharge Requirements*. The network shall include one or more background monitoring wells and sufficient number of designated monitoring wells to evaluate the extent to which, if any, WWTF units, including but not limited to, the unlined sludge beds, have degraded or threaten to degrade groundwater. These include monitoring wells immediately down gradient of the unlined sludge drying beds. All wells shall comply with appropriate standards as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more stringent standards adopted by the City or County pursuant to CWC section 13801. The City shall install approved monitoring wells and commence groundwater monitoring in accordance with this Order's Monitoring and Reporting Program (MRP). After the first sampling event, the City shall report on its sampling protocol as specified in this Order's MRP. After completion of Task d outlined below, the City shall characterize background quality of monitored constituents in a technical report. The City shall comply with the following compliance schedule in implementing the work required by this Provision:

<u>Task</u>	<u>Compliance Date</u>
a. Submit technical report: implementation schedule and monitoring well installation work plan.	7 March 2007
b. Implement monitoring well installation work plan.	90 days following completion of Task a. and approval of the Executive Officer.
c. Complete monitoring well installation and commence groundwater monitoring.	In accordance with the approved implementation schedule.
d. Submit technical report: monitoring well installation report of results.	In accordance with the approved implementation schedule.
e. Report on sampling procedures as described in the MRP.	1st day of the second month following the first sampling event.

<u>Task</u>	<u>Compliance Date</u>
f. Submit technical report: background quality.	365 days following completion of Task d.

Technical reports submitted pursuant to this Provision are subject to the requirements of Provision G.4 and are subject to Executive Officer approval.

15. Compliance with this Order’s Groundwater Limitations will be evaluated based on data collected from approved groundwater monitoring wells following completion of Provision G.14, Task f. Should the City fail to comply with the schedule to characterize background groundwater quality at approved monitoring wells by the date specified in Provision G.14, Task f, the Regional Water Board shall not consider the lack of background characterization as sufficient defense to enforcement for violations of Groundwater Limitations.
16. Compliance with this Order’s Groundwater Limitations will be evaluated based on data collected from approved groundwater monitoring wells following completion of Provision G.14, Task f. If, following the completion of Provision G.14, Task f, groundwater passing under the sludge drying beds is found to be degraded, the City shall conclude that its practice of discharging digester sludge to unlined sludge drying beds caused the degradation unless it can demonstrate within **90 days** that the degradation was due to an offsite source. Within **90 days** of receiving written notification from the Executive Officer that the City’s use of unlined sludge drying beds has caused degradation, the City shall submit a technical report containing a work plan and implementation schedule describing proposed modifications to the WWTF’s sludge handling operations to ensure compliance with this Order’s Sludge Specifications and Groundwater Limitations. The technical report submitted pursuant to this Provision is subject to the requirements of Provision G.4 and is subject to Executive Officer approval.
17. The City shall conduct a receiving water hardness study in accordance with the following schedule:

<u>Task</u>	<u>Compliance Date</u>
a. Submit a receiving water hardness study work plan and proposed implementation schedule for Regional Water Board review and comment. The work plan shall 1.) detail the steps and information necessary to determine representative downstream receiving water hardness conditions that could be used to establish water quality criteria for hardness-dependent metals that are fully protective of downstream beneficial uses, 2.) describe how the proposed methodology conforms with the	7 June 2007

<u>Task</u>	<u>Compliance Date</u>
USEPA guidelines for defining water quality criteria for the applicable hardness-dependent metals, and 3.) describe how the City intends to address the hardness and alkalinity and/or pH relationship issue described in the preamble to the California Toxics Rule (Section F.2.f., 65 FR 31692, May 18, 2000).	
b. Implement EO approved work plan.	30 days following EO written approval of a.
c. Submit proposed receiving water hardness concentration to be used for establishing hardness-dependent metals water quality criteria for Regional Water Board EO approval.	By the deadline approved by the EO but no later than 5 June 2009.

Pending Executive Officer approval of the proposed receiving water hardness concentration, this Order shall be reopened for consideration of revised effluent limitations for metals with hardness-dependent criteria, as appropriate.

18. If the City elects to conduct a site-specific salinity investigation to evaluate whether a revised EC value represents best efforts and will reasonably protect AGR, the investigation must include the following information to receive consideration by the Regional Water Board:
 - a. Identification of the most salt sensitive crop types that have been, are, and could be grown in the area affected by the effluent discharge.
 - b. Identification of the local soil types, climate, and irrigation management practices for crops in "a."
 - c. An evaluation of all the other salt sources (e.g., confined animal facilities, cheese processing waste, agricultural drainage, groundwater, surface water, etc.) that affect the EC of waters impacted by the effluent discharge and used to irrigate "a."
 - d. Proposed EC value and demonstration that it reflects best efforts of the City to control EC and will never exceed the EC of the source water plus 500 umhos/cm.
 - e. The economic and social costs of the proposed EC value on "a." given "b." and "c." and how this is of maximum interest to the people of the State.

The Executive Officer shall determine whether the investigation results merit that this Order shall be reopened for consideration of a revised EC effluent limitation.

19. The City shall implement best practicable treatment and control, including proper operation and maintenance, to comply with this Order.
20. The City 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.
21. If new or amended applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA, or amendments thereto, this Order may be reopened and modified in accordance with the new or amended standards.
22. This Order may be reopened and modified if information not available at the time of permit issuance becomes available, and the new information would have justified different permit conditions at the time of issuance.
23. If the Regional Water Board determines that waste constituents in the discharge have reasonable potential to cause or contribute to an exceedance of a water quality objective, this Order may be enforced or, alternately, reopened for consideration of addition or revision of appropriate numeric effluent limitations for the problem constituents. The Regional Water Board may consider inclusion of a compliance time schedule within the bounds of the applicable regulations if the City is not able to meet a new discharge requirement immediately.
24. 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 a TRE. Additionally, if the State Water Board adopts a numeric chronic toxicity water quality objective, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on that objective.
25. The City shall submit to the Regional Water Board on or before each report due date the specified document or, if an action is specified, a written report detailing evidence of compliance with the date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the City will be in compliance. The City shall notify the Regional Water Board by letter when it returns to compliance with the time schedule.
26. The City must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Water Board or court orders requiring corrective action, imposing civil monetary liability, in revision, or rescission of this Order. CWC section 13385 requires the Regional Water Board to issue mandatory minimum penalties for certain reporting and effluent violations.

27. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the City shall obtain approval of or clearance from the State Water Board (Division of Water Rights).
28. In the event of any change in control or ownership of land or waste treatment and storage facilities presently owned or controlled by the City, the City shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office.

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, the 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 paragraph of Standard Provision D.6 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.

29. The conditions of this Order that pertain to surface water discharge, and serve as an NPDES permit, expire on **7 December 2011**, at which time surface water discharge is prohibited. The City must file a complete Report of Waste Discharge in accordance with Title 23, CCR, section 13376, not later than **10 June 2011**, if it wishes to continue the discharge.

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 Central Valley Regional Water Quality Control Board, on **21/22 June 2007**.

PAMELA C. CREEDON, Executive
Officer

Order Attachments:

Monitoring and Reporting Program No. R5-2007-XXXX

A: Location Map

B: Process Schematic

C: Symbol for Recycled Water Signs

D: Information Needs for Sludge Management Plan

E: Standard Monitoring Well Provisions for Waste Discharge Requirements

Fact Sheet and Attachment

Standard Provisions for Waste Discharge Requirements (NPDES) (February 2004)

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2007-XXXX
NPDES NO. CA0079197
CITY OF ATWATER WWTF
MERCED COUNTY

-42-

WDH/BLH/DBI/MSS: 5/17/07

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2007-XXXX

NPDES NO. CA0079197

FOR
CITY OF ATWATER
WASTEWATER TREATMENT FACILITY
MERCED COUNTY

Adherence to this Monitoring and Reporting Program (MRP) is required pursuant to California Water Code (CWC) sections 13267 and 13383. The City shall not deviate from this MRP unless and until the Regional Water Board or Executive Officer issues a revised MRP. Sample station locations are depicted on Attachment B. Any proposed change to a sampling location must have the prior written concurrence of the Regional Water Board's staff. After concurrence, a description of the change and the Regional Water Board staff's written concurrence must be attached to the City's copy of this Order.

Sample collection, storage, and analyses shall be performed in accordance with 40 CFR Part 136 or other methods approved and specified by the Executive Officer of the Regional Water Board. All samples shall be grab samples unless otherwise indicated and representative of the volume and nature of the discharge or matrix of material sampled. The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with Standard Provisions, Provisions for Monitoring.

Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DHS) or a laboratory waived by the Executive Officer from obtaining a certification for these analyses by the DHS. The director of the laboratory whose name appears on the certification or his or her laboratory supervisor who is directly responsible for analytical work performed shall supervise all analytical work including appropriate quality assurance/quality control procedures in his or her laboratory and shall sign all reports of such work submitted to the Regional Water Board.

For California Toxics Rule (CTR) constituents (priority pollutants), the City shall report sampling results as required by the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementations Plan or SIP) Section 2.4. The City's laboratory must meet minimum levels in the SIP Appendix 4.

INFLUENT MONITORING

Samples shall be collected at approximately the same time as effluent samples and should be representative of the influent. Influent monitoring shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Meter	Continuous
Settleable Solids	mL/L	Grab	Daily
pH	pH units	Grab	Daily
Conductivity @ 25°C (EC)	µmhos/cm	Grab	Daily
BOD ₅ ¹	mg/L, lbs/day	24-hr Composite ²	3/week ³
Suspended Solids	mg/L, lbs/day	24-hr Composite ²	3/week ³
Ammonia	mg/L	Grab	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly
Oil and Grease	mg/L	Grab	Weekly

- ¹ Five-day biochemical oxygen demand at 20°C
² Composite samples must be flow-proportioned samples
³ Nonconsecutive days

EFFLUENT MONITORING

Effluent samples shall be collected at the point E-2 indicated on Attachment B (downstream from the last connection through which pollutants can be admitted into the outfall) except as footnoted in the table below. Samples should be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. Effluent monitoring shall include at least the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Flow	mgd	Meter	Continuous
Settleable Solids	mL/L	Grab	Daily
pH	pH units	Grab	Daily
Chlorine Residual ¹	mg/L	Meter ²	Continuous
Conductivity @ 25°C (EC)	µmhos/cm	Grab	Daily
Temperature	°C (°F)	Grab	Daily
Ammonia ^{3,4}	mg/L	24-hr Composite ⁵	Weekly
Nitrate-nitrogen	mg/L	24-hr Composite ⁵	Weekly
Nitrite-nitrogen	mg/L	24-hr Composite ⁵	Weekly
Total Kjeldahl nitrogen	mg/L	24-hr Composite ⁵	Monthly
Total Nitrogen	mg/L	Calculated	Monthly
Total Coliform Organisms ⁶	MPN ⁷ /100 mL	Grab	Daily
General Minerals ⁸	mg/L	24-hr Composite ⁵	Annually
BOD ₅ at 20°C	mg/L, lbs/day, % removal	24-hr Composite ⁵	3/week ⁹
Total Suspended Solids	mg/L, lbs/day, % removal	24-hr Composite ⁵	3/week ⁹
Oil and Grease	mg/L	Grab	Weekly

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Copper, Total	µg/L	24-hr Composite ⁵	Monthly
Lead, Total	µg/L	24-hr Composite ⁵	Monthly
Zinc, Total	µg/L	24-hr Composite ⁵	Monthly
Bromodichloromethane	µg/L	Grab	Monthly
Chlorodibromomethane	µg/L	Grab	Monthly
2,3,7,8-TCDD (Dioxin) ¹⁰	pg/L	24-hr Composite ⁵	Quarterly ¹⁵
Metals ¹¹	µg/L	24-hr Composite ⁵	Annually
Hardness (as CaCO ₃)	mg/L	Grab	2/year ¹²
Priority Pollutants ¹³	µg/L	24-hr Composite ^{5,16}	Annually
Turbidity ¹⁴	NTU	Meter	Continuous

¹ Total chlorine residual samples shall be collected at the points labeled E-1 and E-2 on Attachment B. Monitoring at E-1 shall commence on the final compliance date established in Provision G.11, Task c.

² Prior to 7 June 2007, grab samples every 15 minutes may be taken at E-2 during calibration of the online analyzer. The detection limit of the monitoring system at E-2 prior to 7 June 2007 shall be ≤ 0.05 mg/L. Beginning 7 June 2007, the effluent shall be monitored at E-2 continuously at all times and the detection limit of the monitoring system shall be ≤ 0.01 mg/L.

³ Report as both total and un-ionized ammonia (record effluent temperature and pH at time of sample collection). Temperature and pH of the receiving water at R-2 shall be recorded on the same day as ammonia effluent samples.

⁴ Concurrent with acute toxicity monitoring.

⁵ Composite samples must be flow-proportioned samples.

⁶ Total coliform organism samples shall be collected at the point labeled E-1 on Attachment B (downstream from chlorination).

⁷ Most probable number.

⁸ General minerals shall include the constituents listed in the General Minerals Analyte List below. The reporting for general minerals shall include verification that the analysis is complete (i.e., cation/anion balance).

⁹ Non-consecutive days.

¹⁰ Samples shall be analyzed for 2,3,7,8-TCDD and the other 16 congeners listed in Section 3 of the SIP. See the MRP section entitled *Reporting* for information on how to report the analytical results.

¹¹ Aluminum, arsenic, cadmium, mercury, molybdenum, nickel, and selenium. Analysis for mercury shall be by USEPA Method 1631 for sampling, handling and analysis. The results shall be for total metals.

¹² January and July.

¹³ Priority Pollutants consist of the constituents listed in the most recent National Toxics Rule and California Toxics Rule. The laboratory shall investigate and report all unknown peaks with concentrations approaching internal standards utilizing tentative identified compound (TIC) protocol. The reported minimum levels shall comply with the SIP. Priority pollutant testing shall exclude Bromodichloro-methane, Chlorodibromo-methane, copper, lead, zinc, cadmium, mercury, nickel, selenium, and 2,3,7,8-TCDD (Dioxin), which are covered by separate monitoring requirements.

¹⁴ Monitoring shall commence on the final compliance date established in Provision G.11, Task c.

¹⁵ If Effluent Limitations B.5.a for dioxin are exceeded based on the results of a quarterly dioxin monitoring event, the City shall conduct accelerated monthly monitoring until testing results show that dioxin levels are less than the limitations contained in Effluent Limitations B5.a., at which time quarterly monitoring may be resumed.

¹⁶ Except where required otherwise by constituent testing protocol or approved by the Executive Officer.

General Minerals Analyte List

Alkalinity (as CaCO ₃), unfiltered	Chloride	Phosphorus, total dissolved (P)
Boron	Hardness (as CaCO ₃), calculated	Potassium
Bicarbonate (as CaCO ₃), unfiltered	Iron	Sodium
Calcium	Magnesium	Sulfate
Carbonate (as CaCO ₃), unfiltered	Manganese	

RECEIVING SURFACE WATER MONITORING

All receiving surface water samples shall be grab samples. Each specific location shall be marked with a monument. Sampling at R-1 is only required when there is a measurable flow at R-1 and shall be concurrent with sampling at R-2. Notations regarding whether there is measurable flow in R-1 shall be included in summaries of weekly Receiving Surface Water Monitoring. Receiving surface water monitoring shall include at least the following:

<u>Station</u>	<u>Description</u>
R-1	Not to exceed 500 feet upstream from the point of discharge to the Atwater Drain.
R-2	Not to exceed 600 feet downstream from the point of discharge to the Atwater Drain.

<u>Constituent</u>	<u>Units</u>	<u>Sampling Frequency</u>
Flow ¹	mgd	Weekly
Dissolved Oxygen	mg/L	Weekly
pH	pH units	Weekly ²
Hardness	mg/L	Quarterly
Turbidity	NTU	Weekly
Temperature	°F (°C)	Weekly ²
EC	µmhos/cm	Weekly
Fecal Coliform Organisms	MPN/100 mL	Weekly ⁵
Ammonia as N	mg/L	Weekly ²
Un-ionized Ammonia as N (calculated)	mg/L	Weekly
Chlorine Residual ³	mg/L	Weekly
Priority Pollutants ⁴	µg/L	Annually

¹ Only required at R-1. Instantaneous flow shall be determined at R-1. The City's method of estimating instantaneous receiving water flow is acceptable for meeting this monitoring requirement. This method involves measuring the time required for a floating object to travel through a culvert of known length upstream of the Atwater WWTF discharge point. Velocity is calculated by dividing the culvert length by the travel time. The water depth in the culvert is measured to calculate the flow area. Instantaneous flow is the product of the calculated velocity and flow area.

² Temperature and pH shall be determined at the time of sample collection for the calculation of un-ionized ammonia.

³ Minimum detection limit shall be ≤ 0.05 mg/L prior to 7 June 2007. Beginning 7 June 2007, the minimum

detection limit shall be ≤ 0.01 mg/L.

- 4 Priority Pollutants consist of the constituents listed in the most recent National Toxics Rule and California Toxics Rule. The laboratory shall investigate and report all unknown peaks with concentrations approaching internal standards utilizing tentative identified compound (TIC) protocol. The reported minimum levels shall comply with the SIP.
- 5 One additional sample shall be collected per 30-day period to demonstrate compliance with receiving water limitation D.14. The sample shall not be collected at the same time as other required weekly monitoring.

In conducting the receiving water monitoring, a log shall be kept of the receiving water conditions throughout the reaches bounded by Stations R-1 and R-2. Notes on receiving water conditions shall be summarized in the monitoring report. Attention shall be given to the presence or absence of:

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

Additionally, the City shall at least once monthly inspect reaches of the Atwater Drain that are accessible to the public to note whether all posted warning signs are present and accounted for. The City shall certify in each monthly monitoring report that all warning signs are present. In the event the City finds any warning sign missing or irreparably damaged, the City shall note in the monthly monitoring report the assigned number of the missing sign (as depicted in the map submitted pursuant to Provision G.6) and specify a date by which the City will replace the sign.

WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

- A. **Acute Toxicity Testing.** The City shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The City shall meet the following acute toxicity testing requirements:
1. Monitoring Frequency – The City shall perform **quarterly** (January, April, July, and October) acute toxicity testing, concurrent with effluent ammonia sampling.
 2. Sample Types – For static non-renewal and static renewal testing, the samples shall be 24-hour flow proportional composites and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at effluent monitoring location E-2.
 3. Test Species – Test species shall be fathead minnows (*Pimephales promelas*).
 4. Methods – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. Until the deadline established in Provision G.11, Task c., pH adjustments may only be allowed to reduce ammonia-related toxicity, after which no pH adjustments will be allowed unless approved by the Executive Officer.
 5. Test Failure – If an acute toxicity test does not meet all test acceptability criteria, as specified

in the test method, the City must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

6. Ammonia Toxicity – The acute toxicity testing may be modified to eliminate ammonia-related toxicity until the deadline established in Provision G.11, Task c., at which time the City shall implement the test without modifications to eliminate ammonia toxicity.

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

1. Monitoring Frequency – the City shall perform **quarterly** (January, April, July, and October) three species chronic toxicity testing.
2. Sample Types – Effluent samples shall be 24-hour composites and shall be representative of the volume and quality of the discharge. Chronic toxicity samples shall be collected at effluent monitoring location E-2. The receiving water control shall be a grab sample collected from the R-1 sampling location. Time of sample collection shall be recorded.
3. 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 City 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).
4. 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.
5. 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.
6. Dilutions – If toxicity is found in any of the 100 percent effluent tests, the City must retest using the full sampling protocol of the five dilutions listed in the table below. The receiving water control shall be used as the diluent unless the Atwater Drain is dry upstream of the WWTF or the receiving water is toxic.
7. Secondary Data Analysis – If any test indicates there is a statistically significant difference between the values for the observed test species response and the receiving water control, a secondary data analysis shall be performed. The secondary data analysis shall test statistically

for a difference between the values for the observed test species response and the laboratory control water. The results of the secondary data analysis shall be used to determine exceedance of the monitoring trigger specified in Provision G.8.

8. **Test Failure** – The City must re-sample and re-test as soon as possible, but no later than fourteen (14) days from the time the City becomes aware of the test failure. A chronic toxicity test fails if:
 - a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002, 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 Provision G.8.).

9. **Ammonia Toxicity** – The chronic toxicity testing may be modified to eliminate ammonia-related toxicity until the deadline established in Provision G.11, Task c., at which time the City shall implement the test without modifications to eliminate ammonia toxicity.

Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water	Laboratory Water ²
% Effluent	100	75	50	25	12.5	0	0
% Receiving Water ¹	0	25	50	75	87.5	100	0
% Laboratory Water ^{1,2}	0	25	50	75	87.5	0	100

¹ Laboratory water shall be used for dilution series if the Atwater Drain is dry when samples are collected or the receiving water is toxic.

² Laboratory water shall meet EPA protocol requirements.

- C. **WET Testing Notification Requirements.** The City shall notify the Regional Water Board within 24-hrs from the time the City becomes aware of the test results exceeding the monitoring trigger during regular or accelerated monitoring.

- D. **WET Testing Reporting Requirements.** All toxicity test reports shall include the contracting laboratory’s complete report provided to the City 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 TU_c, measured as 100/NOEC, and also measured as 100/LC₅₀, 100/EC₂₅, 100/IC₂₅, and 100/IC₅₀, as appropriate.
 - b. The statistical methods used to calculate endpoints;
 - c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);
 - d. The dates of sample collection and initiation of each toxicity test; and
 - e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TU_c, and organized by test species and type of test (survival, growth or reproduction).

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted to the Regional Water Board within 30 days following completion of the test and reported as percent survival.
3. **TRE Reporting.** Reports for Toxicity Reduction Evaluations shall be submitted in accordance with the schedule contained in the City's approved TRE Work Plan.
4. **Quality Assurance (QA).** The City 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.

PRETREATMENT PROGRAM MONITORING

The City shall submit an annual report to the Regional Water Board, with copies to the USEPA Regional Administrator and the State Water Board, describing the City's pretreatment activities over the

previous 12 months. In the event that the City is not in compliance with any conditions or pretreatment requirements of this Order, the City shall include the reasons for the noncompliance and state how and when the City shall comply with such conditions and requirements. This annual report shall be submitted by **1 February** and shall contain, but not be limited to items G.1 through G.8 of *Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)* dated February 2004 (Standard Provisions).

In addition to the information required in the annual report, the City shall report quarterly the information contained in G.4 (a through g) of Standard Provisions. The reports shall also describe progress towards compliance with audit or pretreatment compliance inspection requirements. Reports shall be submitted by **1st day of the second month following the end of each quarter**. The fourth quarterly report may be included as part of the annual report. If none of the aforementioned conditions exists, at a minimum, the City must submit a letter certifying that all industries are in compliance and no violations or changes to the pretreatment program have occurred during the quarter.

SLUDGE MONITORING

A composite sample of sludge shall be collected at least quarterly (i.e., January, April, July, and October). Composite sludge sampling shall be performed in accordance with EPA's *POTW Sludge Sampling and Analysis Guidance Document*, August 1989, and tested for the following constituents:

Arsenic	Lead	Nickel	2,3,7,8-TCDD (Dioxin) ¹
Cadmium	Mercury	Selenium	
Copper	Molybdenum	Zinc	

¹ Samples shall be analyzed for 2,3,7,8-TCDD and the other 16 congeners listed in Section 3 of the SIP.

Sludge 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.

Prior to any disposal or land application of sludge or biosolids, or removal of sludge or biosolids from the WWTF site, the monitoring and record keeping requirements of 40 CFR 503 shall be met.

WATER SUPPLY MONITORING

The City shall monitor the municipal water supply for the area served by the WWTF. Sampling stations shall be established where representative samples of each municipal water supply source can be obtained. The water supply monitoring shall include at least the following for each sampling station:

<u>Constituent</u>	<u>Units</u>	<u>Sample Type</u>	<u>Sampling Frequency</u>
Electrical Conductivity @25°C ¹	µmhos/cm	Grab	Annually

Standard Minerals^{1,2} mg/L Grab Annually

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

GROUNDWATER MONITORING

Prior to collecting samples, the monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. The method used for purging shall meet applicable EPA standards and be consistent with a monitoring well installation work plan approved by the EO.

At least quarterly and concurrently with groundwater quality sampling, the City shall measure the water level in each well as groundwater depth (in feet and hundredths) and as groundwater surface elevation (in feet and hundredths above mean sea level). The horizontal geodetic location for each monitoring well shall be provided where the point of beginning shall be described by the California State Plane Coordinate System, 1983 datum and shall be included on the monitoring report.

Samples shall be collected from approved monitoring wells and analyzed for the following constituents at the following frequency:

<u>Constituent</u>	<u>Units</u>	<u>Sample Type</u>	<u>Sampling Frequency⁵</u>
Depth to groundwater	0.01 feet	Measured	Quarterly ¹
Groundwater Elevation	0.01 feet MSL	Calculated	Quarterly ¹
Horizontal Location	0.1 feet	Measured	Quarterly ¹
Total Dissolved Solids (TDS)	mg/L	Grab	Quarterly ¹
EC	µmhos/cm	Grab	Quarterly ¹
Ammonia (as NH ₃ -N)	mg/L	Grab	Quarterly ¹
Nitrate (as NO ₃ -N)	mg/L	Grab	Quarterly ¹
pH	pH units	Grab	Quarterly ¹
Total Coliform Organisms	MPN/100 mL	Grab	Quarterly ¹
Total Organic Carbon	mg/L	Grab	Quarterly ¹
Total Kjeldahl Nitrogen (TKN)	mg/L	Grab	Quarterly ¹
Total Nitrogen (as N)	mg/L	Calculated	Quarterly ¹
Adjusted SAR ²	None	Calculated	Quarterly
Metals ³	mg/L	Grab	Quarterly ¹
General Minerals ⁴	mg/L	Grab	Quarterly ¹

¹ January, April, July and October

² Adjusted sodium adsorption ratio (SAR) shall be determined as follows:

$$\text{Sodium adsorption ratio (SAR)} = \frac{Na}{\sqrt{\frac{Ca + Mg}{2}}}, \text{ where Na, Ca, and Mg are in meq/L}$$

- 3 Metal analyses shall include aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc. Samples placed in acid-preserved bottles must first be filtered through a 0.45 μm nominal pore size filter. If field filtering is not feasible, samples shall be collected in unpreserved containers and submitted to the laboratory within 24-hours with a request (on the chain-of-custody form) to immediately filter then preserve the sample.
- 4 General minerals shall include bicarbonate, calcium, carbonate, chloride, fluoride, potassium, sodium, sulfate, and total phosphorus. The reporting for general minerals shall include verification that the analysis is complete (i.e., cation/anion balance).
- 5 Background wells shall be monitored monthly for the first 12 months, and quarterly thereafter.

In reporting the results of the first sampling event performed pursuant to this program, the City shall include a detailed description of the procedures and techniques for: (a) sample collection, including purging and post-sampling purging techniques, sampling equipment, and decontamination of sampling equipment; (b) sample preservation and shipment; (c) analytical procedures; and (d) chain of custody control.

One full year after the completion of Provision G.14, Task d., the City shall analyze monitoring data from background well(s) to compute background water quality values for each constituent and to perform an initial assessment of whether there is evidence of an impact from the discharge. To complete this task, the City shall use monitoring data from background, internal and boundary monitoring wells in an appropriate data analysis method (e.g., Title 27 section 20415(e)(7-9)). Prior to the completion of Provision G.14, Task d., reports shall be submitted in accordance with the EO approved groundwater monitoring well implementation schedule. Reports thereafter shall be submitted quarterly by the 1st day of the second month after the prescribed sample collection and shall include the same analysis. Location shall be based upon and expressed as both latitude and longitude (NAD 1983) and California Coordinate System as surveyed.

Compliance with this Order's Groundwater Limitations will be evaluated based on data collected from approved groundwater monitoring wells following completion of Provision G.14, Task f. If the City, during any quarterly data evaluation following the completion of Provision G.14, Task f., finds statistically significant evidence of an increase in waste constituents in groundwater at a boundary and/or internal monitoring well compared to background levels, the City shall conclude that the discharge caused the increase unless it can demonstrate within 90 days that it was due to an offsite source. The City shall describe the data analysis method used as well as the criteria it used for determining "statistically significant evidence."

REPORTING

The City shall report monitoring data and information as required in this MRP and as required in the Standard Provisions and Reporting Requirements. All reports submitted in response to this MRP shall comply with the signatory requirements in Standard Provisions, General Reporting Requirements D.6. All monitoring data where the required monitoring frequency is monthly or more frequent than once per month shall be reported in monthly monitoring reports. Monitoring results shall be submitted to the Regional Water Board by the **1st day of the second month** following sample collection. Quarterly monitoring results shall be submitted by the **1st day of the second month** following each calendar quarter. Semi-annual monitoring reports shall be submitted by the **1 February and 1 August**. Annual monitoring results shall be submitted by **1 February** of each year. Reports shall be submitted whether or not there was a discharge during the reporting period. Failure to submit a report will result in an assessment of a Minimum Mandatory Penalty pursuant to CWC Section 13385.

Monitoring data and/or discussions submitted concerning WWTF performance must be signed and certified by the chief plant operator whom the City shall have provided written designated signatory authority. Reports containing laboratory analyses must also be signed and certified by: (1) the chief of the laboratory when laboratory analyses are performed by the City, and (2) the chief of the laboratory or authorized signatory when performed by a contract laboratory.

Each laboratory report shall clearly identify the following:

- analytical method
- measured value
- units
- what constituent a value is reported as
- method detection limit (MDL)
- reporting limit (RL) (i.e., a practical quantitation limit or PQL)
- documentation of cation/anion balance for general minerals analyses of supply water, effluent, and groundwater samples
- analyst name and signature

All laboratory results shall be reported down to the method detection limit (MDL), as defined in 40 CFR 136. Nondetected results shall be reported as less than the MDL (<MDL). Results above the MDL, but below the concentration of the lowest calibration standard for multipoint calibration methods or below the reporting limit for other methods shall be flagged as estimated. The reported minimum level (ML) shall be at least as low as the lowest ML for each priority pollutant specified in Appendix 4 of the State Implementation Plan.

For each dioxin congener, the analytical results, including the quantifiable limit, the MDL, and the measured or estimated concentration shall be reported. The City shall multiply each measured or estimated congener concentration by its respective toxicity equivalency factor (TEF) (See Section 3 of the SIP for TEFs) and report the sum of these products.

In reporting the monitoring data, the City 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 BOD₅ and Suspended Solids, should be determined and recorded.

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

By **1 February of each year**, the City shall submit a written report to the Executive Officer containing the following:

1. The names, certificate grades, and general responsibilities of all persons in charge of wastewater treatment and disposal (Standard Provision A.5).
2. The names and telephone numbers of persons to contact regarding the WWTF for emergency and routine situations.
3. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).
4. A statement whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment facility as currently constructed and operated, and the dates when these documents were last reviewed for adequacy.
5. The most recent annual water supply reports for the City of Atwater and for the unincorporated community of Winton.
6. The results of an annual evaluation conducted pursuant to Standard Provision B.5 and a figure depicting monthly average discharge flow for the past five years.
7. A summary of the following monitoring data collected during the previous 12 months, presented in tabular form, as well as on 3.5" computer diskette or CD: (1) daily coliform, (2) running 7-sample median coliform, (3) maximum daily coliform for each month, (4) average daily chlorine residual for each month, (5) highest daily maximum chlorine residual for each month.
8. A summary of sludge monitoring, including:
 - a. Annual sludge production in dry tons and percent solids.
 - b. A schematic diagram showing sludge handling facilities and solids flow diagram.
 - c. A description of disposal methods, including the following information related to the disposal methods used at the WWTF. If more than one method is used, include the percentage of annual sludge production disposed of by each method.
 - i. For **landfill disposal**, include: (a) the Order numbers of WDRs that regulate the landfill(s) used, (b) the present classifications of the landfill(s) used, and (c) the names and locations of the facilities receiving sludge.
 - ii. For **land application**, include: (a) the locations of the site(s), and (b) the Order numbers of any WDRs that regulate the site(s).

- iii. For **incineration**, include: (a) the names and location of the site(s) where sludge incineration occurs, (b) the Order numbers of WDRs that regulate the site(s), (c) the disposal method of ash, and (d) the names and locations of facilities receiving ash (if applicable).
 - iv. For **composting**, include: (a) the location of the site(s), and (b) the Order numbers of any WDRs that regulate the site(s).
9. A summary of groundwater monitoring in a format (both printed and electronic) selected in concurrence with Regional Water Board staff, including
- a. Hydrographs showing the groundwater elevation in approved wells for at least the previous five years or to the extent that such data are available, whichever is fewer. The hydrographs should show groundwater elevation with respect to the elevations of the top and bottom of the screened interval and be presented at a scale of values appropriate to show trends or variations in groundwater elevation. The scale for the background plots shall be the same as that used to plot downgradient elevation data;
 - b. Graphs of the laboratory analytical data for samples taken from approved wells within at least the previous five calendar years (as data become available). Each such graph shall plot the concentration of one or more waste constituents selected in concurrence with Regional Water Board staff. The graphs shall plot each datum, rather than plotting mean values, over time for a given monitoring well, at a scale appropriate to show trends or variations in water quality. For any given constituent, the scale for the background plots shall be the same as that used to plot downgradient data.
 - c. All monitoring analytical data obtained during the previous four quarterly reporting periods, presented in tabular form, as well as on 3.5" computer diskette or CD.
10. A summary and discussion of the compliance record for the reporting period. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with this Order.

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

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

(Date)

FACT SHEET

ORDER NO. R5-2007-XXXX
NPDES NO. CA0079197
CITY OF ATWATER WWTF
MERCED COUNTY

BACKGROUND

The City of Atwater (City) applied for a permit renewal to discharge wastes from its wastewater treatment facility (WWTF) under the National Pollutant Discharge Elimination System (NPDES). The City contracts with Veolia Water North America – West, LLC to operate the WWTF. The WWTF has a design capacity of 6.0 million gallons per day (mgd) and currently treats a monthly average flow of about 3.9 mgd. The WWTF provides municipal sewerage services to the City of Atwater and the unincorporated community of Winton and serves about 37,000 residents. Treated municipal wastewater is discharged to the Atwater Drain, a water of the United States. The discharge to the Atwater Drain is governed by Waste Discharge Requirements (WDRs) Order No. 95-034 (NPDES Permit No. CA 0079197).

The WWTF has standby power for the headworks and disinfection building. In 1999, it installed a new SCADA system and auto dialers to replace the auto dialer which failed during an October 1998 power outage. The City reported that during a November 1998 outage, which lasted seven hours, the WWTF effluent met permit limitations.

The City's major industrial dischargers are Sun Garden - Gangi Canning Company (Sun Garden) (formerly Atwater Canning Co.) and Jim's Farm Meat in Winton. Castle Aviation and Development Center in Merced County, which also discharges to the WWTF, has no significant industrial discharges. Sun Garden has individual WDRs Order No. 96-205 for land application of food processing wastewater. In July 2001, the City submitted its industrial pretreatment program (IPP) and sewer ordinance to the Regional Water Board for approval. By letter dated 14 November 2001, Regional Water Board staff and State Water Resources Control Board Office of Chief Counsel (OCC) provided review comments on the City's IPP and draft ordinance. The City has made all OCC's recommended changes. This Order approves the City's IPP and establishes a time schedule for the City to implement the approved IPP.

The Atwater Drain conveys treated discharges from the WWTF, storm water runoff from the City of Atwater, and agricultural drainage. The City has a contract with Merced Irrigation District to maintain the Atwater Drain. Effluent samples diluted with receiving water have occasionally resulted in more toxicity than undiluted effluent.

WWTF DESCRIPTION

The WWTF has headworks, two primary clarifiers, two aeration basins, four secondary clarifiers, and three parallel chlorine contact chambers. The WWTF is currently operated in extended aeration mode. Preliminary treatment includes a conical grit chamber, cyclone grit classifiers, a 3/8-inch bar screen and a screenings compactor. Treated wastewater is disinfected with chlorine gas and dechlorinated with calcium thiosulfate and sodium bisulfite. Two anaerobic digesters process sludge from the primary clarifiers and waste activated sludge that has been partially dewatered via gravity belt thickeners. A

concrete lined sludge holding basin contains sludge from the anaerobic digesters. During the summer months, solids are pumped from the sludge holding basin to ten unlined one-acre drying beds. The WWTF produces approximately 600 dry tons of sludge annually. With the exception of leachate from the unlined sludge drying beds, liquid wastes from solids handling operations (i.e., digester supernatant, sludge holding basin decant, sludge drying bed decant, and gravity belt thickener filtrate) are returned to the aeration basins for treatment.

RECEIVING WATER DESCRIPTION AND BENEFICIAL USES

The WWTF discharges to the Atwater Drain, the beneficial uses of which are not specifically identified in the *Water Quality Control Plan for the (Sacramento River Basin and San Joaquin River Basin, Fourth Edition)* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for waters of the Basin.

According to Merced Irrigation District Records, the 1918 surveyor report showed that the Atwater Drain was explicitly conceived and designed to collect storm water drain for the City of Atwater. Merced County and the Merced Irrigation District entered into an agreement on 6 April 1922 for the construction and maintenance of the Atwater Drain. Construction was completed thereafter. The Atwater Drain begins approximately 800 feet above the City of Atwater WWTF discharge point. Historically, the flows in the Atwater Drain, about thirteen miles downstream from the discharge, entered a siphon under the East Side Canal prior to discharging to Bear Creek, a tributary to the San Joaquin River. On a 29 June 2005 reconnaissance inspection of the Atwater Drain, Regional Water Board staff observed that the Atwater Drain terminates approximately 0.6 miles upstream from the old siphon on Arena Plains Unit of the Merced National Wildlife Refuge (Refuge), which is owned and operated by the U. S. Fish & Wildlife Service. The drain channel between its current terminus and the old siphon is filled with earth. The Atwater Drain feeds wetland habitat on the Refuge. Natural surface water channels convey water from the wetland habitat to the southwest corner of the Refuge, which is bounded by a levee. A breach in the levee allows the Refuge to exchange water with the East Side Canal. Water in the East Side Canal is periodically diverted to the San Joaquin River just south of its confluence with the Merced River

The City and Joseph Gallo Farms (also known as Gallo Ranch) entered into an agreement wherein Gallo Ranch granted the City an easement to flow its WWTF effluent over Gallo Ranch in exchange for the right to all the WWTF effluent (up to the design flow) in the Atwater Drain. Gallo Ranch, in turn, mixes the Atwater Drain water with pumped groundwater, Merced Irrigation District water, and wastewater from Sun Garden to irrigate fodder crops (e.g., corn and wheat) and sweet potatoes. Any WWTF effluent not extracted from the Atwater Drain for use by Gallo Ranch flows to the Refuge (formerly the Bert Crane Sunrise Ranch).

Two pipe outfalls exist at the head of the Atwater Drain. Historically, Sun Garden used one outfall to

discharge non-contact cooling water. Sun Garden no longer possesses an NPDES permit to discharge non-contact cooling water. The sources of water in the other outfall include storm water from the City of Atwater and miscellaneous discharges (e.g., landscape irrigation runoff, wash water, etc.) from residential and industrial areas within the City of Atwater. With the exception of storm events, there is little to no flow (typically around 0.08 cubic feet per second) in the Atwater Drain above the Atwater WWTF discharge. Given that the Atwater Drain is a constructed storm drain, it has no natural background water, and background water, the majority of the time, is a mixture of miscellaneous discharges from human activity and effluent backflow and the remainder of the time storm water diverted by man-made drainage structures.

Regional Water Board staff observations indicate that the Atwater Drain provides habitat for certain aquatic resources. The Atwater Drain's alignment parallels several major roads and is accessible to the public. During a 12 June 2001 inspection, Regional Water Board staff observed members of the public harvesting frogs and crayfish. On a 29 June 2005 reconnaissance inspection of the Atwater Drain, Regional Water Board staff observed crayfish, catfish, carp, and other unidentified fish species. The City's Self Monitoring Reports (SMRs) for 2004 through April 2006 note frogs, tadpoles, crayfish, minnows, fish, birds, ducks, and aquatic insects in the Atwater Drain.

Precedential State Water Resources Control Board (State Water Board) Order No. WQO 2002-0015 (Vacaville Order) provides guidance on implementing the Basin Plan, particularly beneficial uses as designated and permit limitations that protect beneficial uses in an effluent dominated water body while uses undergo re-evaluation. Some of the issues addressed by the Vacaville Order are relevant to the City's WWTF discharge. Specifically, the beneficial uses affecting the effluent limitations of the Atwater Drain downstream of the discharge point are agricultural irrigation (AGR), warm freshwater aquatic (WARM), municipal and industrial (MUN), and contact and non-contact water recreation (REC-1 and REC-2). AGR, WARM, and REC-1 and REC-2 are firmly established. Other beneficial uses, whether they exist or do not exist, are unlikely to change the effluent limitations of this Order.

State Water Board Resolution No. 88-63, Adoption of Policy Entitled "Sources of Drinking Water," states:

All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water ...with the exception of:

* * *

2. Surface Waters Where:

- a. The water is in systems designed or modified to collect...storm water runoff, provided that the discharge from such systems is monitored to assure compliance with all relevant water quality objectives as required by the Regional Boards...

Although the Atwater Drain was explicitly conceived and designed to collect storm water runoff and it

meets exception 2.a. of Resolution 88-63, Resolution No. 88-63 is not self-implementing. A Basin Plan amendment will be required to dedesignate MUN as a beneficial use of the Atwater Drain.

If the City has or wishes to acquire information that indicates MUN does not exist and is unlikely to exist in the future, the City may provide the information to the Regional Water Board for evaluation through a full Use Attainability Analysis (UAA). If the UAA indicates that the Basin Plan should be amended to remove this designated beneficial use, the Regional Water Board will process the Basin Plan amendment, if appropriate, with support from the City. The City should be aware that the Vacaville Order makes it clear that the discharger bears the responsibility for providing the information to support this evaluation including efforts to amend the Basin Plan. To the extent that beneficial use designation/designation issues are relevant in this case, the City should consider evaluating alternatives for the discharge to determine the most cost effective course of action (e.g., increased treatment, alternative disposal of the effluent, studies to support dedesignating beneficial uses, etc.).

BIOSOLIDS

The City disposes of grit and screenings in the Merced County Highway 59 Solid Waste Landfill, which is regulated by Waste Discharge Requirements Order No. R5-2006-0022. The City disposes of sludge to Brisco Enterprises' Silva Ranch in El Nido, California, which is regulated by a permit issued by Merced County.

SUMMARY OF CHANGES TO CURRENT ORDER

A summary of the key changes in this Order is as follows:

A. Prohibitions

This Order prohibits the discharge of waste classified as 'hazardous' as defined in section 2521(a) of Title 23, CCR, section 2510 et seq., or 'designated' as defined in CWC section 13173.

This Order provides that no waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of groundwater limitations. Prohibitions A.3, A.4, and A.5 are new.

B. Final Effluent Limitations

This Order includes a compliance schedule for final effluent limitations including CTR constituents pending completion of the WWTF upgrade to tertiary, or equivalent, treatment; or an effluent disposal method other than to discharge to the Atwater Drain.

This Order includes effluent limits for ammonia, nitrate, nitrite, oil and grease, turbidity, chlorine

residual, copper, lead, zinc, 2,3,7,8-TCDD (Dioxin), bromodichloromethane, and chlorodibromomethane.

C. Sludge Specifications

This Order requires:

- sludge removal to ensure optimal plant operation;
- confining sludge treatment and storage to WWTF property;
- only temporary sludge storage;
- sludge disposal in a manner approved by the Executive Officer; and
- use of sludge as a soil amendment shall comply with valid waste discharge requirements and with the provisions of 40 CFR part 503.

D. Receiving Water

This Order establishes receiving water dissolved oxygen concentrations, restricts materials such as oils, greases, and waxes; requires chlorine not to be detected; limits pesticide concentrations, limits discoloration, limits biostimulatory substances, limits material deposition; sets ambient pH; limits turbidity; limits radionuclides; limits toxic substances; limits taste- or odor-producing substances; limits fecal coliform concentration; and prohibits violation of any applicable adopted water quality standard for receiving waters.

This Order does not include direct application of the Basin Plan numeric water quality objectives for temperature and turbidity as they apply to changes to natural water, and there is no natural background water in the Atwater Drain. The existing beneficial uses developed while effluent of existing temperatures and turbidity was discharged, and they are not at risk if that continues. At a minimum, it is appropriate that the City maintain the historical temperature and turbidity of the discharge, but there is no natural background conditions that must be protected from unreasonable alteration. This Order includes turbidity effluent limitations based on the tertiary treatment requirements in Title 22, California Code of Regulations. As implementation of these new effluent limitations will improve the existing conditions, it is unnecessary to include a numeric receiving water limitation for turbidity; however, this Order includes a narrative receiving water limitation.

This Order does not include a temperature effluent limitation that will improve existing conditions. Thus, to ensure protection of WARM, this Order requires the City to conduct a study in consultation with the California Department of Fish and Game to develop appropriate numeric receiving water limits for temperature. In the interim, this Order contains a narrative receiving water limitation for temperature.

E. Groundwater

This Order requires groundwater monitoring to determine whether the City's present and previous use of unlined sludge drying and storage beds have degraded groundwater.

This Order does not allow groundwater within the influence of the WWTF to be degraded or to exceed water quality objectives.

F. Industrial Pretreatment Program

This Order approves and requires the City to implement its approved Industrial Pretreatment Program.

G. Provisions.

This Order includes the addition of groundwater monitoring tasks and a time schedule for the City to evaluate the groundwater impact from the unlined sludge drying beds and provide a technical report. If the technical report concludes that there is a groundwater impact, then the City must propose mitigation measures.

This Order provides time schedules for achieving final effluent limitations. The technical reports are subject to approval by the Executive Officer.

This Order requires the City to submit a toxicity reduction evaluation (TRE) work plan for Executive Officer approval. This Order also requires the City to comply with a numeric monitoring trigger for conducting accelerated chronic WET monitoring and a protocol for requiring the City to initiate an approved TRE if a pattern of toxicity is demonstrated.

This Order requires a receiving water study to develop numeric receiving water limitations for temperature that are protective of downstream beneficial uses.

This Order requires the City to post signs on the Atwater Drain to alert the public that the Atwater Drain contains recycled water and is not suitable for drinking or public contact.

H. Monitoring and Reporting Program

This Order includes the addition of influent monitoring requirements to measure ammonia, total Kjeldahl nitrogen, total suspended solids and oil and grease.

This Order includes the addition of effluent monitoring requirements to measure nitrite nitrogen, nitrate nitrogen, total Kjeldahl nitrogen, total trihalomethanes, turbidity (after construction of tertiary

units), and priority pollutants.

This Order includes the addition of receiving water monitoring requirements to measure ammonia and calculate un-ionized ammonia.

BASIS FOR PROHIBITIONS

- A.1 Prohibition of discharge, except as described in this Order, is based on the Basin Plan and the Current Order, otherwise discharges would result in an unpermitted discharge in violation of Clean Water Act Section 402.
- A.2 Prohibition of by-pass or overflow is based on 40 CFR 122.41(m) as described in Standard Provision A.13.

RATIONALE FOR NON-PRIORITY POLLUANT EFFLUENT LIMITATIONS

The following effluent limitations have been derived from 40 CFR 133.102 or the Basin Plan. Some of these limits are carried over from Order No. 95-034.

The specific rationale for these limits is as follows:

Dilution: Water quality-based effluent limitations (e.g., pH and total residual chlorine) in this Order apply at the point of discharge since the Atwater Drain is designed and constructed as a storm water drain, thus there is no significant dilution except during storm events.

Flow: The WWTF was designed to provide secondary treatment for up to its design flow of 6.0 mgd, the current effluent limitation for flow. This limitation is carried over from previous WDRs.

Mass-based limits: Mass-based limits are calculated using the applicable concentration limit and the design flow of the facility. (See examples below for BOD₅ and TSS.)

BOD₅ and TSS: BOD₅ and TSS limits are set in accordance with the secondary treatment standards found at 40 CFR 133.102, which state that the effluent BOD₅ and TSS shall not exceed a 30-day average of 30 mg/L and a 7-day average of 45 mg/L, and that the average BOD₅ and TSS percent removal rate shall be no less than 85%. The maximum daily limitation of 90 mg/L is carried over from Order No. 95-034. The mass-based limits are calculated using the applicable concentration limit and the design flow of the facility. These limits will continue until the City modifies the WWTF to meet tertiary treatment requirements, as described in later findings. Subsequent to adding coagulation and filtration,

the BOD₅ and TSS limitations will be 10 mg/L, 15 mg/L, and 20 mg/L respectively for the monthly average, weekly average, and daily maximum.

Mass-based limit calculation for BOD₅ and TSS:

$$\text{Given: } \frac{\text{lbs}}{\text{day}} = \frac{8.34 \frac{\text{lbs}}{\text{million gal}}}{\frac{\text{mg}}{\text{L}}} \times x \frac{\text{mg}}{\text{L}} \times y \frac{\text{million gallons}}{\text{day}}$$

Design flow = 6.0 mgd

Monthly Average = 8.34 × 30 mg/L × 6.0 mgd = **1501 lbs/day**

Weekly Average = 8.34 × 45 mg/L × 6.0 mgd = **2251 lbs/day**

Daily Max = 90 mg/L × 8.34 × 6.0 mgd = **4504 lbs/day**

pH: The Basin Plan requires that the pH of receiving waters shall not be depressed below 6.5 or raised above 8.5 standard units. As the discharge is at times the only flow in the Atwater Drain, these limitations are applied directly to the discharge. These requirements are more stringent than the pH requirements based on the secondary treatment standards at 40 CFR 133.102.

Settleable Solids: Secondary effluent limitations for settleable solids are based on limitations from the current Order and were developed to attain the Basin Plan narrative water quality objective for settleable material. The tertiary effluent limitations for settleable solids are based upon expected performance standards for a tertiary level wastewater treatment process.

Electrical Conductivity (EC): The Basin Plan, Table II-1, designates irrigation as a beneficial use for irrigation of various crops including food crops. The Basin Plan states on Page III-3.00, “Chemical Constituents,” “Waters shall not contain constituents in concentrations that adversely affect beneficial uses.” The Basin Plan’s “Policy for Application of Water Quality Objectives” provides that in implementing narrative water quality objectives, the Regional Water Board must consider numeric criteria and guidelines developed by other agencies and organizations as well as information submitted by the discharger and interested parties. This application of the Basin Plan is consistent with 40 CFR 122.44(d).

A report published by Food and Agriculture Organization of the United Nation - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985) entitled Water Quality for Agriculture by Ayers R.S. and D.W. Westcott indicates that almost all crops should be able to attain full yields without special irrigation management when irrigated with water containing a salinity less than 700 umhos/cm. The UN Report also states that when using higher salinity irrigation water (i.e., > 700 umhos/cm), “. . . a full yield

potential is still possible but care must be taken to achieve the required leaching fraction in order to maintain soil salinity within the tolerance of the crop. For higher salinity water and sensitive crops, increasing the leaching to satisfy a leaching requirement greater than 0.25–0.30 may not be practical because of the excessive amount of water required. In such a case, consideration must be given to changing to a more tolerant crop that will require less leaching to control salts within crop tolerance.”

The 700 umhos/cm effluent limitation in this Order is based, in part, on preventing the necessity for any type of restriction on the types of crops grown in the area. Evidence exists that the soil and climate at the Gallo Ranch is suitable for growing salt sensitive crops. According to 1995 and 2002 Department of Water Resources land use maps, salt sensitive crops (i.e., beans and strawberries) are grown within a four-mile radius of the Gallo Ranch, some as close as one-half mile from the ranch. Should the Gallo Ranch decide in the future to grow a salt sensitive crop, applying irrigation water with an EC greater than 700 umhos/cm may require it to alter irrigation practices, such as by increasing the leaching fraction. Increasing the leaching fraction requires more water, which may or may not be readily available, and would likely increase cost. The State Water Board made it clear in WQO 2004-0010 that *“it is inappropriate to force downstream irrigators to alter their practices and incur costs to accommodate a controllable upstream discharge.”*

Increased leaching of salt eventually results in more salt degradation of groundwater. Groundwater is designated for use as AGR and degradation of its quality must also be controlled. California Water Code Section 13263, among other things, requires consideration of environmental characteristics of the hydrographic unit and other factors that affect water quality in the area. For example, the record concerning State Water Board WQO 2004-0010 (City of Woodland) indicated that flooding occurs in the Yolo Bypass about six out of every ten years and the State Water Board determined, *“It is reasonable to expect that significant flooding could leach sufficient salts to prevent diminished crop yields.”* The State Water Board concluded that a study to evaluate whether a relaxed EC objective was appropriate. The magnitude and frequency of diluting water affecting water and crops in the area of the Atwater Drain have not been identified, though precipitation and storm water runoff will have, on average, some mitigating affect on the impact from the discharge on groundwater quality. However, the Gallo Ranch has significant salt sources from confined animal facilities, cheese plants, and farming that have significantly greater influence on water quality of the hydrographic unit. The City has not provided Regional Water Board staff with any information to justify a greater salinity as being of maximum public interest, appropriate for the site-specific circumstances, and a concentration reasonably achievable. Therefore, an EC objective of 700 umhos/cm is relevant and appropriate at this time to the circumstances of the City’s discharge.

Furthermore, State Water Board Resolution No. 68-16 (commonly referred to as the “Antidegradation Policy”) requires the City to implement *“the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.”* Municipal wastewater discharges in the Tulare Lake Basin and Los Angeles Basin maintain a discharge EC of less than 500

umhos/cm greater than their source water. This performance-based limit is in the City's existing permit. The City's discharge has historically averaged less than 700 umhos/cm and less than 400 umhos/cm increase over source water. Therefore, performance alone might support an effluent limitation greater than 700 umhos/cm if receiving water quality was not the constraining factor. Before any consideration of increasing the EC effluent limit above current performance, the City would have to demonstrate a change in effluent quality to be consistent with the Antidegradation Policy.

This Order includes an effluent limitation of 700 umhos/cm for conductivity based on the beneficial use AGR. This limitation has historically been achievable by the City. The City's self monitoring reports for 1 June 2002 through 30 April 2006 show that the average effluent EC was 549 umhos/cm, the standard deviation was 58 umhos/cm, and the maximum 30-day moving average EC was 641 umhos/cm. The limitation of 700 umhos/cm is essential to water quality protection and the agricultural beneficial use, represents what has historically been achievable, will not require any WWTF modifications to maintain compliance, and complies with Resolution 68-16 anti-degradation requirements.

The City may pursue a detailed, site-specific investigation of whether an EC greater than 700 umhos/cm represents its best efforts and is reasonably protective of AGR. Provision 18 specifies the information that must be included in such an investigation. Pending Executive Officer decision that any investigation result warrants reconsideration of the EC effluent limitation, this Order will be reopened for consideration of a revised EC effluent limitation.

Total Coliform Organisms. Total coliform bacteria is a group of bacteria that includes fecal coliform and other non-fecal bacteria. *Escherichia coli* (*E. coli*) is a specific kind of fecal coliform that is found in human and other mammal waste. Some of the health risks associated with fecal-contaminated water are gastroenteritis, ear infections, typhoid fever, dysentery, and hepatitis. The presence of coliform suggests contamination of the water supply that may include such harmful microorganisms *Giardia spp.* and *Cryptosporidium spp.* as well as others.

The preceding Order included effluent limitations for 7-sample median and daily maximum total coliform organisms of 23 and 500 MPN/100 mL, respectively, to reflect standard disinfected secondary treatment WWTF performance. On 27 April 2001, the Regional Water Board assessed a mandatory minimum penalty of \$30,000 to the City for violating the effluent coliform limitations between 1 January 2000 and 30 June 2000. On 29 October 2004, the Regional Water Board assessed a mandatory minimum penalty of \$30,000 to the City for violating the effluent coliform limitations between 1 July 2000 and 31 July 2004 and the effluent conductivity limitation on 22 March 2001. This Order continues, as interim limitations, the 23 MPN/100 mL 7-sample median in the preceding Order but reduces the daily maximum to 240 MPN/100 mL to conform with the California Department of Health Services (DHS) definition for disinfected secondary effluent, and requires daily testing rather than the three times per week testing in the preceding Order.

Title 22, CCR, section 60301 *et seq.*, reclamation criteria for the reuse of wastewater 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. Title 22 is not directly applicable to surface waters; however, in 1999, the Regional Water Board asked DHS for guidance regarding treatment and disinfection levels necessary to protect public health from discharges to agricultural drains and creeks with beneficial uses of water contact recreation. In an April 1999 letter, DHS recommends that wastewater discharges to such resources be adequately oxidized, coagulated, filtered, and disinfected. It is appropriate to apply DHS' reclamation criteria because the Atwater Drain meets the definition of full water contact recreation because it is used for harvesting crayfish and frogs.

As discussed in more detail below, this Order contains a time schedule to comply with the more stringent Effluent Limitations based upon the tertiary or equivalent 2.2 MPN/100mL standard.

Therefore, from **7 December 2011** forward, effluent limitations based on disinfected tertiary treatment standards as defined in Title 22 are included in this Order to protect the beneficial uses of non-restricted contact recreation in the Atwater Drain.

Residual Chlorine. The Basin Plan states that, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." EPA's *Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life* recommends a maximum one-hour average concentration of 0.019 mg/L and a maximum four-day average concentration of 0.011 mg/L. The preceding Order required that the discharge not cause residual chlorine in the receiving water to exceed 0.1 mg/L. Weekly chlorine residual receiving water monitoring shows 13 detections. The chlorine residual concentrations in these samples ranged from 0.11 to 1.5 mg/L. The City attributed these exceedances to transitory problems with the WWTF's chlorination and dechlorination units and corrected the problems within hours of each violation. To ensure consistent compliance with the current Order's receiving water limitation for chlorine residual, the City constructed a storage chamber, upgraded dechlorination facilities at an approximate cost of \$500,000, and has upgraded its continuous flow effluent residual chlorine analyzer.

The limits in this Order are based upon EPA's Water Quality Criteria of 0.019 mg/L as a daily maximum concentration and 0.011 mg/L as a 30-day average concentration. The final effluent limitation for chlorine was calculated using the procedures set forth in section 5.4 of the USEPA *Technical Support Document for Water Quality-based Toxics Control* (1991)(TSD). The effluent daily maximum limitation is 0.02 mg/L and the effluent monthly average limitation is 0.01 mg/L, the calculations for which are below. Except for when the continuous meter is offline for calibration, the City continuously monitors the effluent. The current reliable reporting limit of the instrument is 0.05 mg/L and the City has an automatic gate to divert the flow to a pond if there is a violation. The City is in the process of purchasing and installing a second analyzer so the effluent can be monitored continuously without interruption. This Order gives the City six months to install the second analyzer.

In the interim, this Order requires continuous monitoring using the existing analyzer and grab samples every 15 minutes when the analyzer is taken offline for calibration.

Assume CV = 0.6
n=30 samples (daily sampling)
Acute Multiplier = 0.321
Chronic Multiplier = 0.527
 $ECA_{acute} = 0.019 \text{ mg/L}$
 $ECA_{chronic} = 0.011 \text{ mg/L}$
 $LTA_{acute} = ECA_{acute} \times 0.321 = 0.019 \times 0.321 = 0.006$
 $LTA_{chronic} = ECA_{chronic} \times 0.527 = 0.11 \times 0.527 = 0.058$
Average Monthly Effluent Limitation for Chlorine
 $AMEL = 0.006 \times 1.19 = 0.007 \cong \mathbf{0.01 \text{ mg/L}}$
Maximum Daily Effluent Limitation for Chlorine
 $MDEL = 0.006 \times 3.11 = 0.019 \cong \mathbf{0.02 \text{ mg/L}}$

Acute Whole Effluent Toxicity: Regarding the narrative objective for toxicity, the Basin Plan requires that, at a minimum, compliance with this objective shall be evaluated with a 96-hour bioassay. The Basin Plan further states that “...*effluent limits based upon acute biotoxicity tests of effluents will be prescribed...*” This Order carries over from Order No. 95-034 the following effluent limitations for acute toxicity: the median survival in undiluted effluent for any three or more consecutive 96-hour bioassays shall be at least 90%, with no single test having less than 70% survival.

Turbidity. In addition to coliform testing, effluent turbidity limitations have been included as a secondary 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 also capable of reliably meeting a reduced turbidity limitation of 2 NTU as a daily average, 5 NTU at least 95 percent of the time within a day, and 10 NTU at all times. Failure of the filtration system, such that virus removal is impaired, would normally result in increased particles in the effluent and higher effluent turbidity. Turbidity monitoring has a major advantage over coliform monitoring for evaluating filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing by comparison, is not conducted continuously and requires several hours to days to identify high coliform concentrations. This Order would require compliance with the turbidity limitations upon commencement of tertiary treatment.

Ammonia. Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrate, and denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification processes to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. The WWTF was not designed for full nitrifying mode;

however, at the present flows, which are approximately 65% of design capacity, the WWTF is being operated in a nitrification mode.

Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia have the potential to violate the Basin Plan narrative toxicity objective, which states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." In accordance with 40 CFR 122.44(d)(1)(vi)(B), it is appropriate to use USEPA's December 1999 publication, *Update of Ambient Water Quality Criteria for Ammonia* (1999 Ammonia Update). The 1999 Ammonia Update contains USEPA's most recent freshwater aquatic life criteria for ammonia, superseding all previous USEPA recommended freshwater criteria for ammonia. The new criteria reflect recent research and data since 1984, and are a revision of several elements in the 1984 criteria, including the pH and temperature relationship of the acute and chronic criteria and the averaging period of the chronic criterion. The new criteria incorporates revisions where the acute criterion (1-hour average)(CMC) for ammonia is now dependent on pH and fish species and the chronic criterion (30-day average) is dependent on pH and temperature, and at temperatures lower than 15°C is also dependent on fish species. USEPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. EPA's Ambient Water Quality Criteria contain limitations for ammonia that reflect concentrations protective of fish and other aquatic species. USEPA also found that invertebrates and young fish experienced increasing chronic toxicity affects with increasing temperature. USEPA presents the acute ammonia criteria as equations and tables. The other significant revision in the 1999 Ammonia Update is USEPA's recommendation of 30 days as the averaging period for the ammonia chronic criterion. In addition, USEPA recommends that within the 30-day averaging period, no 4-day average concentration exceed 2.5 times the chronic criterion (Criterion Continuous Concentration (CCC)).

The acute and chronic ammonia toxicity criteria applicable to the Atwater Drain were calculated using nine years (1998-2006) of weekly receiving water pH and temperature data collected downstream of the discharge at R-2. Regional Water Board staff used all the receiving water data that was available electronically. It is appropriate to use all nine years of electronically available data as it provides a higher degree of confidence that the full range of environmental conditions that could occur in the Atwater Drain were considered. The receiving water pH and temperature data were divided into a summer season (April 1 – October 31) and a winter season (November 1 – March 31).

Acute Criteria. An acute criterion was calculated using the CMC equation (salmonids absent) in the 1999 Ammonia Update for almost all of the receiving water pH data points recorded during the respective summer and winter seasons. The pH value (8.01) reported for 10 February 1998 was not used in the acute criteria analysis because a box plot analysis of the data indicated the data point was an extreme outlier (i.e., greater than three times the interquartile range from the third quartile). A total of 275 and 193 acute criteria were calculated for the summer and winter seasons, respectively. For each season, the 1/10th percentile of the calculated acute criteria was determined. The resultant values/criteria for the summer and winter seasons are 16.3 mg/L (1-

hour average) and 18.5 mg/L (1-hour average), respectively. The 1/10th percentile is consistent with the 1-in-3 year average frequency for criteria excursions recommended by the USEPA.

Chronic Criteria. The chronic criteria were calculated using the CCC equation (early life stages present) presented in the 1999 Ammonia Update. For each season, a running 30-day average of pH and temperature were calculated. A chronic criterion was then calculated for each 30-day average pH and temperature pair. The pH value (8.01) reported on 10 February 1998 was not used in the calculations for the reason explained in the acute criteria section above. In addition, the temperature reported for 3 February 1998 (122.5 °C) and the temperature reported on 17 February 1998 (541 °C) were not used in the calculations because the temperature values were incorrectly reported. For each season, the 1/10th percentile of the calculated chronic criteria was determined. The resultant value/criteria for the summer and winter seasons are 2.01 mg/L (30-day average) and 3.28 mg/L (30-day average), respectively. The 1/10th percentile is consistent with the 1-in-3 year average frequency for criteria excursions recommended by the USEPA. The 4-day average criteria (2.5 times CCC) for the summer and winter seasons are 5.03 mg/L and 8.20 mg/L, respectively.

Effluent monitoring results submitted by the City from January 2004 to December 2006 indicate that the summer and winter concentrations of ammonia in the effluent ranged from <0.5 – 7.7 mg/L and <0.5 mg/L - 9.3 mg/L, respectively. Summer and winter monthly average concentrations have been as high as 4.8 mg/L and 3.9 mg/L, respectively, which exceed the chronic criteria.

The Code of Federal Regulations, 40 CFR 122.44(d)(1)(iii), states that when a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above allowable numeric criteria for an individual pollutant, the NPDES permit must contain an effluent limit. Therefore, this Order contains new seasonal effluent limitations for ammonia based on the acute and chronic criteria presented above.

On 22 December 1999, the USEPA published in the Federal Register a notice of availability for the 1999 Ammonia Update. Section V of the notice describes implementation of the ammonia criteria. It states that dynamic models are preferred for developing waste load allocations, but steady state models are an alternative if dynamic models cannot be used. The City has not provided sufficient information to support a dynamic model so the effluent limitations in this Order are based on a steady state model. The Federal Register notice refers to using procedures presented in the TSD, with certain modifications to account for the 30-day averaging period for the chronic criteria and to develop the average monthly effluent limitation.

In order to develop the effluent limitations using the procedures in the TSD, the coefficient of variation (CV) must be calculated. The TSD presents a method for estimating the CV when the data contain a combination of detected and non-detected values. The method is based on the delta-lognormal

distribution. Effluent ammonia data submitted by the City from January 2002 to December 2006 show that the percentage of non-detects for the summer and winter seasons are 77% and 92%, respectively. Approximately 83 percent of the non-detects were reported as <1 mg/L. Therefore, the non-detect data were censored at 1 mg/L. Using the equations in Appendix E, page E-10 of the TSD, the coefficient of variation for the summer and winter seasons were calculated to be 1.0. Since the number of non-detects are high and the detection limit is relatively high, five years of data (January 2002 to December 2006) were used to estimate the CV in order to increase the statistical power of the method used to calculate the CV. Data from the last five years are relevant because the City has been operating the facility in a nitrifying mode since the mid to late nineties and no major changes to the facility or sources of ammonia have occurred.

The following table presents the various factors and coefficients used to calculate the effluent limitations:

WQBEL Calculations for Ammonia

	April 1 to October 31 CV ¹ = 1.0			November 1 to March 31 CV ¹ = 1.0		
	Acute	Chronic (30-day)	Chronic (4-day)	Acute	Chronic (30-day)	Chronic (4-day)
Criteria (mg/L) ²	16.3	2.01	5.03	18.5	3.28	8.20
Dilution Credit	No dilution	No dilution	No dilution	No dilution	No dilution	No dilution
ECA	16.3	2.01	5.03	18.5	3.28	8.20
ECA Multiplier	0.204	0.667 ³	0.373	0.204	0.667 ³	0.373
LTA	3.33	1.34	1.88	3.77	2.19	3.06
MDEL Multiplier (99 th %)	4	4.90	4	4	4.90	4
AMEL Multiplier (95 th %)	4	1.33 ⁵	4	4	1.33 ⁵	4
MDEL	4	6.6	4	4	10.7	4
AMEL	4	1.8	4	4	2.9	4

¹ Coefficient of variation

² USEPA Ambient Water Quality Criteria

³ Calculated based on the TSD modification presented in the 22 December 1999 Federal Register notice where $\sigma^2 = \ln(CV^2/30 + 1)$

⁴ Limitations based on chronic LTA (LTAacute > LTAchronic)

⁵ Based on n=30. USEPA recommends that the value of "n" should not be less than the averaging period upon which the criterion value is based. In this case, the criterion is based on a 30-day average.

The resulting final effluent limitations for ammonia, total (as N) are:

Season	Daily Maximum	Monthly Average
April 1 thru October 31	6.6 mg/L	1.8 mg/L
November 1 thru March 31	10.7 mg/L	2.9 mg/L

Effluent monitoring data from January 2004 to December 2006 indicates the City cannot consistently comply with the daily maximum for the summer season and monthly average effluent limitations for both the summer and winter seasons. New or modified control measures are necessary to consistently comply with the final effluent limitations. The City is currently in the design phase of a project to upgrade several treatment processes so consistent compliance with the proposed effluent limitations can be achieved. The upgrades will require significant modification and construction, thereby rendering it infeasible to achieve immediate compliance with the proposed final ammonia effluent limitations. The Basin Plan includes a provision that authorizes the use of compliance schedules in NPDES permits for water quality objectives adopted after 25 September 1995 (see Basin Plan at page IV-16). The City's current order does not include ammonia effluent limitations. Inclusion of ammonia effluent limitations in this Order is based on a new interpretation of the narrative toxicity objective. Therefore, this Order includes a compliance schedule to comply with the final daily maximum for the summer season and the final monthly average effluent limitations for both the summer and winter seasons.

This Order contains an interim effluent limitation for the summer season expressed as a daily maximum concentration of 9.2 mg/L, ammonia as nitrogen. This interim limitation is based on the current performance of the WWTF and was calculated by estimating the 99th percentile of the effluent ammonia data using the equations for the delta-lognormal distribution in Appendix E, page E-12 of the TSD. The interim effluent limitation for the winter season is set as a daily maximum of 10.7 mg/L (i.e., equivalent to the final winter daily maximum). As part of the compliance schedule, this Order requires the City to submit a work plan and implementation schedule for complying with the final ammonia effluent limitations. The interim limitations are in effect until the deadline approved by the Executive Officer, but no later than 7 December 2011. Semiannual progress reports are also required until the City achieves compliance with the final effluent limitations.

Nitrate and Nitrite. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan's chemical constituents water quality objective requires that water designated MUN not contain chemical constituents in concentrations that exceed drinking water MCLs published in Title 22, CCR or that adversely affect beneficial uses. MUN currently applies to the Atwater Drain and local groundwater. The California DHS has adopted primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. Title 22, CCR, Table 64431-A, also includes a primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen. Effluent data obtained from the City's SMRs from 2001 through April 2006 show nitrate concentrations (as nitrogen) ranging from 1.6-21 mg/L. The discharge from the WWTF has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for nitrite and nitrate based on the effluent data and given the WWTF is operated in a nitrifying mode. Effluent limits for nitrite and nitrate are based on the MCLs. To ensure the treatment process adequately denitrifies the waste stream to protect the beneficial uses of municipal and domestic supply and to limit the introduction of biostimulatory substances to the Atwater Drain, this Order contains average monthly effluent limitations for nitrite and nitrate of 1 mg/L and 10 mg/L, respectively (measured as nitrogen). Sampling data indicate that the City is unable to comply with these limitations. Therefore, this Order

contains an interim effluent limitation expressed as a daily maximum concentration of 21 mg/L (as nitrogen) and includes a compliance schedule to comply with the final nitrate and nitrite effluent limitations.

Aluminum. The City was not required to monitor aluminum in the effluent and it is not one of 126 priority pollutants. However, USEPA's recommended ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum, expressed as total recoverable, are 750 µg/L (1-hour average, acute) and 87 µg/L (4-day average, chronic). The current Order prohibits the discharge of toxic constituents in toxic amounts, and USEPA's criteria for prevention of acute and chronic toxicity are numeric criteria, which are protective of the Basin Plan's narrative toxicity objective. There is no monitoring information to determine whether the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the chronic toxicity water quality criteria for aluminum. Therefore, this permit includes monitoring requirements to collect data.

RATIONALE FOR TERTIARY TREATMENT REQUIREMENTS

The 1988 Memorandum of Agreement (MOA) between DHS and the State Water Board on the use of recycled water establishes basic principles relative to the agencies and the Regional Water Boards. In addition, the MOA allocates primary areas of responsibility and authority between these agencies, and provides for methods and mechanisms necessary to assure ongoing, continuous future coordination of activities relative to the use of recycled water in California.

DHS has developed water-recycling criteria, Title 22, California Code of Regulations (CCR), Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for irrigation of food crops where the edible portion of the crop may come in contact with treated wastewater, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be disinfected tertiary recycled water. DHS uses coliform as an indicator of the overall effectiveness of a treatment train's ability to remove pathogens. Disinfected tertiary recycled water is considered an adequately oxidized, coagulated, filtered and disinfected wastewater such that:

- The chlorine disinfection process provides a CT (residual chlorine concentration times modal contact time) value of not less than 450 milligram-minutes per liter at all times, with a modal contact time of at least 90 minutes, based on peak dry weather design flow; and
- The median concentration of total coliform bacteria measured in the disinfected effluent does not exceed an MPN of 2.2 per 100 mL, utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 23 per 100 mL in more than one sample in any 30-day period. No single sample should exceed an MPN of 240 per 100 mL for total coliform bacteria.

This Board requested guidance from DHS on 24 February 1999 regarding use of relatively undiluted wastewater discharged to agricultural drains or streams where the water may be used or diverted for beneficial uses of AGR for irrigation of vegetable and fruit crops and for REC-1. DHS' letter dated 8 April 1999 recommends that relatively undiluted wastewater discharged in this circumstance be disinfected tertiary recycled water.

To protect the AGR and REC-1 beneficial uses of the receiving waters and the potential use of MUN, the wastewater must be adequately treated to prevent disease. It is appropriate to apply DHS' recycling water criteria to WWTF discharges to the Atwater Drain because they are frequently undiluted, provide REC-1 (Finding 33), and are used to irrigate crops without restriction. The treatment method is not prescribed by this Order, but discharges must be treated to a level equivalent to that recommended by DHS. If the City deems disinfected tertiary recycled water or equivalent treatment infeasible, it must develop other alternatives that do not require this level of treatment to dispose of its wastewater.

Title 22 is not directly applicable to surface waters; however, as mentioned earlier, it is appropriate to apply DHS' recycling water criteria to the Atwater Drain because it provides water frequently undiluted for REC-1. The method of treatment is not prescribed by this Order, but the wastewater must be treated to a level equivalent to that recommended by DHS. If the City deems disinfected tertiary recycled water or equivalent treatment infeasible, it must develop other alternatives to dispose of its wastewater that do not require this level of treatment.

The beneficial uses of the Atwater Drain include AGR, MUN, REC-1 and REC-2. Crayfish are collected for human consumption from the Atwater Drain as verified by Regional Water Board staff during the 12 June 2001 inspection. To protect this beneficial use, 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. Filtration also reduces solids in the effluent and allows for more effective disinfection. The wastewater must be treated to tertiary standards (filtered) to protect contact recreational use. Tertiary treatment also would permit future irrigation use on food crops.

The application of tertiary treatment processes results in the ability to achieve lower levels for BOD and TSS than the secondary standards currently prescribed; the 30-day average BOD and TSS limitations have been revised to 10 mg/L, which is technically based on the capability of a tertiary system. Average weekly and maximum daily limits also have been revised based on this 30-day average requirement.

Effluent limitations and a tertiary level of treatment, or equivalent, are necessary to protect the beneficial uses of the receiving water. In accordance with CWC Section 13241, the following were considered:

- Joseph Gallo Farms has a contract with the City of Atwater for WWTF effluent. Based upon this information, AGR is an existing beneficial use of the Atwater Drain downstream of the discharge point.
- Water bodies within the basins that do not have beneficial uses designated in Table II of the Basin Plan are assigned MUN designation in accordance with State Water Board Resolution 88-63. The Atwater Drain could qualify for an exception according to Resolution 88-63; however, in accordance with State Water Board Order No. WQO 2002-0015 (Vacaville Order), dedesignation of MUN for the Atwater Drain requires a Basin Plan amendment as discussed at the beginning of this Fact Sheet.
- Water contact and non-contact water recreation and aesthetic enjoyment (REC-1 and REC-2) are beneficial use categories that include fishing and swimming. The discharge flows for the most part through agricultural areas. There is ready public access to the Atwater Drain and exclusion of the public is unrealistic. Regional Water Board staff has observed evidence of public access, including crayfishing, which is a water contact recreation activity. Contact recreational activities currently exist along the Atwater Drain and this use is likely to increase as the population in the area grows. The agricultural use includes irrigators having direct contact with the water. Based on this information, water contact recreation (REC-1) is an existing beneficial use of the Atwater Drain downstream of the discharge point.
- Water upstream of the discharge includes storm water runoff from the storm water collection system during storm events. Other than during storm events, upstream flow is from miscellaneous human sources and from backwater from the discharge. Miscellaneous flows are insignificant when compared to the flows discharged from the WWTF. Upstream water has exhibited occasional toxicity in chronic toxicity tests. The water downstream of the discharge is of good quality with respect to salts and when properly disinfected should be of good quality with respect to pathogens. The water downstream of the discharge is used by and benefits many people.
- Fishable, swimmable, and agricultural irrigation water quality conditions can be reasonably achieved by upgrading the WWTF to tertiary standards.
- The City currently uses the activated sludge treatment process, secondary clarifiers, and disinfection. The treatment process will require upgrade to meet tertiary treatment criteria.
- The need for developing housing in the area. Population growth in Merced County in the Atwater and City of Merced areas is increasing demand for housing. The requirement to increase the level of treatment for discharge to the Atwater Drain should not impede home construction in the area. Increased population density will, however, increase the potential for water related activities, such as water contact and non-contact water recreation and recreational

shellfish harvesting. The public has ready access to the Atwater Drain. Protection of these beneficial uses requires high quality water; i.e., tertiary treatment.

Economic Analysis. In accordance with California Water Code, Section 13241, the Regional Water Board has considered the economic impact of requiring an increased level of treatment.

- The Regional Water Board staff has estimated that the cost of providing tertiary treatment would be \$7.4 million, based on a 6.0 mgd flow rate. A cost of \$6.2 million, based on an Engineering News Record construction cost (ENR) index of 5600, was calculated using Table 29.18, “Estimated Capital Costs for Reclamation Treatment Facilities,” from the chapter “The Cost of Wastewater Reclamation and Reuse,” in *Water Reclamation and Reuse*, by Technomic Publishing Co., Inc. 1996. Based upon a October 2004 ENR index of 7313, the estimated cost is \$8.10 million.
- The City’s current monthly domestic sewer user fee is \$19.71. The economic impact from the capital improvement project would increase the monthly user fee by approximately \$2.67 based on 6,094 residential users and a 20 year amortization at 2.7 percent interest rate. This would increase the monthly user fee to approximately \$22.38 if none of the costs were passed onto industrial, commercial, and institutional users or to Winton Water and Sanitary District or Merced County. The California average monthly domestic sewer user fee is \$20.46. Since the proposed increase in user fee is near the statewide average, the incremental difference is considered reasonable and necessary for the protection of beneficial uses.
- Without this Order’s tertiary or advanced treatment requirements, the irrigation of food crops and public access for contact recreational purposes, would require prohibition and this contravenes water quality law and presents a social and economic impact. Tertiary or advanced treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, and reducing the need for additional treatment although the extent of pollutant removal is unknown.
- The cost associated with the alternative of loss of beneficial uses or resulting illness among those that would utilize the receiving water was not assessed.

REASONABLE POTENTIAL ANALYSIS AND EFFLUENT LIMITS FOR CTR AND NTR POLLUTANTS

Federal regulations contained in 40 CFR 122.4 (d) require effluent limitations for 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 numeric water quality standard. The USEPA adopted the National Toxics Rule (NTR) on 5 February 1993 and the California Toxics Rule (CTR) on 18 May 2000. The NTR and CTR contain water quality standards applicable to this discharge. The

State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan or SIP), which contains guidance on implementation for the NTR and CTR.

On 5 January 2001, the Regional Water Board issued the City a letter under the authority of California Water Code Section 13267 requesting effluent and receiving water monitoring to meet the requirements of the State Implementation Plan. The City has sampled wastewater treatment plant effluent and receiving water to determine if the priority pollutants established in the CTR and NTR are present in wastewater treatment plant effluent. Fact Sheet – Attachment A presents the results of effluent and receiving water quality testing and lists the priority pollutants regulated by the NTR and CTR, applying the most stringent receiving water quality objective for the beneficial uses of the Atwater Drain.

The beneficial uses pertinent to the Atwater Drain in terms of a reasonable potential analysis for the NTR and CTR priority pollutants include freshwater aquatic habitat, and water supply coupled with human consumption of fish and other food. In addition to the water quality standards given in the NTR and CTR, the analysis also considered Basin Plan objectives. The attachment lists the most stringent of those applicable water quality objectives or standards. The analysis for metals, based upon the NTR and CTR, adjusted quality objectives for water hardness and metals translators as described in the SIP and Basin Plan. The hardness used for these adjustments was the lowest upstream receiving water hardness detected (22 mg/L) which provides the most conservative estimate of the potential for exceedance of a water quality objective.

Reasonable Potential Analysis (RPA):

- a. *Water Quality Objectives (WQO) and Water Quality Criteria (WQC):* An RPA involves the comparison of effluent data and receiving water background data with appropriate WQC in the CTR or NTR and, as applicable, WQO in the Basin Plan or other numeric criteria.
- b. *RPA determination:* The RPA results are summarized in Fact Sheet – Attachment A, Reasonable Potential Analysis. The raw data are for receiving water and effluent samples for each constituent. The table further shows the maximum effluent concentration (MEC), criterion maximum concentration (CMC), the criterion chronic concentration (CCC), the values for human health concentration (H Health) both for consuming water and organisms and consuming organisms such as crayfish or fish only, the determination of whether there is an effluent reasonable potential, whether or not there is a reasonable potential when considering both effluent and receiving water results, and whether or not an effluent limitation is required. There is an effluent reasonable potential (YES) if the effluent exceeded any of: the CMC, the CCC, the human health concentration, or the Basin Plan objective. Similarly, there is a reasonable potential (YES) if the receiving water exceeded the CMC, the CCC, the human health concentration, or the Basin Plan objective **and** the pollutant was detected in the effluent. The table shows a “-” where there is no published criterion value.

Development of Effluent Limits

a. Development of Interim Effluent Limitations

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 states further 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 efforts currently underway or completed; (c) a proposal for additional or future source control measures, pollutant minimization actions, or waste treatment (i.e., facility upgrades); and (d) a demonstration that the proposed schedule is as short as practicable.”* This Order requires the City to provide this information. If justification for compliance schedules is not completed and submitted by the City to the Regional Water Board, or the Regional Water Board determines the justification is not adequate, the new water quality based effluent limitations for bromodichloromethane, chlorodibromomethane, copper, lead, zinc, and dioxins become effective immediately. If compliance schedules are justified and implemented, then the final water quality based effluent limitations for bromodichloromethane, chlorodibromomethane, copper, lead, zinc, and dioxins become effective **18 May 2010**. This Order contains a Provision with a compliance schedule for implementation of effluent limitations for bromodichloromethane, chlorodibromomethane, copper, lead, zinc, and dioxins.

If compliance schedules are granted for implementation of final effluent limitations for CTR and NTR constituents, Section 2.2.1 of the SIP requires the Regional Water Board to establish interim limitations and compliance dates in the NPDES permit. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with interim effluent limitations, can significantly degrade water quality and adversely impact the beneficial uses of the receiving stream on a long-term basis. For example, regarding copper, USEPA states in the *Ambient Water Quality Criteria for the Protection of Fresh Water Aquatic Life*, that an unstressed system will take approximately three years to recover from a pollutant in which exposure to copper exceeds the recommended criterion. However, the interim effluent limitations establish enforceable ceiling concentrations until compliance with the final effluent limitations can be achieved.

The SIP requires that interim limitations must: 1) be based on current treatment plant performance or existing permit limitations, whichever is more stringent; 2) include interim compliance dates separated by no more than one year; and 3) be included in the Provisions.

There are no limitations for CTR and NTR constituents in the existing Order. Therefore, the interim limitations in this Order are based on the current treatment plant performance.

The interim effluent limitations in this Order were derived using the following methodology:

- Where 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, interim limitations in this Order are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2).
- Where there are ten sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row*). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. Where actual sampling shows an exceedance of the proposed 3.3-standard deviation interim limit, the maximum detected concentration has been established as the interim limitation.

b. Development of Final Effluent Limitations

The following effluent limitations have been derived from either 40 CFR 133.102, the Basin Plan, or the CTR and the SIP.

Metals. The metals table adjusted the measured values according to hardness using translators as described in the SIP. The table also includes the numeric Basin Plan objective for the maximum contamination level (MCL).

As stated in Section 1.2 of the SIP, “When implementing the provisions of this Policy, the RWQCB shall ensure that criteria/objectives are properly adjusted for hardness or pH, using the hardness or pH values for the receiving water...” Also, 40 CFR 131.38(c)(4)(i) (*California Toxics Rule*) states, “For purposes of calculating freshwater aquatic life criteria for metals from the equations in paragraph (b)(2) of this section, for waters with a hardness of 400 mg/L or less as calcium carbonate, the actual ambient hardness of the surface water shall be used in those equations.” Neither the SIP nor the CTR specify where to collect hardness data in the receiving

water. The only receiving water hardness data available for the Atwater Drain is upstream data collected at monitoring location R-1. 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 the worst-case condition (*e.g.*, lowest ambient hardness) to protect beneficial uses for all discharge conditions. Therefore, the hardness in the calculations below based on the lowest reported receiving water concentration of 22 mg/L. Using the lowest receiving water value ensures the effluent limitations are sufficiently protective of the beneficial uses of the Atwater Drain.

As described in this Fact Sheet, the Atwater Drain at the WWTF outfall is effluent dominated the majority of the year. Under these conditions, the effluent hardness significantly influences downstream hardness concentrations. Thus, using the lowest observed upstream hardness concentration to perform a reasonable potential analysis and establish effluent limitations might be overprotective. As no downstream hardness data is available, Provision G.17 of this Order requires the City to submit a receiving water hardness study work plan for Executive Officer approval. Upon full implementation of the approved work plan, the proposed receiving water hardness concentration will be subject to Executive Officer approval. Pending Executive Officer approval, this Order will be reopened for consideration of revised effluent limitations for metals with hardness-dependent criteria.

Copper. Copper was present in all the effluent samples. The aquatic life CCC for copper, based upon 22 mg/L hardness, is 2.6 µg/L and the CMC is 3.4 µg/L.

$$CV = 0.46$$

$$n=10 \text{ samples}$$

$$\text{Acute Multiplier} = 0.396 \text{ (SIP Table 1)}$$

$$\text{Chronic Multiplier} = 0.604 \text{ (SIP Table 1)}$$

$$ECA_{\text{acute}} = 3.4 \text{ µg/L}$$

$$ECA_{\text{chronic}} = 2.6 \text{ µg/L}$$

$$LTA_{\text{acute}} = ECA_{\text{acute}} \times 0.396 = 3.4 \times 0.396 = 1.346$$

$$LTA_{\text{chronic}} = ECA_{\text{chronic}} \times 0.604 = 2.6 \times 0.604 = 1.570$$

Select the most limiting LTA (SIP Step 4):

Average Monthly Effluent Limitation (AMEL) for Copper

$$\text{AMEL} = LTA_{\text{acute}} \times \text{AMEL Multiplier} = 1.346 \times 1.42 = 1.912 \cong \mathbf{1.9 \text{ µg/L}}$$

Maximum Daily Effluent Limitation (MDEL) for Copper

$$\text{MDEL} = LTA_{\text{acute}} \times \text{MDEL Multiplier} = 1.346 \times 2.53 = 3.405 \cong \mathbf{3.4 \text{ µg/L}}$$

Sampling results show that the City cannot presently meet the AMEL or MDEL. If a compliance schedule is granted for implementation of the final effluent limitations, an interim effluent limitation of 8.1 µg/L as a daily maximum is established in this Order. The interim effluent limitation is based on the methodology described in the section above entitled Development of Interim Effluent Limitations.

Lead. Lead was present in all the effluent samples. The aquatic life CCC for lead, based upon 22 mg/L hardness, is 0.46 µg/L and the CMC is 12 µg/L.

Assume CV = 0.6

n=4 samples

Acute Multiplier = 0.321 (SIP Table 1)

Chronic Multiplier = 0.527 (SIP Table 1)

$ECA_{acute} = 12 \mu\text{g/L}$

$ECA_{chronic} = 0.46 \mu\text{g/L}$

$LTA_{acute} = ECA_{acute} \times 0.321 = 12 \times 0.321 = 3.852$

$LTA_{chronic} = ECA_{chronic} \times 0.527 = 0.46 \times 0.527 = 0.242$

Select the most limiting LTA (SIP Step 4):

Average Monthly Effluent Limitation (AMEL) for Lead

AMEL = $LTA_{chronic} \times \text{AMEL Multiplier} = 0.242 \times 1.55 = 0.375 \cong \mathbf{0.38 \mu\text{g/L}}$

Maximum Daily Effluent Limitation (MDEL) for Lead

MDEL = $LTA_{chronic} \times \text{MDEL Multiplier} = 0.242 \times 3.11 = 0.753 \cong \mathbf{0.75 \mu\text{g/L}}$

Sampling results show that the City cannot presently meet the AMEL or MDEL. If a compliance schedule is granted for implementation of the final effluent limitations, an interim effluent limitation of 2.5 µg/L as a daily maximum is established in this Order. The interim effluent limitation is based on the methodology described in the section above entitled Development of Interim Effluent Limitations.

Zinc. Zinc was present in all the effluent samples. The aquatic life CCC for zinc, based upon 22 mg/L hardness, is 33 µg/L and the CMC is 33 µg/L.

Assume CV = 0.6

n=4 samples

Acute Multiplier = 0.321 (SIP Table 1)

Chronic Multiplier = 0.527 (SIP Table 1)

$ECA_{acute} = 33 \mu\text{g/L}$

$ECA_{chronic} = 33 \mu\text{g/L}$

$LTA_{acute} = ECA_{acute} \times 0.321 = 33 \times 0.321 = 10.59$

$LTA_{chronic} = ECA_{chronic} \times 0.527 = 33 \times 0.527 = 17.39$

Select the most limiting LTA (SIP Step 4):

Average Monthly Effluent Limitation (AMEL) for Zinc

AMEL = $LTA_{acute} \times \text{AMEL Multiplier} = 10.59 \times 1.55 = 16.41 \cong \mathbf{16 \mu\text{g/L}}$

Maximum Daily Effluent Limitation (MDEL) for Zinc

MDEL = $LTA_{acute} \times \text{MDEL Multiplier} = 10.59 \times 3.11 = 32.93 \cong \mathbf{33 \mu\text{g/L}}$

Sampling results show that the City cannot presently meet the AMEL or MDEL. If a compliance schedule is granted for implementation of the final effluent limitations, an interim effluent limitation of 120 µg/L as a daily maximum is established in this Order. The interim effluent limitation is based on the methodology described in the section above entitled Development of Interim Effluent Limitations.

2,3,7,8-TCDD (Dioxin) Effluent Limitation Required. The CTR establishes a human health criterion of 0.013 pg/L (picograms/L) for dioxin and its congeners, after applying toxicity equivalent factors (TEF) for each congener. The sampling results did not show 2,3,7,8-TCDD, only congeners. The April and July 2001, January 2002, and January 2003, showed the presence of dioxin congeners in effluent samples at concentrations above the 0.013 pg/L CTR criterion. The October 2001 and July 2003 samples did not show dioxin or its congeners. This Order requires monthly sampling for dioxin and its congeners and requires the City to perform an investigation and to submit a technical report with the investigation findings and proposed remediation measures.

Assume CV = 0.6

n=7 samples

ECA = effluent concentration allowance

No dilution

Average Monthly Effluent Limitation (AMEL) for 2,3,7,8-TCDD (Dioxin)

AMEL_{human health} = ECA = 0.013 pg/L

Maximum Daily Effluent Limitation (MDEL) for 2,3,7,8-TCDD (Dioxin)

MDEL₉₉/AMEL₉₅ multiplier = 2.01 (Table 2, SIP, CV = 0.6)

MDEL_{human health} = ECA × MDEL/AMEL multiplier = 0.013 × 2.01 = 0.026 pg/L

Sampling results show that the City cannot presently meet the AMEL or MDEL. If a compliance schedule is granted for implementation of the final effluent limitations, an interim effluent limitation of 1.46 pg/L as a daily maximum is established in this Order. The interim effluent limitation is based on the methodology described in the section above entitled Development of Interim Effluent Limitations. Compliance for the final and interim effluent limitations shall be determined by multiplying each measured or estimated congener concentration by its respective toxic equivalency factor (TEF) and calculating the sum of these products.

For 2,3,7,8-TCDD (Dioxin), the highest acceptable minimum levels for the different dioxin congeners shall be the detection levels indicated in EPA Test Method 1613 (latest version).

Bromodichloromethane. The CTR establishes a human health limitation of 0.56 µg/L for water and organisms only and 46 µg/L for organisms only for bromodichloromethane. Effluent sampling results showed concentrations from 4.8 to 13µg/L.

Assume CV = 0.6

n=4 samples

ECA = effluent concentration allowance

No dilution

Average Monthly Effluent Limitation (AMEL) for *Bromodichloromethane*

AMEL_{human health} = ECA = 0.56 µg/L

Maximum Daily Effluent Limitation (MDEL) for *Bromodichloromethane*

MDEL₉₉/AMEL₉₅ multiplier = 2.01 (Table 2, SIP, CV = 0.6)

MDEL_{human health} = ECA × MDEL/AMEL multiplier = 0.56 × 2.01 = 1.13 µg/L

Sampling results show that the City cannot presently meet the AMEL or MDEL. Given that MUN is not likely a probable beneficial use of water in the Atwater Drain and its dedesignation would eliminate the need for effluent limits for bromodichloromethane, it is appropriate to stay both interim and final effluent limits for those compounds should the City choose to pursue a Basin Plan amendment for the Atwater Drain. Alternatively, should the City decide the Basin Plan amendment proves too onerous or costly or it implements ultraviolet disinfection, it is reasonable to implement interim limits until the City implements measures to comply with final effluent limits for bromodichloromethane. An interim effluent limitation of 40 µg/L as a daily maximum is established in this Order. The interim effluent limitation is based on the methodology described in the section above entitled Development of Interim Effluent Limitations. This Order provides compliance schedules that provide the City both options.

Chlorodibromoethane. The CTR establishes a human health limitation of 0.40 µg/L for water and organisms only and 34 µg/L for organisms only for chlorodibromomethane. Effluent sampling results showed concentrations from 1.2 to 3.3 µg/L.

Average Monthly Effluent Limitation (AMEL) for *Chlorodibromoethane*

AMEL_{human health} = ECA = 0.40 µg/L

Maximum Daily Effluent Limitation (MDEL) for *Chlorodibromoethane*

MDEL₉₉/AMEL₉₅ multiplier = 2.01 (Table 2, SIP, CV = 0.6)

MDEL_{human health} = ECA × MDEL/AMEL multiplier = 0.40 × 2.01 = 0.81 µg/L

Sampling results show that the City cannot presently meet the AMEL or MDEL. Given that MUN is not likely a probable beneficial use of water in the Atwater Drain and its dedesignation would eliminate the need for effluent limits for chlorodibromomethane, it is appropriate to stay both interim and final effluent limits for those compounds should the City choose to pursue a Basin Plan amendment for the Atwater Drain. Alternatively, should the City decide the Basin Plan amendment proves too onerous or costly or it implements ultraviolet disinfection, it is reasonable to implement interim limits until the City implements measures to comply with final effluent limits for chlorodibromomethane. An interim effluent limitation of 10 µg/L as a daily maximum is established in this Order. The interim effluent limitation is based on the

methodology described in the section above entitled Development of Interim Effluent Limitations. This Order provides compliance schedules that provide the City both options.

Constituents with reported detection limit results above the MLs

The SIP establishes expected minimum levels for laboratory analyses for each of the priority pollutants in the NTR and CTR. Reasonable potential could not be determined for some of the priority pollutants because the reported detection level was higher than the method level set forth in the SIP. This Order requires the City to monitor those priority pollutants during the term of this Order to provide additional data. Reasonable potential will be reevaluated to determine whether there is a need to add numeric effluent limits to the permit or to continue monitoring in the next permit.

Pollutants with no reasonable potential

WQBELs are not included in this Order for constituents that do not have reasonable potential to cause or contribute to exceedance of applicable WQO or WQC based on the RPA.

CHRONIC TOXICITY TESTING AND TOXICITY REDUCTION EVALUATION (TRE)

The water flea (*Ceriodaphnia dubia*) reproduction results from February 2003 to May 2006 report a chronic toxicity unit (TU_c) greater than one (1) in seven (7) of 14 tests. It appears the dechlorination agent used by the laboratory may have caused toxicity in some of the tests, which may not be representative of the effluent from the WWTF. In other tests where the TU_c was greater than one, the test results for the 100 percent effluent show the effluent meets the test acceptability criteria for control purposes. Algae (*Selenastrum capricornutum*) growth test results from May 2005 to May 2006 show a TU_c greater than one in three (3) of five (5) tests. Results from two out of the three algae tests with a TU_c greater than one show that the 100 percent effluent meets the test acceptability criteria for control purposes.

Despite that the toxicity samples may not have been representative and that several test results may have misrepresented the toxicity of the effluent, the discharge still appears it may have a reasonable potential to cause or contribute to an excursion above the Basin Plan's narrative toxicity objective.

Provision 8 in this Order requires the City 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

This Order requires the City to comply with a numeric monitoring trigger for conducting accelerated chronic WET monitoring and a protocol for requiring the City to initiate an approved TRE if a pattern of toxicity is demonstrated.

Numeric chronic WET effluent limitations have not been included in this order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region¹ that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, *“In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.”* The process to revise the SIP is currently underway. Proposed changes include

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

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 City meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

RECEIVING WATER TEMPERATURE STUDY

The Basin Plan includes numeric receiving water objectives for temperature, which limit the increase of temperature over the natural background conditions. As described in this Fact Sheet, there is no "natural" background water in the Atwater Drain and the numeric objectives for temperature do not apply. Further, the beneficial uses have developed under the temperature ranges produced by the discharge and environment. It is appropriate that the historical range be maintained. To protect beneficial uses, this Order requires the City to conduct a study in consultation with the California Department of Fish and Game to develop numeric receiving water limitations for temperature.

PERMIT REOPENER

This Order includes a reopener provision to allow numeric effluent limits to be added for any constituent that in the future exhibits reasonable potential to cause or contribute to exceedance of WQO or WQC.

Pending the results of a TRE, this Order may be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if the State Water Board adopts a chronic toxicity water quality objective, this Order may be reopened and a limitation based on that objective included.

Pending the results of the receiving water temperature study required by this Order, this Order will be reopened for consideration of addition of appropriate numeric receiving water limitations.

Pending the results of the receiving water hardness study, this Order may be reopened for consideration of revised effluent limitations for metals with hardness-dependent criteria, as appropriate.

MONITORING AND REPORTING REQUIREMENTS

This Order requires the City to monitor WWTF influent and effluent at specific frequencies to evaluate compliance with effluent limitations and to monitor the receiving surface water upstream and downstream of the point of discharge to evaluate compliance with receiving water limitations. The Order also includes monitoring for those priority pollutants that for which the water quality standards are less than the reported analytical detection levels. The Order also requires the City to monitor sludge

production and disposal operations, and to report on its pretreatment program activities.

Section 4 of the SIP states that a chronic toxicity effluent limitation is required in permits for all discharges that will cause, have the reasonable potential to cause, or contribute to chronic toxicity in receiving waters. Therefore, in accordance with the SIP, the City will be required to conduct chronic toxicity testing.

This Order requires the City to monitor groundwater for waste constituents resulting from the discharge of digested sludge to unlined sludge drying beds. Provisions in the Order require the City to propose a groundwater monitoring program, characterize background water quality after monitoring groundwater for a period of one year after completion of Provision G.14. Task d, and compare downgradient groundwater quality against background quality to determine whether groundwater passing under the sludge drying beds has been degraded. This determination will involve the application of appropriate statistical techniques (e.g., those prescribed in Title 27, CCR, section 20005 *et seq.*). The Order allows the City an opportunity to submit data for the Executive Officer's consideration in support of an argument that an offsite source caused the degradation. However, should the Executive Officer determine that the sludge drying beds have degraded or threaten to degrade groundwater, this Order requires the City to submit a work plan and implementation schedule for modifying the sludge beds to achieve and maintain compliance with this Order's groundwater limitations.

CEQA AND ANTIDegradation CONSIDERATIONS

The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code section 21000 *et seq.*), in accordance with CWC section 13389.

This NPDES permit is consistent with the Clean Water Act and water quality objectives contained in the Basin Plan. The permitted discharge to the Atwater Drain is an existing surface water discharge consistent with the antidegradation provisions of 40 CFR 131.12 and the State Antidegradation Policy. The effluent limitations are as stringent as, or in most cases more stringent than those in the existing WDRs and will not result in greater degradation than previously found to be consistent with water quality policies. This NPDES permit does not authorize an increase in flow or mass loading; thus, an antidegradation analysis is not necessary.

This Order requires the application of best practicable treatment or control. Control measures include implementing an effective pretreatment program, a current operations and maintenance manual, and sufficient staffing to assure proper operation and maintenance. The existing secondary treatment process incorporates nitrification, disinfection, and dechlorination processes to protect surface water quality; and provides for biosolids handling and treatment for reuse. This Order requires the City to implement nitrification and tertiary treatment. This Order also requires the City to evaluate whether the WWTF's sludge handling facilities have adversely impacted groundwater. If, as a result of this

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evaluation, the City determines evidence of groundwater degradation or pollution, this Order requires the City to implement corrective measures to elevate the WWTF's sludge handling operations to a level that reflects best practicable treatment and control and that ensures compliance with this Order's Sludge Specifications and Groundwater Limitations.

BLH/DBI/MSS: 5/17/07

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REASONABLE POTENTIAL ANALYSIS-- METALS

RECEIVING WATER DATA

Constituent	Sb µg/L #1	As µg/L #2	Be µg/L #3	Cd µg/L #4	Cr Total µg/L	Cr (III) µg/L #5a	Cr (VI) µg/L #5b	Cu µg/L #6	Pb µg/L #7	Hg µg/L #8	Ni µg/L #9	Se µg/L #10	Ag µg/L #11	Tl µg/L #12	Zn µg/L #13	CN µg/L #14	Asb MF/L #15
CTR #																	
Date																	
4/30/2001	0.13	5.8	< 0.02	< 0.05	3.29	2.40	0.89	2.6	0.29	0.004	0.9	< 1	0.05	< 0.02	30.7	< 10	0.27
10/30/2001	0.25	2.5	< 0.1	0.29	2.68	2.68	< 0.5	27	12.3	0.022	6.7	< 1	< 0.1	< 0.1	185	< 10	16.3
1/31/2002	0.46	4.6	< 0.02	0.19	1.7	1.7	< 0.5	6.2	1.13	0.007	2.4	< 1		< 0.02	61.9	< 10	3.3
Observed Max SIP Section 1.4.3.1	0.46	5.8	< 0.10	0.29	3.29	2.68	0.89	27	12.3	0.022	6.7	< 1	0.1	< 0.10	185	< 10	16.3
Arithmetic Mean SIP Section 1.4.3.2	0.3	4.3	0.05	0.2	2.6	2.3	0.6	11.9	4.57	0.011	3.3	< 1	0.1	0.0	92.5	< 10	6.6

EFFLUENT DATA

4/30/2001	0.25	0.57	< 0.02	0.18	2.56	2.4	0.16	5.2	0.28	0.007	1.5	< 1	0.05	< 0.02	37.4	< 10	0.54
7/25/2001	0.25	5.6	< 0.02	0.07	1.3	1.3	0.13	3.1	0.34	0.011	2.1	< 1	0.04	< 0.02	32.4	< 10	< 0.27
10/30/2001	0.25	4.9	< 0.02	0.43	1.5	1.5	< 0.05	6.7	0.81	0.007	2.3	< 2	0.03	< 0.02	36	< 10	< 0.27
1/31/2002	0.23	5.4	< 0.02	0.67	1.3	2.8	0.5	2.3	0.37	0.011	1.5	1.1	0.05	< 0.02	39.7	< 10	< 0.27
12/1/2004								< 5									
12/8/2004								< 5									
12/15/2004								< 5									
12/22/2004								< 5									
1/5/2005								< 5									
1/13/2005								< 5									
MEC, total (µg/L)	0.25	5.6	< 0.02	0.67	2.56	2.8	0.5	6.7	0.81	0.011	2.3	< 2	0.05	< 0.02	39.7	< 10	0.54
Max Background, Tot	0.46	5.8	0.1	0.29	3.29	2.68	0.89	27	12.3	0.022	6.7	1	0.1	0.1	185	< 10	16.3
CMC (µg/L) Freshwater																	
Total @ 22 mg/L Hardness	-	340	-	0.82	-	502	-	3.4	11.9	-	130	-	0.3	-	33	-	-
CCC (µg/L) Freshwater																	
Total @ 22 mg/L Hardness	-	150	-	0.75	-	57	-	2.56	0.46	-	14.5	5	-	-	33	-	-
H Health (µg/L) Water & Org	14	-	-	-	-	-	-	1300	-	0.05	610	-	-	1.7	-	700	7 MF/L
H Health (µg/L) Org Only	4300	-	-	-	-	-	-	-	-	0.051	4600	-	-	6.3	-	220,000	-
Numeric Basin Plan Objective (µg/L)																	
(MCL, site specific)	6	10	4	5	50	-	-	1300	15	2	100	50	-	2	-	200	7 MF/L
Effluent Reasonable Potential	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	YES	NO	NO
Reasonable Potential	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	YES	NO	NO
Effluent Limitation Required	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	YES	NO	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS--DIOXIN AND CONGENERS

2,3,7,8-TCDD Equivalents Calculations for Atwater Effluent

Sample Date	Congener														Sum
	1,2,3,4,6,7,8-HpCDD		OCDD		2,3,7,8-TCDF		1,2,3,7,8-PeCDF		1,2,3,4,7,8-HxCDF		1,2,3,4,6,7,8-HpCDF		OCDF		
	Meas	Equiv	Meas	Equiv	Meas	Equiv	Meas	Equiv	Meas	Equiv	Meas	Equiv	Meas	Equiv	
4/30/2001	3.31	0.033	8.90	0.000890	< 0.424	0.0424	< 1.870	0.0935	< 0.860	0.086	< 1.120	0.0112	< 3.850	0.0004	0.034
7/25/2001	< 1.42	0.014	9.36	0.000936	< 0.424	0.0424	< 1.450	0.0725	< 0.559	0.056	1.060	0.0106	27.80	0.0028	0.014
10/30/2001	< 2.37	0.024	< 8.62	0.000862	< 0.478	0.0478	< 1.270	0.0635	< 0.800	0.080	< 1.140	0.0114	< 4.260	0.0004	
1/31/2002	< 1.40	0.014	8.75	0.000875	< 0.478	0.0478	< 0.921	0.0461	1.080	0.108	< 0.766	0.0077	4.680	0.0005	0.109
7/23/2002	< 1.85	0.019	< 4.80	0.000480	< 0.478	0.0478	< 1.450	0.0725	< 0.434	0.043	< 1.150	0.0115	2.660	0.0003	0.000
1/29/2003	< 2.11	0.021	9.56	0.000956	3.110	0.3110	3.130	0.1565	< 0.539	0.054	< 1.690	0.0169	3.430	0.0003	0.469
7/24/2003	< 1.59	0.016	< 6.96	0.000696	< 1.030	0.1030	< 1.960	0.0980	< 0.575	0.058	< 1.200	0.0120	< 3.080	0.0003	
ML	2.38		6.27		1.03		2.25		0.80		1.55		3.85		
TEF	0.01		0.0001		0.1		0.05		0.1		0.01		0.0001		

Criterion = 0.013 pg/L (human health criterion based on water and organisms)

Reasonable Potential  YES

Based upon SIP criterion 1.4.3.2, where the testing showed analytical results greater than the method level (ML).
 In calculating the arithmetic mean, only values above reporting values were used in the calculation. All values are in pg/L.

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	2,3,7,8-TCDD (Dioxin)	Acrolein	Acrylonitrile	Benzene	Bromoform	Carbon Tetrachloride	Chlorobenzene
CTR #	#16	#17	#18	#19	#20	#21	#22
EFFLUENT							
4/30/2001	1.144E-07	T -	< 1	0.15	0.1	< 0.5	< 0.5
7/25/2001	1.075E-07	T -	< 1	< 0.5	< 0.5	< 0.5	< 0.5
10/30/2001	1.048E-07	T -	< 1	< 0.5	< 0.5	< 0.5	< 0.5
1/31/2002	1.125E-07	T -	< 1	< 0.5	< 0.5	< 0.5	< 0.5
MEC (µg/L)	1.144E-07		< 1	0.15	0.1	< 0.5	< 0.5
RECEIVING WATER							
4/30/2001	-	T	< 1	0.13	0.41	< 0.5	< 0.5
10/30/2001	-	T	< 1	< 0.5	< 0.5	< 0.5	< 0.5
1/31/2002		T	< 1	< 0.5	< 0.5	< 0.5	< 0.5
Max Background	0.000E+00		< 1	< 0.5	< 0.50	< 0.5	< 0.5
Lowest MLs (µg/L)							
SIP Appendix 4		2.0	2.0	0.5	0.5	0.5	0.5
BP Obj (µg/L)	3.000E-05	-	-	1	100	0.5	70
CMC (µg/L)	-	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-	-
H Health (µg/L)							
Water & Org Only	1.300E-08	320	0.059	1.2	4.3	0.25	680
Org Only	1.400E-08	720	0.66	71	360	4.4	21,000
Reasonable Potential							
Effluent	YES	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO
Limitation Required	YES	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	YES	YES	NO	NO	YES	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	Chlorodibromo- methane	Chloroethane	2-Chloro- ethylvinyl Ether	Chloroform	Dichloro- bromomethane	1,1-Dichloro- ethane
CTR #	#23	#24	#25	#26	#27	#28
EFFLUENT						
4/30/2001	2.1	< 0.5	T -	20	9	< 0.5
7/25/2001	3.3	< 0.5	T -	24	13	< 0.5
10/30/2001	2.1	< 0.5	T -	21	9.5	< 0.5
1/31/2002	1.2	< 0.5	T -	8.8	4.8	< 0.5
MEC (µg/L)	3.3	< 0.5		24	13	< 0.5
RECEIVING WATER						
4/30/2001	< 0.5	< 0.5	T	< 0.5	< 0.5	< 0.5
10/30/2001	< 0.5	< 0.5	T	< 0.5	< 0.5	< 0.5
1/31/2002	< 0.5	< 0.5	T	< 0.5	< 0.5	< 0.5
Max Background	< 0.5	< 0.5	T	< 0.5	< 0.5	< 0.5
SWRCB MLs (µg/L)						
SIP Appendix 4	0.5	0.5	1	0.5	0.5	0.5
BP Obj (µg/L)	100	-	-	100	100	5
CMC (µg/L)	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-
H Health (µg/L)						
Water & Org Only	0.401	-	-	Reserved	0.56	-
H Health (µg/L) Org Only	34	-	-	Reserved	46	-
Reasonable Potential						
Effluent	YES	NO	NO	NO	YES	NO
Receiving Water	YES	NO	NO	NO	NO	NO
Limitation Required	YES	NO	NO	NO	YES	NO
Monitoring Required	NO	NO	NO	NO	NO	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

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Constituent	1,2-Dichloro- ethane	1,1-Dichloro- ethylene	1,2-Dichloro- propane	1,3-Dichloro- propylene	Ethyl benzene	Methyl Bromide	Methyl Chloride
CTR #	#29	#30	#31	#32	#33	#34	#35
EFFLUENT							
4/30/2001	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5
7/25/2001	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5
10/30/2001	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5
1/31/2002	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5
MEC (µg/L)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5
RECEIVING WATER							
4/30/2001	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5
10/30/2001	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	4.6	< 0.5
1/31/2002	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 1.0	< 0.5
Max Background	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	4.6	< 0.5
<hr/>							
SWRCB MLs (µg/L)							
SIP Appendix 4	0.5	0.5	0.5	0.5	0.5	1.0	0.5
BP Obj (µg/L)	0.5	6	5	0.5	700	-	-
CMC (µg/L)	-	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-	-
H Health (µg/L)							
Water & Org Only	0.38	0.057	0.52	10	3,100	48	-
H Health (µg/L) Org Only	99	3.2	39	1,700	29,000	4,000	-
Reasonable Potential							
Effluent	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	YES	NO	NO	NO	NO	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	Methylene Chloride #36	1,1,2,2-Tetra- chloroethane #37	Tetrachloro- ethylene #38	Toluene #39	1,2-Trans-Dichloro- ethylene #40	1,1,1- Trichloro-ethane #41
CTR #						
EFFLUENT						
4/30/2001	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
7/25/2001	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
10/30/2001	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1/31/2002	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
MEC (µg/L)	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
RECEIVING WATER						
4/30/2001	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
10/30/2001	< 5.0	< 0.5	< 0.5	0.43	< 0.5	< 0.5
1/31/2002	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Max Background	< 5.0	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
SWRCB MLs (µg/L)						
SIP Appendix 4	0.5	0.5	0.5	0.5	0.5	0.5
BP Obj (µg/L)	5	1	5	150	10	200
CMC (µg/L)	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-
H Health (µg/L)						
Water & Org Only	4.7	0.17	0.8	6,800	700	-
H Health (µg/L) Org Only	1,600	11	8.85	200,000	140,000	-
Reasonable Potential						
Effluent	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO
Monitoring Required	NO	YES	NO	NO	NO	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	1,1,2 Trichloro-ethane	Trichloro-ethylene	Vinyl Chloride	2-Chloro-phenol	2,4 Dichloro-phenol	2,4-Dimethyl- phenol
CTR #	#42	#43	#44	#45	#46	#47
EFFLUENT						
4/30/2001	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
7/25/2001	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
10/30/2001	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
1/31/2002	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
MEC (µg/L)	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
RECEIVING WATER						
4/30/2001	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
10/30/2001	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
1/31/2002	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
Max Background	< 0.5	< 0.5	< 0.5	< 10	< 10	< 10
SWRCB MLs (µg/L)						
SIP Appendix 4	0.5	0.5	0.5	2	1	1
BP Obj (µg/L)	5	5	0.5	-	-	-
CMC (µg/L)	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-
H Health (µg/L)						
Water & Org Only	0.6	2.7	2	120	93	540
H Health (µg/L)						
Org Only	42	81	525	400	790	2,300
Reasonable Potential						
Effluent	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO
Monitoring Required	NO	NO	NO	NO	NO	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent CTR #	2-Methyl 4,6-Dinitrophenol #48	2,4-Dinitrophenol #49	2-Nitro- phenol #50	4-Nitro-phenol #51	3-Methyl-4-Chlorophenol #52	Pentachloro-phenol #53	Phenol #54
EFFLUENT							
4/30/2001	< 50	< 50	< 10	< 50	< 20	< 50	< 10
7/25/2001	< 50	< 50	< 10	< 50	< 20	< 50	< 10
10/30/2001	< 50	< 50	< 10	< 50	< 20	< 50	< 10
1/31/2002	< 50	< 50	< 10	< 50	< 20	< 50	< 10
MEC (µg/L)	< 50	< 50	< 10	< 50	< 20	< 50	< 10
RECEIVING WATER							
4/30/2001	< 50	< 50	< 10	< 50	< 20	< 50	< 10
10/30/2001	< 50	< 50	< 10	< 50	< 20	< 50	< 10
1/31/2002	< 50	< 50	< 10	< 50	< 20	< 50	< 10
Max Background	< 50	< 50	< 10	< 50	< 20	< 50	< 10
SWRCB MLs (µg/L)							
SIP Appendix 4	5	5	10	5	1	1	1
BP Obj (µg/L)	-	-	-	-	-	1	-
CMC (µg/L)	-	-	-	-	-	19	-
CCC (µg/L)	-	-	-	-	-	15	-
H Health (µg/L)							
Water & Org Only	13.4	70	-	-	-	0.28	21,000
H Health (µg/L)							
Org Only	765	14,000	-	-	-	8.2	4,600,000
Reasonable Potential							
Effluent	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	NO	NO	NO	NO	YES	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	2,4,6-Tri- chlorophenol	Acenaphthene	Acenaphthylene	Anthracene	Benzidene	Benzo(a) Anthracene	Benzo(a) Pyrene
CTR #	#55	#56	#57	#58	#59	#60	#61
EFFLUENT							
4/30/2001	< 10	< 10	< 10	< 10	T -	< 10	< 10
7/25/2001	< 10	< 10	< 10	< 10	T -	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	T -	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	T -	< 10	< 10
MEC (µg/L)	< 10	< 10	< 10	< 10		< 10	< 10
RECEIVING WATER							
4/30/2001	< 10	< 10	< 10	< 10	T	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	T	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	T	< 10	< 10
Max Background	< 10	< 10	< 10	< 10	T	< 10	< 10
SWRCB MLs (µg/L)							
SIP Appendix 4	10	0.5	0.2	2	5	5	2
BP Obj (µg/L)	-	-	-	-	-	-	0.2
CMC (µg/L)	-	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-	-
H Health (µg/L)							
Water & Org Only	2.1	1,200	-	9,600	0.00012	0.0044	0.0044
H Health (µg/L)							
Org Only	6.5	2,700	-	110,000	0.00054	0.049	0.049
Reasonable Potential							
Effluent	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	NO	NO	NO	YES	YES	YES

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 REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	Benzo(b) Fluoranthene #62	Benzo(ghi) Perylene #63	Benzo(k) Fluoranthene #64	Bis (2-Chloro- ethoxy) Methane #65	Bis (2-Chloro- ethyl) Ether #66	Bis (2-Chloro-isopropyl) Ether #67
CTR #						
EFFLUENT						
4/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
7/25/2001	< 10	< 10	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10
MEC (µg/L)	< 10	< 10	< 10	< 10	< 10	< 10
RECEIVING WATER						
4/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10
Max Background	< 10	< 10	< 10	< 10	< 10	< 10
<hr/>						
SWRCB MLs (µg/L)						
SIP Appendix 4	10	0.1	2	5	1	2
BP Obj (µg/L)	-	0.2	-	-	-	-
CMC (µg/L)	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-
H Health (µg/L)						
Water & Org Only	0.0044	-	0.0044	-	0.031	1,400
H Health (µg/L) Org Only	0.049	-	0.049	-	1.4	170,000
Reasonable Potential						
Effluent	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	YES	YES	NO	YES	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent CTR #	Bis (2-Ethyl- hexyl) Phthalate #68	4-Bromophenyl Phenyl Ether #69	Butylbenzyl Phthalate #70	2-Chloro- naphthalene #71	4-Chlorophenyl Phenyl Ether #72	Chrysene #73	Dibenzo(a,h) Anthracene #74
EFFLUENT							
4/30/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
7/25/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10	< 10
MEC (µg/L)	< 10	< 10	< 10	< 10	< 10	< 10	< 10
RECEIVING WATER							
4/30/2001	< 10	< 10	17	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Max Background	< 10	< 10	17	< 10	< 10	< 10	< 10
SWRCB MLs (µg/L)							
SIP Appendix 4	5	5	10	10	5	5	0.1
BP Obj (µg/L)	4	-	-	-	-	-	-
CMC (µg/L)	-	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-	-
H Health (µg/L)							
Water & Org Only	1.8	-	3,000	1,700	-	0.0044	0.0044
Org Only	5.9	-	5,200	4,300	-	0.049	0.049
Reasonable Potential							
Effluent	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	NO	NO	NO	NO	YES	YES

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	1,2-Dichloro- benzene	1,3-Dichloro- benzene	1,4-Dichloro- benzene	3,3-Dichloro- benzidine	Diethyl Phthalate	Dimethyl Phthalate
CTR #	#75	#76	#77	#78	#79	#80
EFFLUENT						
4/30/2001	< 10	< 10	< 10	< 20	6.3	< 10
7/25/2001	< 10	< 10	< 10	< 20	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 20	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 20	< 10	< 10
MEC (µg/L)	< 10	< 10	< 10	< 20	6.3	< 10
RECEIVING WATER						
4/30/2001	< 10	< 10	< 10	< 20	0.61	< 10
10/30/2001	< 10	< 10	< 10	< 20	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 20	< 10	< 10
Max Background	< 10	< 10	< 10	< 20	0.61	< 10
SWRCB MLs (µg/L)						
SIP Appendix 4	2	1	1	5	2	2
BP Obj (µg/L)	600	-	5	-	-	-
CMC (µg/L)	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-
H Health (µg/L)						
Water & Org Only	2,700	400	400	0.04	23,000	313,000
H Health (µg/L)						
Org Only	12,000	2,600	2,600	0.077	120,000	2,900,000
Reasonable Potential						
Effluent	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO
Monitoring Required	NO	NO	YES	YES	NO	NO

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Constituent	Di-n-Butyl Phthalate	2,4-Dinitro- toluene	2,6-Dinitro- toluene	Di-n-Octyl Phthalate	1,2-Diphenyl- hydrazine	Fluoranthene	Fluorene
CTR #	#81	#82	#83	#84	#85	#86	#87
EFFLUENT							
4/30/2001	0.59	< 10	< 10	< 10	T -	< 10	< 10
7/25/2001	< 10	< 10	< 10	< 10	T -	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	T -	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	T -	< 10	< 10
MEC (µg/L)	0.59	< 10	< 10	< 10		< 10	< 10
RECEIVING WATER							
4/30/2001	< 10	< 10	< 10	< 10	T	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	T	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	T	< 10	< 10
Max Background	< 10	< 10	< 10	< 10		< 10	< 10
SWRCB MLs (µg/L)							
SIP Appendix 4	10	5	5	10	1	0.05	0.1
BP Obj (µg/L)	700	-	0.05	-	-	-	-
CMC (µg/L)	-	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-	-
H Health (µg/L)							
Water & Org Only	2,700	0.11	-	-	0.04	300	1,300
H Health (µg/L)							
Org Only	12,000	9.1	-	-	0.54	370	14,000
Reasonable Potential							
Effluent	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	NO	YES	YES	NO	YES	NO	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent CTR #	Hexachloro- benzene #88	Hexachloro- butadiene #89	Hexachloro- cyclopentadiene #90	Hexachloro- ethane #91	Indeno(1,2,3-cd) Pyrene #92	Isophorone #93
EFFLUENT						
4/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
7/25/2001	< 10	< 10	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10
MEC (µg/L)	< 10	< 10	< 10	< 10	< 10	< 10
RECEIVING WATER						
4/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10
Max Background	< 10	< 10	< 10	< 10	< 10	< 10
SWRCB MLs (µg/L)						
SIP Appendix 4	1	1	5	1	0.05	1
BP Obj (µg/L)	1	-	50	-	-	-
CMC (µg/L)	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-
H Health (µg/L)						
Water & Org Only	0.00075	0.44	240	1.9	0.0044	8.4
H Health (µg/L)						
Org Only	0.00077	50	17,000	8.9	0.049	600
Reasonable Potential						
Effluent	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	YES	NO	YES	YES	YES

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NPDES NO. CA0079197

CITY OF ATWATER WWTF

MERCED COUNTY

REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	Naphthalene	Nitro-benzene	N-nitrosodi-methylamine	N-Nitrosodi-n-Propylamine	N-Nitrosodi-phenylamine	Phenanthrene	Pyrene
CTR #	#94	#95	#96	#97	#98	#99	#100
EFFLUENT							
4/30/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
7/25/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10	< 10
MEC (µg/L)	< 10	< 10	< 10	< 10	< 10	< 10	< 10
RECEIVING WATER							
4/30/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
10/30/2001	< 10	< 10	< 10	< 10	< 10	< 10	< 10
1/31/2002	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Max Background	< 10	< 10	< 10	< 10	< 10	< 10	< 10
SWRCB MLs (µg/L)							
SIP Appendix 4	0.2	1	5	5	1	0.05	0.05
BP Obj (µg/L)	-	-	-	-	-	-	-
CMC (µg/L)	-	-	-	-	-	-	-
CCC (µg/L)	-	-	-	-	-	-	-
H Health (µg/L)							
Water & Org Only	-	17	0.00069	0.005	5	-	960
H Health (µg/L)							
Org Only	-	1,900	8.1	1.4	16	-	11,000
Reasonable Potential							
Effluent	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	NO	NO	YES	YES	YES	NO	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	1,2,4-Trichloro- benzene	Aldrin	alpha-BHC	beta-BHC	gamma-BHC	delta-BHC	Chlordane	4,4-DDT
CTR #	#101	#102	#103	#104	#105	#106	#107	#108
EFFLUENT								
4/30/2001	< 10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
7/25/2001	< 10							
10/30/2001	< 10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1/31/2002	< 10							
MEC (µg/L)	< 10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
RECEIVING WATER								
4/30/2001	< 10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
10/30/2001	< 10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1/31/2002	< 10							
Max Background	< 10	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
SWRCB MLs (µg/L)								
SIP Appendix 4	1	0.005	0.01	0.005	0.02	0.005	0.1	0.01
BP Obj (µg/L)	5	-	-	-	0.2	-	0.1	-
CMC (µg/L)	-	3	-	-	0.95	-	2.4	1.1
CCC (µg/L)	-	-	-	-	-	-	0.0043	0.001
H Health (µg/L)								
Water & Org Only	-	0.00013	0.0039	0.014	0.019	-	0.00057	0.00059
H Health (µg/L)								
Org Only	-	0.00014	0.013	0.046	0.063	-	0.00059	0.00059
Reasonable Potential								
Effluent	NO	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	YES	YES	YES	YES	NO	YES	YES

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	4,4-DDE	4,4-DDD	Dieldrin	alpha- Endosulfan	beta- Endosulfan	Endosulfan Sulfate	Endrin	Endrin Aldehyde
CTR #	#109	#110	#111	#112	#113	#114	#115	#116
EFFLUENT								
4/30/2001	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
7/25/2001								
10/30/2001	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1/31/2002								
MEC (µg/L)	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
RECEIVING WATER								
4/30/2001	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
10/30/2001	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
1/31/2002								
Max Background	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
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SWRCB MLs (µg/L)								
SIP Appendix 4	0.05	0.05	0.01	0.02	0.01	0.05	0.01	0.01
BP Obj (µg/L)	-	-	-	-	-	-	2	-
CMC (µg/L)	-	-	0.24	0.22	0.22	-	0.086	-
CCC (µg/L)	-	-	0.056	0.056	0.056	-	0.036	-
H Health (µg/L)								
Water & Org Only	0.00059	0.00083	0.0001	110	110	110	0.76	0.76
H Health (µg/L)								
Org Only	0.00059	0.00084	0.0001	240	240	240	0.81	0.81
Reasonable Potential								
Effluent	NO	NO	NO	NO	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO	NO	NO	NO	NO
Monitoring Required	YES	YES	YES	NO	NO	NO	YES	NO

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REASONABLE POTENTIAL ANALYSIS-- PRIORITY POLLUTANTS—ORGANIC CHEMICALS

Constituent	Heptachlor	Heptachlor	Polychlorinated	Toxaphene
CTR #	#117	Epoxide #118	biphenyls (PCBs) #119-125	#126
EFFLUENT				
4/30/2001	< 0.05	< 0.05	< 0.05	< 1
7/25/2001				
10/30/2001	< 0.05	< 0.05	< 0.05	< 1
1/31/2002				
MEC (µg/L)	< 0.05	< 0.05	< 0.05	< 1
RECEIVING WATER				
4/30/2001	< 0.05	< 0.05	< 0.05	< 1
10/30/2001	< 0.05	< 0.05	< 0.05	< 1
1/31/2002				
Max Background	< 0.05	< 0.05	< 0.05	< 1
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SWRCB MLs (µg/L)				
SIP Appendix 4	0.01	0.01	0.5	0.5
BP Obj (µg/L)	0.01	0.01	0.5	3
CMC (µg/L)	0.52	0.52		0.73
CCC (µg/L)	0.0038	0.0038	0.014	0.0002
H Health (µg/L)				
Water & Org Only	0.00021	0.0001	0.00017	0.00073
H Health (µg/L)				
Org Only	0.00021	0.00011	0.00017	0.00075
Reasonable Potential				
Effluent	NO	NO	NO	NO
Receiving Water	NO	NO	NO	NO
Limitation Required	NO	NO	NO	NO
Monitoring Required	YES	YES	YES	YES