CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0151

NPDES NO. CA0079464

WASTE DISCHARGE REQUIREMENTS FOR SAN ANDREAS SANITARY DISTRICT WASTEWATER TREATMENT PLANT CALAVERAS COUNTY

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

1. The San Andreas Sanitary District, (hereafter Discharger) submitted a Report of Waste Discharge (RWD), dated 27 March 2003, and applied for a permit revision to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the San Andreas Sanitary District Wastewater Treatment Plant (WWTP).

2. The Discharger owns and operates a domestic wastewater collection, treatment, and disposal system, and provides sewerage service to the community of San Andreas, in Calaveras County. The San Andreas Sanitary District was formed as a public agency in the early 1950's. The District includes all of San Andreas as well as some outside areas, encompassing approximately 1,260 acres. The WWTP provides sewer services to approximately 2,700 residents. There are approximately 1140 service connections, of which approximately 1000 are residential users and 140 are commercial users. No industries are connected to the system. San Andreas is the county seat of Calaveras County and experiences a substantial influx in population during the day because of the high school, government centers and tourism.

3. The WWTP components include a grit removal chamber, mechanical screen (for solids removal) Parshall flume, flow metering, storm flow by-pass device for diverting excessive storm inflow to the high flow treatment system and storage reservoir, pre-aeration basin, primary clarifier, re-circulating trickling filter, secondary clarifier, sodium hypochlorite contact chamber, sodium bisulfite dechlorination unit, heated unmixed anaerobic digester, sludge drying beds, three post-secondary effluent polishing ponds, and a 6 million gallon storage reservoir. A diesel power generator is on site and used in the event of electrical power loss. The Plant lay out and wastewater flow diagram is shown in Attachment A, a part of this Order.

4. Disposal of treated wastewater is accomplished exclusively to land from 1 May through 31 October of each year. The Discharger owns approximately 180 acres of land for disposal, known as the Dedicated Land Disposal Area (DLDA). Presently, the Discharger uses about 70 of those acres, as the other 110 acres were recently purchased and are currently unimproved land. The treated wastewater is first held in the effluent storage reservoir, then pumped to on-site evaporation, transpiration and percolation ditches. The disposal ditches have a total length of approximately two miles, and vary in depth from about 1.5 to 3.0 feet and in width from about 2 to 4 feet. Storm water run off, or excess effluent from the trenches is returned to the storage

reservoir via a return ditch. Vegetation control in the DLDA is accomplished through prescribed burns by the local public fire agency.

5. From 1 November through 30 April, secondary treated effluent is discharged to the DLDA to the extent feasible. Treated effluent that cannot be discharged to land is currently discharged to San Andreas Creek, a tributary to Murray Creek, a tributary of the North Fork of the Calaveras River. Using the effluent polishing ponds for storage, the WWTP is capable of discharging up to a maximum of 1.5 mgd of treated effluent depending upon receiving water flows and considering the minimum 20:1 dilution requirement. Discharge to surface waters is prohibited during the period of 1 May through 31 October of each year.

   The discharge to San Andreas Creek is disinfected secondary treated wastewater, which requires that adequate dilution water be available in the creek at the time of discharge. Previous Order No. 5-01-118 required the Discharger to install a stream gauge monitor in Murray Creek to assure that when discharges occur, the stream flows of the creek would provide at least a 20:1 (receiving water:effluent) dilution ratio. The California Department of Health Services (DHS) has recommended that discharges of secondary treated domestic wastewater, when not diluted by receiving water flows of at least 20:1, be treated to a tertiary level to reduce the concentration of human pathogens.

   In previous Order No. 5-01-118, the Discharger proposed moving the point of effluent discharge from San Andreas Creek, to Murray Creek, where it was expected that a larger watershed would provide for higher sustained flows and a consistent minimum 20:1 dilution ratio. After installing a stream gauge monitor on Murray Creek, the Discharger determined that moving the effluent discharge point downstream from San Andreas Creek to Murray Creek might not result in a consistent minimum 20 to 1 dilution of receiving water to effluent recommended by the California DHS. The Discharger subsequently completed studies to evaluate all available effluent disposal options. In the February 2003 Effluent Disposal Options Assessment Report, the Discharger considered reclamation, land disposal, winter only surface water discharge, and year-round surface water discharge options. Results of this report indicate viable reclamation alternatives do not exist, and the complete containment of wastewater on land during typical wet winters is infeasible. Considering these findings, this Report concluded that dry season land disposal, combined with maximizing winter land disposal supplemented with a winter surface water discharge was the superior option with regards to public health, the environment, and economics. For the wet season surface water discharge portion of this option, the Discharger determined that moving the point of effluent discharge downstream in the watershed, to the confluence of Murray Creek and the North Fork of the Calaveras River, would provide a consistent minimum dilution of 20 to 1 throughout the wet season period of discharge. The Discharger has proposed moving the discharge location from San Andreas Creek to the Calaveras River by 1 November 2004. The Discharger has also proposed that the water will enter the Calaveras River via a ‘cross river diffuser’.

6. A California Environmental Quality Act (CEQA) Mitigated Negative Declaration was prepared by the Discharger in support of the proposal to move the point of effluent discharge downstream to the Calaveras River. This Mitigated Negative Declaration was approved by the Lead Agency

(the Discharger) on 19 March 2003. The Discharger has filed the Notice of Determination with the County Clerk and Office of Planning and Research. The Regional Board has considered the Mitigated Negative Declaration, and these waste discharge requirements will mitigate or avoid the significant impacts on water quality by: (a) ensuring the discharge does not cause a condition of pollution or nuisance, and, (b) establishing effluent limitations and monitoring requirements for toxic and conventional pollutants with the reasonable potential to cause or contribute to exceedence of a water quality standard.

7. The WWTP, DLDA, and discharge points to San Andreas Creek are in Section 18, T4N, R12E, MDB&M, as shown on Attachment B, a part of this Order. The discharge point to the Calaveras River is in Section 12, T4N, R11E, MDB&M, as shown on Attachment B. Treated wastewater is subsequently discharged from the ponds to San Andreas Creek, a water of the United States, at the point lattitude 38°, 12', 11" and longitude 120°, 41', 18". or to the Calaveras River, a water of the United States, at the point lattitude 38°, 12', 38" and longitude 120°, 42', 17" also as shown in Attachment B.

8. The Report of Waste Discharge describes the existing wastewater flows and influent quality as follows:

Average Dry Weather Influent Flow:	0.3	million gallons per day (mgd)
Design Average Dry Weather Flow:	0.4	mgd
Design Hydraulic Capacity:	1.5	mgd
Average Temperature:	76.7°F Summer; 63.2°F Winter	

Constituent	mg/L	lbs/day[2]
BOD[1]	306	1021
Total Suspended Solids	244	814

[1] 5-day, 20°C biochemical oxygen demand
[2] At design average flow

9. The Report of Waste Discharge describes the existing treated wastewater effluent flows and effluent quality as follows:

Average Effluent Flow:	0.31	mgd
Design Wet Weather Flow to Surface Waters:	1.5	mgd

Constituent	mg/L	lbs/day[2]
BOD[1]	16	41
Total Suspended Solids	13	34

[1] 5-day, 20°C biochemical oxygen demand
[2] At average flow

10. The discharge of treated wastewater was previously regulated by Waste Discharge Requirements (WDR) Order No. 5-01-118, NPDES Permit No. CA0079464, which was adopted by the Regional Board on 11 May 2001. Under this Order, the Discharger was permitted to discharge a

maximum of 1.5 million gallons per day (mgd) of treated wastewater to San Andreas or Murray Creek from 1 November through 30 April.

11. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a minor discharge.

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

13. The existing **beneficial uses** of the **Calveras River**, from its source to New Hogan Reservoir, as identified in Table II-1 of the Basin Plan include: body contact recreation, canoeing and rafting, (REC-1); and other non-body contact recreation (REC-2); warm freshwater aquatic habitat (WARM); cold freshwater aquatic habitat (COLD); migration of aquatic organisms (MIGR) in warm habitat, warm and cold habitat spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). Agricultural supply (AGR) including both irrigation and stock watering, is not identified in Table II-1 of the Basin Plan as an existing beneficial use of the Calaveras River. However, active water rights permits (stockwatering), have been identified downstream of the point of discharge along Murray Creek and the North Fork Calveras River. The Regional Board is required to apply the beneficial uses of municipal and domestic supply to the Calaveras River based on SWRCB Resolution No. 88-63 which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, provides that "*Where a a body of water is not currently designated as MUN* (municipal and domestic supply beneficial use) *but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation*. " Based upon ambient receiving water data collected by the Discharger, the North Fork Calveras River, from its source to New Hogan Reservoir, is suitable for MUN, therefore the MUN use is also designated as a beneficial use of this water body. Also, the State Water Resources Control Board (State Board) maintains an active water rights permit for domestic and irrigation supply use from New Hogan Reservoir, downstream of the discharge.

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

14. The Basin Plan at page II-2.00 states that: "Existing and potential beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify **beneficial uses** for **San Andreas Creek** or Murray Creek, but the Basin Plan does identify existing beneficial uses for the Calaveras River, as noted above, to which they are tributary.

In reviewing what existing beneficial uses that may apply to San Andreas Creek and Murray Creek, the Regional Board has considered the following facts:

a. *Domestic, Municipal, and Agricultural Irrigation Supply*

The Regional Board is required to apply the beneficial uses of municipal and domestic supply to San Andreas Creek and Murray Creek based on SWRCB Resolution No. 88-63 which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. The State Water Resources Control Board (SWRCB) has issued water rights permits to existing water users along Murray Creek and the Calaveras River downstream of the discharge for domestic and irrigation uses. Since San Andreas Creek and Murray Creek are ephemeral streams, the creeks likely provide groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in San Andreas Creek and Murray Creek.

b. *Groundwater Recharge*

In areas where groundwater elevations are below the stream bottoms, water from the streams will percolate to groundwater. Since San Andreas Creek and Murray Creek are at times almost dry, it is reasonable to assume that the stream water is lost by evaporation, flow downstream and percolation to groundwater thereby providing a source of domestic, municipal, and irrigation water supply.

c. *Freshwater Replenishment*

When water is present in San Andreas Creek and Murray Creek, there is hydraulic continuity between San Andreas Creek, Murray Creek and the Calaveras River. During periods of hydraulic continuity, San Andreas and Murray Creeks add to the water quantity and may impact the quality of water flowing downstream in the Calaveras River.

d. *Water Contact and Non-Contact Recreation and Esthetic Enjoyment*

The Regional Board finds that the discharge flows through areas where there is ready public access to San Andreas and Murray Creek. Exclusion of the public is unrealistic and contact recreational activities currently exist along the creeks. These uses are likely to increase as the population in the area grows.

e. *Preservation and Enhancement of Fish, Wildlife and Other Aquatic Resources.*

San Andreas Creek and Murray Creek flow to the Calaveras River. The California Department of Fish and Game (DFG) has verified that the fish species present in San Andreas and Murray Creeks and downstream waters are consistent with both cold and

warm water fisheries, and that a cold water species has been found both upstream and downstream of the wastewater treatment plant. The Basin Plan (Table II-1) designates the Calaveras River source to New Hogan Reservoir, as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to San Andreas and Murray Creeks. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l. This approach recognizes that, if the naturally occurring in-stream dissolved oxygen concentration is below 7.0 mg/l, the Discharger is not required to improve the naturally occurring level.

Upon review of the flow conditions, habitat values, existing and potential beneficial uses of the Calaveras River, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Calaveras River, from it's source to New Hogan Reservoir, are applicable to San Andreas Creek and Murray Creek. In addition, beneficial uses not specifically identified in the Basin Plan, as indicated above, exist or potentially exist in San Andreas Creek and Murray Creek and must be protected.

The Board also finds that based on the available information and on the Discharger's application, that San Andreas Creek and Murray Creek, absent the discharge, are at times ephemeral streams. At other times, natural flows within San Andreas Creek and Murray Creek help support the cold-water aquatic life. Both conditions may exist within a short time span, where the Creeks would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Calaveras River. Dry conditions occur primarily in the summer months, but dry conditions, and low flow conditions, may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water-related uses , agricultural water uses and aquatic life. Significant dilution may occur during and immediately following high rainfall events.

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

16. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard. Beneficial uses, together with their corresponding water quality objectives or promulgated water quality criteria, constitute the water quality standards for waters of the state for purposes of compliance with the CWA.

In determining whether a discharge has the reasonable potential to contribute to an in-stream excursion (reasonable potential analysis), the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. The available dilution may also be used to

calculate protective effluent limitations by applying water quality criteria at the edge of the defined mixing zone. These calculations include receiving water pollutant concentrations that are typically based on worst-case conditions for flow and concentration.

If limited or no dilution is available, effluent limitations are set equal to the applicable water quality objective or criteria which are applied at the point of discharge so the discharge will not cause the receiving stream to exceed water quality objectives or promulgated criteria established to protect the beneficial uses. In situations where receiving water flows are substantially greater than effluent flows, dilution may be considered in establishing effluent limitations. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality objectives or criteria that are applied at the point of discharge such that the discharge will not cause or contribute to the receiving stream excursion above water quality objectives or promulgated criteria established to protect the beneficial uses.

17. On 10 September 2001 the Executive Officer of the Regional Board issued a letter pursuant to Section 13267 of the California Water Code (CWC) requiring all NPDES Dischargers to conduct effluent and receiving water monitoring and submit results of this monitoring in accordance with a time schedule provided in the letter. The Discharger conducted a study to determine whether levels of NTR, CTR, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives. Results of this study were submitted in March 2003 with the new Report of Waste Discharge (RWD) which proposed moving the point of discharge to the Calaveras River.

18. While the Discharger has proposed moving the point of effluent discharge downstream to the Calaveras River, extension of the pipeline and completion of the project will not be complete until at least November 2004. Until that time, the Discharger will continue to discharge treated effluent during the wet season at the historical location in San Andreas Creek. Only limited information regarding flows in San Andreas Creek or Murray Creek is available, and no information is available regarding critical flow conditions or flow conditions during extended dry periods. Limited flow data from Murray Creek indicates that a consistent 20:1 dilution ratio cannot be maintained during all flow conditions. Considering the limited watershed supporting San Andreas Creek and Murray Creek, it is likely that flows during a dry fall/winter period could be negligible. Considering these conditions, and given the new information on pollutant concentrations in the effluent, the reasonable potential analysis for pollutants in the effluent discharged to San Andreas Creek, and the development of associated effluent limitations, was accomplished considering no credit for dilution. Previous Order No. 5-01-118 included a time schedule requiring tertiary treatment of any effluent discharged that does not receive 20:1 dilution by **1 April 2006**. This Order retains that time schedule.

19. This Order requires a minimum dilution ratio of 20:1 (receiving water to effluent) for the discharge of treated secondary effluent to the Calaveras River. Development and consideration of dilution credits in establishing and determining compliance with water quality-based effluent

limitations for priority pollutants is described in Section 1.4.2. of the SIP. Dilution credit, mixing zones and mixing zone analyses methods are also presented in Section 2 and Section 4 of the USEPA's Technical Support Document For Water Quality-based Toxics Control, 1991 (TSD). Considering minimum dilution ratio of 20:1 required by this Order, a maximum dilution credit of 20 has been used in accomplishing the reasonable potential analysis and developing effluent limitations where appropriate. As the outfall and diffuser configuration and design have not been completed, the Discharger shall be required, prior to commencing the discharge, to conduct a *Dilution/Mixing Zone Study* to verify complete mixing of the discharge and characterize the extent of actual dilution. Points in the receiving water where the applicable criteria/objective shall be met must also be defined in this study. This Order may be reopened if the study indicates the discharge is not completely mixed, or if site specific conditions concerning the discharge and the receiving water indicate that a smaller dilution credit is necessary to protect beneficial uses and meet the conditions of the SIP. This study shall be completed prior to discharge from the new outfall to the Calaveras River.

20. Section 1.4.2.2 of the SIP outlines conditions which must be met in allowing a mixing zone. Considering these conditions, where applicable, maximum daily effluent limitations have been developed for discharge to the Calaveras River considering acute criteria, an acute waste load allocation, and no dilution credit, to prevent acutely toxic conditions at the point of discharge. Also where applicable, average monthly effluent limitations have been developed considering chronic criteria, a chronic wasteload allocation, and available dilution. A mixing zone and dilution credit were not considered for the discharge to San Andreas Creek.

21. Technology-based treatment requirements under section 301(b) of the CWA represent the minimum level of control that must be imposed in a permit issued under section 402 of the CWA. Regulations promulgated at 40 CFR 122.44 (a) require technology-based effluent limitations to be placed in NPDES permits based on national effluent limitations guidelines and standards, best professional judgment (BPJ), or a combination of the two. 40 CFR Part 133 provides information on the level of effluent quality attainable through the application of secondary or equivalent treatment. 40 CFR Part 133.102 describes the minimum level of effluent quality attainable in terms of the parameters for biochemical oxygen demand (BOD), suspended solids (SS), and pH. Results of monitoring indicate the Discharger is capable of meeting these limitations. Effluent limitations for these conventional pollutants using these levels of effluent quality established in 40 CFR Part 133.102 have been retained in the Order.

22. Previous Order No. 5-01-118 included an effluent limitation for total coliform, with a total coliform count not to exceed 23 MPN (Most Probable Number)/100 ml (milliliters) as a monthly median limitation, and 230 MPN/100ml as a daily maximum, with 20:1 dilution. These limitations were established considering recommendations from the California Department of Health Services. Beneficial uses of the Calaveras River, San Andreas Creek, and Murray Creek include body contact recreation (REC-1) and other non-contact recreation (REC-2), and public access is not restricted up or downstream in the vicinity of the discharge. Other beneficial uses include agricultural supply (AGR) and municipal and domestic supply (MUN). The limitations of Order No. 5-01-118 are retained in this new Order. As noted previously, limited flow information from San Andreas Creek and Murray Creek indicate there may be instances where

the dilution ratio falls below 20:1. As noted previously, this Order includes a time schedule requiring tertiary treatment of any effluent discharged that does not receive 20:1 dilution by 1 April 2006. This Order may be reopened to address new information concerning effects on public drinking water supplies.

23. Section 1.3 of the SIP requires a water quality based effluent limitation when the maximum effluent concentration (MEC) or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion. Based upon the study conducted by the Discharger, the MEC's of copper, zinc, dichlorobromomethane, and bis(2-ethylhexyl) phthalate have exceeded applicable pollutant criteria of the CTR/NTR. Therefore, water quality-based effluent limitations for these pollutants are required. When required, Section 1.4 of the SIP provides four methods that may be used to develop effluent limitations. These four methods include: (1) assigning a loading allocation based upon a completed TMDL; (2) use of a steady state model; (3) use of a dynamic model; or, (4) establishing effluent limitations that consider intake water pollutants. Water quality-based effluent limitations have been developed in this Order using the steady state model described in Section 1.4 of the SIP and the TSD. Since the discharge is permitted only under conditions of a minimum of 20:1 dilution, development of these limitations has, where applicable, considered dilution of the receiving water for pollutants with demonstrated assimilative capacity.

24. In studies conducted by the Discharger, the MEC for total **copper** was reported as 35 µg/L (ppb). The minimum hardness of the effluent was reported as 68 mg/L (ppm) hardness as CaCO3. This MEC exceeds the adjusted freshwater aquatic life water quality acute (Criterion Maximum Concentration, CMC) and chronic (Criterion Continuous Concentration, CCC) criteria for copper established in the USEPA's California Toxics Rule (9.7 µg/L (ppb) and 6.7 µg/L (ppb), respectively at 68 mg/L hardness as CaCO3). As noted above, Section 1.3 of the SIP requires water quality-based effluent limitations when the MEC or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion. Effluent limitations for discharge to the **Calaveras River** have been developed for total copper as shown in the Information Sheet, a part of this Order. To prevent acutely toxic conditions at the point of discharge and in the zone of initial dilution, a table in Attachment D, a part of this Order, expresses the maximum daily effluent limitation (MDEL) developed for copper considering the acute aquatic life criterion (CMC) without consideration of dilution. Attachment D also includes a table expressing the average monthly effluent limitation (AMEL) developed considering the chronic aquatic life criterion (CCC) for copper and dilution credit.

For discharge to **San Andreas Creek**, a final AMEL and MDEL have been developed for copper considering the critical ECA, and no dilution credit as shown in the Information Sheet. These final limitations are to be adjusted accordingly with results of corresponding receiving water monitoring for upstream receiving water hardness as shown in Attachment C, a part of this Order.

The Discharger cannot currently meet these limitations, whether discharging to San Andreas Creek, or the Calaveras River. The Discharger has no processes specific for the removal of copper. 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." As the average monthly and maximum daily effluent limitations for copper are new requirements in this Order, the Discharger has not been afforded an opportunity to submit the compliance schedule justification required by the SIP (Section 2.1). This Order requires the Discharger to provide this information. Implementation of the new water quality based effluent limitations for copper become effective on **17 December 2003** if a compliance schedule justification is not completed and submitted by the Discharger to the Board. If a compliance schedule justification is completed and submitted by this date, the final water quality based effluent limitations for copper become effective **1 October 2008**, and this Order includes a Provision outlining studies and a time schedule for compliance with the new final effluent limitations for copper. In accordance with the SIP, Sections 2.2.1 and 2.2.2, a numeric interim limitation for copper has been established in this Order as shown in the Information Sheet based upon current facility performance. The Order may be reopened to include a new interim effluent limitation for copper after additional effluent data have been collected.

25. In studies conducted by the Discharger, the MEC for total **zinc** was reported as 170 µg/L (ppb). The minimum hardness of the effluent was reported as 68 mg/L (ppm) hardness as CaCO3. This MEC exceeds the adjusted freshwater aquatic life water quality acute CMC and chronic CCC criteria for zinc established in the USEPA's CTR (86 µg/L (ppb) and 86 µg/L (ppb), respectively at 68 mg/L hardness as CaCO3). As noted above, Section 1.3 of the SIP requires water quality-based effluent limitations when the MEC or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion. Effluent limitations for discharge to the **Calaveras River** have been developed for total zinc as shown in the Information Sheet, a part of this Order. To prevent acutely toxic conditions at the point of discharge and in the zone of initial dilution, a table in Attachment F, a part of this Order, expresses the MDEL developed for zinc considering the acute aquatic life criterion (CMC) without consideration of dilution. Attachment F also includes a table expressing the AMEL developed considering the chronic aquatic life criterion (CCC) for zinc and dilution credit.

For discharge to **San Andreas Creek**, a final AMEL and MDEL have been developed for zinc considering the critical ECA, and no dilution credit as shown in the Information Sheet. These final limitations are to be adjusted accordingly with results of corresponding receiving water monitoring for upstream receiving water hardness as shown in Attachment E, a part of this Order.

The Discharger cannot currently meet these limitations, whether discharging to San Andreas Creek, or the Calaveras River. The Discharger has no processes specific to the removal of zinc. 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*." As the average monthly and maximum daily effluent limitations for zinc are new requirements in this Order, the Discharger has not been afforded an opportunity to submit the compliance schedule justification required by the SIP (Section 2.1). This Order requires the Discharger to provide this information. Implementation of the new water quality based effluent limitations for zinc become effective on **17 December 2003** if a compliance schedule justification is not completed and submitted by the Discharger to the Board. If a compliance schedule justification is completed and submitted by this date, the final water quality

based effluent limitations for zinc become effective **1 October 2008**, and this Order includes a Provision outlining studies and a time schedule for compliance with the new final effluent limitations for zinc. In accordance with the SIP, Sections 2.2.1 and 2.2.2, a numeric interim limitation for zinc has been established in this Order as shown in the Information Sheet based upon current facility performance. The Order may be reopened to include a new interim effluent limitation for zinc after additional effluent data have been collected

26. As noted previously, the MUN beneficial use applies to San Andreas Creek, Murray Creek, and the Calaveras River. Section 1.1 of the SIP states in part that "*Designated beneficial uses to which human health criteria/objectives would apply include… municipal and domestic supply (MUN) and water contact recreation (REC 1). Human health criteria/objectives are differentiated by whether organisms alone from the water body are consumed compared to whether both organisms and water from the water body are consumed. Where MUN is designated, the latter situation applies*."

27. A human health criterion for **dichlorobromomethane** of 0.56 µg/L (ppb), for consumption of both water and organisms, was established in the CTR. In studies conducted by the Discharger, the MEC for dichlorobromomethane was reported as 0.7 µg/L (ppb). This MEC exceeds the human health criterion for dichlorobromomethane established in the CTR. Section 1.3 of the SIP requires water quality-based effluent limitations when the MEC or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion.

Water quality-based effluent limitations for discharge to the **Calaveras River** have been developed for dichlorobromomethane as shown in the Information Sheet, a part of this Order. These water quality-based effluent limitations are substantially higher than the reported MEC of 0.7 µg/L (ppb). Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using the calculated AMEL and MDEL. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for dichlorobromomethane is needed prior to establishing a final effluent limitation for the discharge to the Calaveras River. This Order includes a time schedule for the Discharger to collect sufficient information for the calculation of final effluent limitations prior to discharge to the Calaveras River. Pursuant to Section 2.2.1 of the SIP, the water quality to be achieved includes prevention of toxic conditions in the Calaveras River as a result of the discharge, and the maintenance of the highest quality water consistent with the maximum benefit to the people of the State. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for dichlorobromomethane as enforceable limitations.

For discharge to **San Andreas Creek**, an AMEL was developed as shown in the Information Sheet considering the human health criterion for dichlorobromomethane and no dilution credit.

The Discharger cannot currently meet these limitations when discharging to San Andreas Creek. The Discharger has no processes specific to the removal of dichlorobromomethane. 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*." As the average monthly and maximum daily effluent limitations for dichlorobromomethane are new requirements in this Order, the Discharger has not been afforded an opportunity to submit the compliance schedule justification required by the SIP (Section 2.1). This Order requires the Discharger to provide this information. Implementation of the new water quality based effluent limitations for dichlorobromomethane become effective on **17 December 2003** if a compliance schedule justification is not completed and submitted by the Discharger to the Board. If a compliance schedule justification is completed and submitted by this date, the final water quality based effluent limitations for dichlorobromomethane become effective **1 October 2008**, and this Order includes a Provision outlining studies and a time schedule for compliance with the new final effluent limitations for dichlorobromomethane. In accordance with the SIP, Sections 2.2.1 and 2.2.2, and as shown in the Information Sheet, a numeric interim limitation for dichlorobromomethane has been established in this Order based upon current facility performance.

28. A human health criterion for **bis(2-ethylhexyl) phthalate** of 1.8 µg/L (ppb), for consumption of both water and organisms, was established in the NTR. In studies conducted by the Discharger, the MEC for bis(2-ethylhexyl) phthalate was reported as 3.6 µg/L (ppb). This MEC exceeds the human health criterion for bis(2-ethylhexyl) phthalate established in the NTR. Section 1.3 of the SIP requires water quality-based effluent limitations when the MEC or observed maximum background concentration of a priority pollutant exceeds an appropriate pollutant criterion. The maximum observed ambient background concentration (B) of bis(2-ethylhexyl) phthalate in the Calaveras River was reported as < 2.0 µg/L (ppb). Considering this result, it is unknown if and how much assimilative capacity exists within the Calaveras River if any. No information is available regarding ambient background concentrations of bis(2-ethylhexyl) phthalate in San Andreas Creek or Murray Creek.

Concerning calculation of final effluent limitations for bis(2-ethylhexyl) phthalate for discharge to the **Calaveras River**, the SIP provides in Section 1.4 that "*If data are insufficient to calculate the effluent limitation, the RWQCB shall establish interim requirements in accordance with Section 2.2.2*." This Order includes a time schedule for the Discharger to collect sufficient information for the calculation of final effluent limitations prior to discharge to the Calaveras River. Pursuant to Section 2.2.1 of the SIP, the water quality to be achieved includes prevention of toxic conditions in the Calaveras River as a result of the discharge, and the maintenance of the highest quality water consistent with the maximum benefit to the people of the State. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for bis(2-ethylhexyl) phthalate as enforceable limitations. In accordance with the SIP, Sections 2.2.1 and 2.2.2, for discharge to the Calaveras River, a numeric interim limitation for bis(2-ethylhexyl) phthalate has been established in this Order based upon current facility performance, as shown in the Information Sheet.

For discharge to **San Andreas Creek**, an AMEL was developed as shown in the Information Sheet considering the human health criterion for bis(2-ethylhexyl) phthalate and no dilution credit. The Discharger cannot currently meet these limitations when discharging to San Andreas Creek. The Discharger has no processes specific to the removal of bis(2-ethylhexyl) phthalate. Compliance schedules described in Section 2.1 of the SIP exclude NTR pollutants, therefore this Order does not include a schedule of compliance with the final effluent limitation for bis(2-ethylhexyl) phthalate for discharge to San Andreas Creek.

29. At p.III-8.00 the Basin Plan provides that relative to toxicity : "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." At page 1, the TSD provides that "*Where States have not developed chemical specific numeric criteria, States may interpret their narrative standards for specific chemicals by using EPA criteria updated with current quantitative risk values*." The TSD further states on page 1 "*The integrated approach must include the control of toxics through implementation of the "no toxics" criterion and/or numeric criteria for the parameter of toxicity, the control of individual pollutants for which specific chemical water quality criteria exist in a state's standard, as well as the use of biological criteria. Reliance solely on the chemical specific numeric criteria or the narrative criterion or biological criteria would result in only a partially effective State toxics control program*."

Under the CWA Section 304(a), USEPA has developed methodologies and specific criteria guidance to protect aquatic life and human health. These methodologies are intended to provide protection for all surface waters on a national basis. The methodologies have been subject to public review, as have the individual criteria guidance documents. Water quality criteria developed under Section 304(a) of the CWA are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. Section 304(a) criteria do not reflect consideration of economic impacts or the technological feasibility of meeting the chemical concentrations in ambient water. Section 304(a) criteria provide guidance to States in adopting water quality standards that ultimately provide a basis for controlling discharges or releases of pollutants. Staff has used USEPA's ambient water quality criteria as a 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 objective of prohibiting toxic constituents in toxic amounts.

30. The Basin Plan does not provide a numeric water quality objective for **aluminum**. However, the USEPA has developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The USEPA has recommended, as a freshwater ambient water quality criteria for aluminum, a chronic, four day average criterion continuous concentration (CCC) of 87 µg/L, and an acute, one-hour average criterion maximum concentration (CMC) of 750 µg/L expressed in terms of total recoverable metal in the water column. In establishing these criteria, USEPA notes that there are three major reasons why the use of a water-effect ratio (WER) may be appropriate in applying the aluminum criteria including the fact that the 87 µg/L CCC was based on a toxicity test with striped bass in water with low pH and low hardness.

Results of monitoring conducted by the Discharger indicate effluent aluminum concentrations ranged from 160 µg/L to 580 µg/L. The minimum pH of the effluent has been reported as 6.8 pH units, and the minimum hardness of the effluent has been reported as 68 mg/L as CaCO3. Results of monitoring of the Calaveras River indicate ambient background concentrations of aluminum ranged from 40 µg/L to 80 µg/L. The minimum pH of the Calaveras River has been reported as 7.8 pH units during the period of discharge (one data point), and the minimum hardness of the Calaveras River has been reported as 60 mg/L as CaCO3. No information is available on aluminum concentrations in San Andreas or Murray Creek. Results of ambient background pH monitoring in San Andreas Creek during the period of discharge from December 2002 through April 2003 have ranged from 6.9 to 7.2 pH units.

Considering results of monitoring indicate periods of relatively low hardness and neutral pH, the MEC for total aluminum is over 6 times greater than the CCC, the maximum ambient background concentration of aluminum in the Calaveras River has been reported as high as 80 µg/L, the aquatic life beneficial use, the narrative toxicity objective of the Basin Plan, and, the USEPA chronic criterion for aluminum, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

For discharge to the **Calaveras River** or **San Andreas Creek**, AMEL's and MDEL's have been developed for aluminum as shown in the Information Sheet. Based upon the results of effluent monitoring, the Discharger cannot currently comply with these new effluent limitations for aluminum. At Page IV-16.00 the Basin Plan states "*In no event shall an NPDES permit include a schedule of compliance that allows more than ten years (from the date of adoption of the objective or criteria) for compliance with water quality objectives, criteria or effluent limitations based on the objectives or criteria. Schedules of compliance are authorized by this provision only for those water quality objectives or criteria adopted after the effective date of this provision [25 September 1995*]." The narrative toxicity objective is not a new objective, therefore a schedule of compliance for aluminum is not included in this Order.

31. In December 1999, the U.S EPA published an Update of Ambient Water Quality Criteria for **Ammonia** (1999 Ammonia Update). The new criteria in the 1999 Ammonia Update 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. As a result of these revisions, the acute criterion for ammonia is now dependent on pH and fish species present, and the chronic criterion is dependent on pH and temperature. At lower temperatures, the chronic criterion is also dependent on the presence or absence of early life stages of fish (ELS). The beneficial uses of the Calaveras River, from its source to New Hogan Reservoir, and San Andreas Creek include warm freshwater aquatic habitat (WARM), cold freshwater aquatic habitat (COLD), migration of aquatic organisms (MIGR) in warm habitat, warm and cold habitat spawning, and reproduction, and/or early development (SPWN). The early life stages of fish are likely present during the permitted period of discharge.

The reported MEC of total ammonia is 16 mg/L (as N), with an average daily concentration of effluent total ammonia reported as 2.2 mg/L (as N). The maximum effluent pH for the period of discharge from November 1999 through April 2003 was reported as 7.8 pH units. Without regard to dilution, the discharge from the effluent has the reasonable potential to exceed the acute ambient water quality ammonia criteria for the protection of fresh water aquatic life at the point of discharge to the Calaveras River or San Andreas Creek. The maximum total ammonia concentration reported in the Calaveras River was reported as 1.1 mg/L (as N), and the maximum pH was reported as 7.8 pH units. Although simple steady state dilution calculations using the limited ambient data available indicate that assimilative capacity for chronic toxicity is available in the Calaveras River, sufficient information is not available to adequately determine mixing zone and dilution characteristics.

The Regional Board considered the level of ammonia in the effluent in light of the narrative toxicity objective in the Basin Plan. For determining whether there is reasonable potential for an excursion above this narrative objective, the Regional Board used the second method prescribed by 40 CFR 122.44(d)(vi) for determining reasonable potential, which relies on USEPA recommended criteria and other information. The Board chose this method because USEPA's recommended ambient water quality criteria for ammonia have been developed using methodologies that are subject to public review, as is the individual recommended criteria guidance document. Results of monitoring submitted by the Discharger indicate the effluent discharged to the Calaveras River has the reasonable potential to cause or contribute to an excursion above the acute ammonia criterion. Considering no dilution in San Andreas Creek, results of effluent monitoring submitted by the Discharger indicate the effluent discharged to San Andreas Creek has the reasonable potential to cause or contribute to an excursion above the acute and chronic ammonia criteria.

Accordingly, to prevent acutely toxic conditions at the point of discharge to the **Calaveras River**, a one hour maximum effluent limitation for total ammonia has been included in this Order based upon the EPA's ambient water quality acute toxicity criterion (Attachment H). Compliance with this limit will require recording of effluent pH at the time that the samples are collected for ammonia, and may require information regarding the presence or absence of salmonids in the Calaveras River. Because a minimum 20 to 1 dilution is required for discharge, acute toxicity is almost certainly the governing toxic criterion. The extent of the chronic toxicity mixing zone will be evaluated in the *Dilution/Mixing Zone Study*. Based upon the results on the *Dilution/Mixing Zone Study*, this Order may be reopened to include delineation of a chronic toxicity mixing zone and additional chronic effluent limitations for ammonia, if warranted.

To prevent chronic and acutely toxic conditions at the point of discharge to **San Andreas Creek**, a one hour and AMEL for total ammonia have been included in this Order based upon the EPA's ambient water quality chronic and acute toxicity criteria (Attachment G and Attachment H). Compliance with these limits will require recording of effluent pH and temperature at the time that the samples are collected for ammonia, and may require information regarding the presence or absence of salmonids in San Andreas Creek.

Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for total ammonia. As noted previously, the narrative toxicity objective is not a new objective, therefore a schedule of compliance for ammonia is not included in this Order.

32. The Discharger uses **chlorine** for the disinfection of treated wastewater. The Basin Plan does not provide a numeric water quality objective for chlorine, but the Basin Plan does contain a narrative toxicity objective. For determining whether there is reasonable potential for an excursion above this narrative objective, the Regional Board used the second method prescribed by 40 CFR 122.44(d)(vi) for determining reasonable potential, which relies on USEPA criteria and other information. The Board chose this method because USEPA's recommended ambient water quality criteria for chlorine have been developed using methodologies that are subject to public review, as is the individual recommended criteria guidance document. USEPA's ambient water quality criteria for protection of aquatic life are 11 µg/L as a 4-day average (chronic) concentration, and 19 µg/L as a 1-hour average (acute) concentration for total residual chlorine. Continuous use of chlorine for the disinfection of the final effluent presents a reasonable potential for the discharge to cause or contribute to an excursion above the acute and chronic chlorine criteria.

For discharge to the Calaveras River and San Andreas Creek, this Order includes new effluent limitations for chlorine based directly upon the USEPA's ambient water quality criteria. Based upon results of monitoring, and installation of the new dechlorination unit, the Discharger is capable of consistently meeting these limitations.

33. For Chemical Constituents at page III-3.00, the Basin Plan states '*At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…*' Federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A) allow the state to establish effluent limitations using an explicit state policy interpreting its narrative objectives. Use of MCL's is appropriate to implement the chemical constituent objective of the Basin Plan. The Calaveras River, San Andreas Creek, and Murray Creek are designated for use as domestic or municipal supply (MUN).

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

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

34. The Basin Plan does not include a numeric objective for **nitrate** or **nitrite**. The USEPA has established a primary Maximum Contaminant Level (MCL) for nitrate of 10 mg/L (as nitrogen (N)), and a primary MCL for nitrite of 1 mg/L (as nitrogen (N)). USEPA has also established in the MCL a limit for total nitrate + nitrite of 10 mg/L. Additionally, USEPA's ambient water quality criteria for nitrates, protective of human health for consumption of water and organisms, is expressed also as a concentration of 10 mg/l (as N). In Title 22, Table 64431-A of the California Code of Regulations (CCR) the California DHS has established a primary MCL for nitrate + nitrite (sum as nitrogen) of 10 mg/L, and a primary MCL for nitrite (as nitrogen) of 1.0.

As reported by the Discharger, the MEC for nitrate + nitrite (as N) was 17.2 mg/L. Independently, the MEC for nitrate was reported as 17 mg/L (as N), and the MEC for nitrite was reported as 0.2 mg/L (as N). The average daily effluent concentration for nitrate + nitrite (as N) has been reported as 12.2 mg/L. These nitrate + nitrite effluent concentrations, without regard to dilution, exceed the California DHS primary MCL for nitrate + nitrite (as N). The maximum observed ambient background concentration of nitrate + nitrite (as N) in the Calaveras River was reported as 1.7 mg/L. Independently, the maximum observed ambient background concentration for nitrates was reported as 1.7 mg/L (as N), and the maximum observed ambient background concentration nitrites was reported as less than 0.03 mg/L (as N). Considering these effluent monitoring results, the MUN beneficial use, the chemical constituent objective of the Basin Plan, and the California DHS primary MCL for nitrate + nitrite, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

An AMEL and MDEL for discharge to the **Calaveras River** were considered for nitrate + nitrite (as N) developed using the USEPA recommendations for permitting for human health protection as described in Section 5.4.4 of the TSD and as shown in the Information Sheet. These water quality-based effluent limitations are substantially higher than the reported MEC of 17.2 mg/L (ppm). Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using the calculated AMEL and MDEL. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for nitrate + nitrite is needed prior to establishing a final effluent limitation for the discharge to the Calaveras River. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations for discharge to the Calaveras River at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to reopen this Order and include final water quality-based effluent limitations for nitrate + nitrite as enforceable limitations.

For discharge to **San Andreas Creek**, where dilution credit was not considered, an AMEL was developed considering the USEPA recommendations for permitting for human health protection provided in Section 5.4.4 of the TSD. The AMEL was set equal to the WLA, or in this case, the nitrates + nitirites MCL (10 mg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for nitrates +

nitrites. As the chemical constituent objective is not a new objective, a schedule of compliance for nitrates + nitrites is not included in this Order.

35. In Title 22, Table 64449-A of the CCR, the California DHS has established a secondary MCL for **iron** of 300 µg/L considering consumer acceptance limits. Results of monitoring conducted by the Discharger indicate effluent concentrations of iron ranged from 210 µg/L to 450 µg/L . The MEC, without regard to dilution, exceeds the California DHS secondary MCL for iron. The maximum observed ambient background concentration of iron in the Calaveras River was reported as 130 µg/L. The data indicate that the Calaveras River does have assimilative capacity for iron. Dilution and/or assimilative capacity was not considered for discharge to San Andreas Creek. Considering the MEC, the MUN beneficial use, the chemical constituents objective of the Basin Plan, and the California DHS secondary MCL for iron, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

    The criterion used to determine reasonable potential for iron is not related to aquatic toxicity or human health. Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using a calculated AMEL and MDEL based upon a human health WLA. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for iron is needed prior to establishing a final effluent limitation for the discharge to the **Calaveras River**. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for iron as enforceable limitations.

    For discharge to **San Andreas Creek**, where dilution credit was not considered, an AMEL was set equal to the WLA, or in this case, the iron secondary MCL (300 µg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for iron. As the chemical constituents objective is not a new objective, a schedule of compliance for iron is not included in this Order.

36. In Title 22, Table 64449-A of the CCR, the California DHS has established a secondary MCL for **manganese** of 50 µg/L considering consumer acceptance limits. Results of monitoring conducted by the Discharger indicate effluent concentrations of manganese ranged from 25 µg/L to 82 µg/L . The MEC, without regard to dilution, exceeds the California DHS secondary MCL for manganese. The maximum observed ambient background concentration of manganese in the Calaveras River was reported as 12 µg/L. The data indicate that the Calaveras River does have assimilative capacity for manganese. Dilution and/or assimilative capacity was not considered for discharge to San Andreas Creek. Considering the MEC, the MUN beneficial use, the chemical constituents objective of the Basin Plan, and the California DHS secondary MCL for manganese, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

The criterion used to determine reasonable potential for manganese is not related to aquatic toxicity or human health. Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using a calculated AMEL and MDEL based upon a human health WLA. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for manganese is needed prior to establishing a final effluent limitation for the discharge to the **Calaveras River**. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for manganese as enforceable limitations.

For discharge to **San Andreas Creek**, where dilution credit was not considered, an AMEL was set equal to the WLA, or in this case, the manganese secondary MCL (50 µg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for manganese. As the chemical constituents objective is not a new objective, a schedule of compliance for manganese is not included in this Order.

37. In Title 22, Table 64449-A of the CCR, the California DHS has established a secondary MCL for **Methylene Blue Active Substances** (MBAS) of 500 µg/L considering consumer acceptance limits. Results of monitoring conducted by the Discharger indicate effluent concentrations of MBAS ranged from 500 µg/L to 2,000 µg/L . The MEC, without regard to dilution, exceeds the California DHS secondary MCL for MBAS. The maximum observed ambient background concentration of MBAS in the Calaveras River was reported as less than 50 µg/L. The data indicate that the Calaveras River does have assimilative capacity for MBAS. Dilution and/or assimilative capacity was not considered for discharge to San Andreas Creek. Considering the MEC, the MUN beneficial use, the chemical constituents objective of the Basin Plan, and the California DHS secondary MCL for MBAS, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

The criterion used to determine reasonable potential for MBAS is not related to aquatic toxicity or human health. Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using a calculated AMEL and MDEL based upon a human health WLA. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for MBAS is needed prior to establishing a final effluent limitation for the discharge to the **Calaveras River**. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for MBAS as enforceable limitations.

For discharge to **San Andreas Creek**, where dilution credit was not considered, an AMEL was set equal to the WLA, or in this case, the MBAS secondary MCL (500 µg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for MBAS. As the chemical constituents objective is not a new objective, a schedule of compliance for MBAS is not included in this Order.

38. **Diazinon** is used for the control of pests in both agricultural and urban settings. For inland surface waters within the Region, there are currently no adopted numeric objectives for diazinon. For diazinon, the USEPA has published a tentative one-hour maximum acute criterion of 0.09 µg/L. The California Department of Fish and Game (DFG) criteria include a one-hour average acute value of 0.08 µg/L and a four-day average chronic value of 0.05 µg/L.

Results of three effluent sampling events indicated one instance where diazinon was detected, at a concentration of 1.6 µg/L. Results of two ambient background monitoring events in the Calaveras River indicate concentrations of diazinon were less than 0.1 µg/L. This information is not sufficient to adequately assess whether the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard in the Calaveras River. This Order contains new monitoring requirements for diazinon, and may be reopened, and effluent limitations established for diazinon if appropriate, based upon additional data collection. Depending upon the nature of collected data, the Discharger may be required to implement a study and develop source control actions, and/or interim or final point of discharge effluent limitations may be established.

Considering the MEC, the aquatic life beneficial uses, the pesticide and narrative toxicity objectives of the Basin Plan, and the California DFG criteria for diazinon, the discharge to **San Andreas Creek** has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

For discharge to San Andreas Creek, an AMEL and MDEL have been developed for diazinon as shown in the Information Sheet. Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for diazinon. Additionally, based upon the use of current analytical methods, routine monitoring may be unable to determine compliance with these limitations. Analytical methods for compliance monitoring purposes will be specified in this Order. As the narrative toxicity and pesticide objectives are not new objectives, a schedule of compliance for diazinon is not included in this Order.

39. **Carbofuran** is a broad spectrum carbamate insecticide with applications for pest control in various food and feed crops. In Title 22, Table 64444-A of the CCR, the California DHS has established a primary MCL for carbofuran of 18 µg/L The California Office of Environmental Health Hazard Assessment (OEHHA) has established a Public Health Goal for carbofuran in drinking water of 1.7 µg/L. In 1992, the California DFG published an interim criterion to protect freshwater aquatic life of 0.5 µg/L as an instantaneous maximum.

Results of three effluent sampling events indicated one instance where carbofuran was reported as greater than the analytical detection method limit, but less than the method reporting limit, at a

detected, but not quantified (DNQ) concentration of 2.51 µg/L. Results from the two other rounds of effluent monitoring indicated carbofuran concentrations were less than 1.3 and less than 1.1 µg/L. Results of two ambient background monitoring events in the Calaveras River indicate concentrations of carbofuran were less than 0.5 µg/L and less than 1.1 µg/L. This information is not sufficient to adequately assess whether the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard. This Order contains new monitoring requirements for carbofuran, and may be reopened, and effluent limitations established for carbofuran if appropriate, based upon additional data collection. Depending upon the nature of collected data, the Discharger may be required to implement a study and develop source control actions, and/or interim or final point of discharge effluent limitations may be established.

40. The Basin Plan provides that the **pH** (of surface waters) shall not be depressed below 6.5 nor raised above 8.5 pH Units. The Basin Plan further provides that changes in normal ambient pH levels shall not exceed 0.5 pH units in fresh waters with designated COLD or WARM beneficial uses. Although the discharge will occur under conditions of 20 to 1 dilution, pH can significantly affect the mobility of metals, and toxicity of ammonia, therefore the existing effluent limitation for pH has been retained in this Order. This Order also retains receiving water limitations and monitoring requirements for pH.

41. At Page III-5.00, the Basin Pan provides surface water quality objectives for **dissolved oxygen** (DO), and states, in part: *For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time:*

Waters designated WARM 5.0 mg/l
Waters designated COLD 7.0 mg/l
Waters designated SPWN 7.0 mg/l

This Order retains the limitation that the discharge shall not cause the DO of the receiving water to fall below 7.0 mg/l, in support of the COLD and SPWN beneficial uses and associated Basin Plan objective.

42. Effluent and receiving water **temperature** affect numerous water quality conditions including ammonia toxicity (increasing with increasing temperature) and oxygen saturation (decreasing with increasing temperature). Additionally, warm waters may cause detrimental conditions of aquatic aversion or attraction. The Basin Plan states that: *"At no time shall the temperature of…WARM intrastate waters be increased more than 5°F above natural receiving water temperature*". Through the use of the pond system, effluent temperatures are buffered, and under conditions of 20:1 dilution, the potential for the discharge to increase the temperature of the Calaveras River or San Andreas Creek appears unlikely. However, this Order contains receiving water limitations inclusive of the Basin Plan objectives.

43. The Basin Plan states that: "*Waters shall be free of changes in **turbidity** that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is between 0 and 5 (NTUs), increases shall not exceed 1 NTU*
- *Where natural turbidity is between 5 and 50 NTU's, increases shall not exceed 20 percent*
- *Where natural turbidity is between 50 and 100 NTU's, increases shall not exceed 10 NTU's*
- *Where natural turbidity is greater than 100 NTU's, increases shall not exceed 10 percent"*

This Order includes effluent and receiving water monitoring requirements for turbidity, and retains receiving water limitations and monitoring requirements for turbidity.

44. The Basin Plan states that "*Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses*." This Order includes effluent monitoring requirements for **oil and grease**.

45. The beneficial uses of the underlying ground water are municipal and domestic, industrial service, industrial process and agricultural supply. The WWTP processes include the use of three polishing ponds, the equalization basin, and the DLDA.

SWRCB Resolution 68-16 requires the Regional Board, in regulating the discharge of waste, to maintain high quality waters of the State (i.e. background water quality) until it is demonstrated that any change in quality will be consistent with the 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 Board's policies (e.g. quality that exceeds objectives). Some degradation of groundwater beneath the WWTP and associated DLDA is consistent with Resolution 68-16 provided that:

a. the degradation is confined within a specified boundary;

b. The Discharger minimizes degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures;

c. The degradation is limited to waste constituents typically encountered in domestic wastewater as specified in the groundwater limitation in this Order; and,

d. The degradation does not result in water quality less than that prescribed in the Basin Plan.

Some degradation of groundwater by some of the typical waste constituents released with the discharge from a municipal wastewater utility, after effective source control, treatment, and control is consistent with the maximum benefit to the people of the State. The technology, energy, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Degradation of groundwater by toxic pollutants other than those typically associated with a WWTP, and by pollutants that can be effectively removed by conventional treatment (e.g. total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors including; background water quality, the pollutant, the beneficial uses of groundwater and most stringent water quality objective, source control measures, and pollutant treatability. Economic prosperity of the local community is of maximum benefit to the people of the State, and therefore sufficient reason exists to accommodate growth and groundwater degradation around the WWTP, provided that the terms of the Basin Plan including SWRCB Resolution 68-16, are met.

As required by previous Order No. 5-01-118, the Discharger is currently installing a series of three wells to assess and monitor the impact of the discharge on groundwater, if any. This Order includes groundwater limitations that allow groundwater to be degraded when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the operation of the WWTP beyond the quality described above, this Order may be reopened, and specific numeric limitations imposed.

46. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and SWRCB Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

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

48. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Relations Code Section 21000, et. Seq.), in accordance with Section 13389 of the California Water Code.

49. The Regional Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The attached Information Sheet is part of this Order. Attachments A, B, C, D, E, F, G, and H are also a part of this Order.

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

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

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

53. Any person adversely affected by this action of the Regional Board may petition the SWRCB to review the action. The petition must be received by the State Board Office of the Chief Counsel, P.O. Box 100, Sacramento, CA 95812-0100, within 30 days of the date the action was taken. Copies of the law and regulations applicable to filing petitions will be provided upon request.

IT IS HEREBY ORDERED that Order No. 5-01-118 is rescinded and that the San Andreas Sanitary District, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations, policies, and plans adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of wastewater at a location or in a manner different from that described in Findings No.(s) 2 - 5, and No. 7 is prohibited.

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

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

4. The discharge of effluent to San Andreas Creek or the Calaveras River is prohibited from **1 May through 31 October** of each year.

5. The discharge of secondary treated effluent to San Andreas Creek in quantities which do not receive a minimum of 20:1 dilution as a daily average (receiving water flow : effluent flow) is prohibited as of **1 April 2006**. The discharge of treated secondary effluent to the Calaveras River in quantities which do not receive a minimum of 20:1 dilution as a daily average (receiving water flow : effluent flow) is prohibited.

B. Effluent Limitations:

1. Secondary treated effluent discharged to **San Andreas Creek** shall not exceed the following limits:

Constituents	Units	Monthly Average	Weekly Average[16]	Monthly Median	Daily Maximum[16]
BOD[1]	mg/L (ppm)	30[2]	45[2]	---	60[2]
	lbs/day[3]	375	563	---	751
Total Suspended Solids	mg/L (ppm)	30[2]	45[2]	---	60[2]
	lbs/day[3]	375	563	---	751
Settleable Solids	ml/l	0.1	---	---	0.2
Total Coliform	MPN/100ml	---	---	23	230
Chlorine Residual	µg/L (ppb)	---	11.0[14]	---	19[15]
	lbs/day[3]	---	0.14	---	0.24
Copper (Total)	µg/L (ppb)	[4]	---	---	[4]
	lbs/day[3]	[5]	---	---	[5]
	µg/L (ppb)	105[8]	---	---	---
	lbs/day[3]	1.3[8]	---	---	---
Zinc (Total)	µg/L (ppb)	[6]	---	---	[6]
	lbs/day[3]	[7]	---	---	[7]
	µg/L (ppb)	510[8]	---	---	---
	lbs/day[3]	6.4[8]	---	---	---
Dichlorobromomethane	µg/L (ppb)	0.56[13]	---	---	1.1[13]
	lbs/day[3]	0.007[13]	---	---	0.014[13]
	µg/L (ppb)	2.1[8]	---	---	---
	lbs/day[3]	0.026[8]	---	---	---
Bis(2-ethylhexyl) phthalate	µg/L (ppb)	1.8	---	---	3.6
	lbs/day[3]	0.023	---	---	0.045
Aluminum (Total)	µg/L (ppb)	83	---	---	143
	lbs/day[3]	1.04	---	---	1.8
Ammonia (Total)	mg/L (ppm)	[9]	---	---	[11]
	lbs/day[3]	[10]	---	---	[12]
Nitrate + Nitrite (as Nitrogen)	mg/L (ppm)	10	---	---	---
	lbs/day[3]	125	---	---	---
Iron	µg/L (ppb)	300	---	---	---
	lbs/day[3]	3.8	---	---	---
Manganese	µg/L (ppb)	50	---	---	---
	lbs/day[3]	0.63	---	---	---
MBAS	µg/L (ppb)	500	---	---	---
	lbs/day[3]	6.3	---	---	---
Diazinon	µg/L (ppb)	0.04	---	---	0.08
	lbs/day[3]	0.0005	---	---	0.001

[1] 5-day, 20°C Biochemical Oxygen Demand.
[2] To be ascertained by a 24-hour composite.
[3] Based upon a wet weather design discharge capacity of 1.5 mgd (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).

[4] Calculate limit based upon Attachment C. Final effluent limitation effective 1 October 2008.
[5] Calculate limit based upon Attachment C, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day). Final effluent limitation effective 1 October 2008.
[6] Calculate limit based upon Attachment E. Final effluent limitation effective 1 October 2008.
[7] Calculate limit based upon Attachment E, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day). Final effluent limitation effective 1 October 2008.
[8] Interim limits effective until 30 September 2008.
[9] Concentration limits identified in Attachment G.
[10] Calculate limit based upon Attachment G, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).
[11] Maximum one hour average concentration limits identified in Attachment H.
[12] Calculate limit based upon Attachment H, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).
[13] Final effluent limitation effective 1 October 2008.
[14] Maximum four day average concentration limitation.
[15] Maximum one hour average concentration limitation.
[16] Except as noted.

2. Any effluent discharged to **San Andreas Creek** that does not receive 20:1 dilution as of **1 April 2006**, must then receive tertiary treatment, shall be oxidized, coagulated and filtered, or equivalent treatment provided, and shall not exceed the following limits:

Constituents	Units	Monthly Average	Weekly Average[16]	7-Day Median	Daily Maximum[16]	Daily Average
BOD[1]	mg/L (ppm)	10	15	---	20	---
	lbs/day[3]	125	188	---	250	---
Total Suspended Solids	mg/L (ppm)	10	15	---	20	---
	lbs/day[3]	125	188	---	250	---
Settleable Solids	ml/l	0.1	---	---	0.2	---
Total Coliform	MPN/100ml	---	---	2.2	23	---
Turbidity	NTU's	---	---	---	5	2
Chlorine Residual	µg/L (ppb)	---	11[14]	---	19[15]	---
	lbs/day[3]	---	0.14	---	0.24	---
Copper (Total)	µg/L (ppb)	[4]	---	---	[4]	---
	lbs/day[3]	[5]	---	---	[5]	---
	µg/L (ppb)	105[8]	---	---	---	---
	lbs/day[3]	1.3[8]	---	---	---	---
Zinc (Total)	µg/L (ppb)	[6]	---	---	[6]	---
	lbs/day[3]	[7]	---	---	[7]	---
	µg/L (ppb)	510[8]	---	---	---	---
	lbs/day[3]	6.4[8]	---	---	---	---
Dichlorobromomethane	µg/L (ppb)	0.56[13]	---	---	1.1[13]	---
	lbs/day[3]	0.007[13]	---	---	0.014[13]	---
	µg/L (ppb)	2.1[8]	---	---	---	---
	lbs/day[3]	0.026[8]	---	---	---	---

Constituents	Units	Monthly Average	Weekly Average[16]	7-Day Median	Daily Maximum[16]	Daily Average
Bis(2-ethylhexyl) phthalate	µg/L (ppb) lbs/day[3]	1.8 0.023	--- ---	--- ---	3.6 0.045	--- ---
Aluminum (Total)	µg/L (ppb) lbs/day[3]	83 1.04	--- ---	--- ---	143 1.8	--- ---
Ammonia (Total)	mg/L (ppm) lbs/day[3]	[9] [10]	--- ---	--- ---	[11] [12]	--- ---
Nitrate + Nitrite (as Nitrogen)	mg/L (ppm) lbs/day[3]	10 125	--- ---	--- ---	--- ---	--- ---
Iron	µg/L (ppb) lbs/day[3]	300 3.8	--- ---	--- ---	--- ---	--- ---
Manganese	µg/L (ppb) lbs/day[3]	50 0.63	--- ---	--- ---	--- ---	--- ---
MBAS	µg/L (ppb) lbs/day[3]	500 6.3	--- ---	--- ---	--- ---	--- ---
Diazinon	µg/L (ppb) lbs/day[3]	0.04 0.0005	--- ---	--- ---	0.08 0.001	--- ---

[1] 5-day, 20°C Biochemical Oxygen Demand.
[2] To be ascertained by a 24-hour composite.
[3] Based upon a wet weather design discharge capacity of 1.5 mgd (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).
[4] Calculate limit based upon Attachment C. Final effluent limitation effective 1 October 2008.
[5] Calculate limit based upon Attachment C, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day). Final effluent limitation effective 1 October 2008.
[6] Calculate limit based upon Attachment E. Final effluent limitation effective 1 October 2008.
[7] Calculate limit based upon Attachment E, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day). Final effluent limitation effective 1 October 2008.
[8] Interim limits effective until 30 September 2008.
[9] Concentration limits identified in Attachment G.
[10] Calculate limit based upon Attachment G, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).
[11] Maximum one hour average concentration limits identified in Attachment H.
[12] Calculate limit based upon Attachment H, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).
[13] Final effluent limitation effective 1 October 2008.
[14] Maximum four day average concentration limitation.
[15] Maximum one hour average concentration limitation.
[16] Except as noted.

3. Effluent discharged to the **Calaveras River** shall not exceed the following limits:

Constituents	Units	Monthly Average	Weekly Average[13]	Monthly Median	Daily Maximum[13]
BOD[1]	mg/L (ppm) lbs/day[3]	30[2] 375	45[2] 563	--- ---	60[2] 751
Total Suspended Solids	mg/L (ppm) lbs/day[3]	30[2] 375	45[2] 563	--- ---	60[2] 751
Settleable Solids	ml/L	0.1	---	---	0.2

Constituents	Units	Monthly Average	Weekly Average[13]	Monthly Median	Daily Maximum[13]
Total Coliform	MPN/100ml	---	---	23	230
Chlorine Residual	µg/L (ppb) lbs/day[3]	--- ---	11[11] 0.14	--- ---	19[12] 0.24
Copper (Total)	µg/L (ppb) lbs/day[3] µg/L (ppb) lbs/day[3]	[4] [5] 105[8] 1.3[8]	--- --- --- ---	--- --- --- ---	[4] [5] --- ---
Zinc (Total)	µg/L (ppb) lbs/day[3] µg/L (ppb) lbs/day[3]	[6] [7] 510[8] 6.4[8]	--- --- --- ---	--- --- --- ---	[6] [7] --- ---
Dichlorobromomethane	µg/L (ppb) lbs/day	2.1[8] 0.026[8]	--- ---	--- ---	--- ---
Bis(2-ethylhexyl) phthalate	µg/L (ppb) lbs/day	13.7[8] 0.17[8]	--- ---	--- ---	--- ---
Aluminum (Total)	µg/L (ppb) lbs/day	216 2.7	--- ---	--- ---	373 4.7
Ammonia (Total)	mg/L (ppm) lbs/day	--- ---	--- ---	--- ---	[9] [10]

[1] 5-day, 20°C Biochemical Oxygen Demand.
[2] To be ascertained by a 24-hour composite.
[3] Based upon a wet weather design discharge capacity of 1.5 mgd (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).
[4] Calculate limit based upon Attachment D. Final effluent limitation effective 1 October 2008.
[5] Calculate limit based upon Attachment D, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day). Final effluent limitation effective 1 October 2008.
[6] Calculate limit based upon Attachment F. Final effluent limitation effective 1 October 2008.
[7] Calculate limit based upon Attachment F, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day). Final effluent limitation effective 1 October 2008.
[8] Interim limits effective until 30 September 2008.
[9] Maximum one hour concentration limits identified in Attachment H.
[10] Calculate limit based upon Attachment H, where (*x* mg/L x 8.34 x 1.5 mgd = *y* lbs/day).
[11] Maximum four day average concentration limitation.
[12] Maximum one hour average concentration limitation.
[13] Except as noted.

4. The arithmetic mean of 20°C BOD (5-day) and total suspended solids 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).

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

6. The peak wet weather flow through the trickling filter treatment facility shall not exceed 0.9 mgd.

7. The discharge flow to San Andreas Creek or the Calaveras River shall not exceed 1.5 mgd.

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

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

C. Discharge Specifications, Flow Equalization Basin, Designated Land Disposal Area:

1. Treated wastewater discharged to the Designated Land Disposal Area shall not exceed the following limits:

Constituents	Units	Monthly Average	Monthly Median	Daily Maximum
BOD[1]	mg/L	40[2]		80[2]
Settleable Solids	mL/L	0.2		0.5
Total Coliform	MPN/100mL		23	230

[1] 5-day, 20°C biochemical oxygen demand (BOD)
[2] To be ascertained by a 24-hour composite

2. Reclaimed wastewater shall meet the criteria contained in Title 22, Division 4, California Code of Regulations (CCR), Section 60301, et seq.

3. The average dry weather flow through the treatment facility shall not exceed 0.4 mgd.

4. The maximum daily discharge to the Designated Land Disposal Area shall not exceed 0.9 million gallons.

5. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas or property owned by the Discharger.

6. As a means of discerning compliance with Limitation C.5, the dissolved oxygen content in the upper zone (1 foot) of wastewater in ponds shall not be less than 1.0 mg/L.

7. The effluent polishing ponds shall not have a pH less than 6.5 or greater than 8.5 averaged over any 24-hour period. The effluent storage reservoir shall not have a pH less than 6.5 or greater than 9.0 averaged over any 24-hour period.

8. Ponds shall be managed to prevent breeding of mosquitos. In particular,

   a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.

   b. Weeds shall be minimized.

   c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

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

10. Ponds and disposal trenches shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the irrigation season (May through October). Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Freeboard in the storage ponds shall never be less than two feet (measured vertically to the lowest point of overflow).

11. There shall be no run off or overflow of effluent outside the Designated Land Disposal Area. The trenches and ponds shall be protected from inundation from the one in one hundred year storm event.

D. Sludge Disposal:

1. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.

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

3. Use and disposal of sewage sludge shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503.

   If the State Water Resources Control Board and the Regional Water Quality Control Boards are given the authority to implement regulations contained in 40 CFR 503, this Order may be reopened to incorporate appropriate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR 503 whether or not they have been incorporated into this Order.

E. Receiving Water Limitations- San Andreas Creek and the Calaveras River:

Receiving Water Limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit. The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/L (ppm). The monthly median of the mean daily dissolved oxygen concentration at this location shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation.

2. Any individual pesticide or combination of pesticides to be present in concentrations that adversely affect beneficial uses, and total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the Environmental Protection Agency or the Executive Officer.

3. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.

4. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.

5. Aesthetically undesirable discoloration.

6. Fungi, slimes, or other objectionable growths.

7. The turbidity to increase as follows:

    a. More than 1 Nephelometric Turbidity Units (NTUs) where natural turbidity is between 0 and 5 NTUs.

    b. More than 20 percent where natural turbidity is between 5 and 50 NTUs.

    c. More than 10 NTUs where natural turbidity is between 50 and 100 NTUs.

    d. More than 10 percent where natural turbidity is greater than 100 NTUs.

8. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 pH units.

9. Deposition of material that causes nuisance or adversely affects beneficial uses.

10. The normal ambient temperature to increase more than 5°F.

11. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; 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. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.

13. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.

14. Violations of any applicable water quality standard for receiving waters adopted by the Regional Board, the State Water Resources Control Board, or the U.S. Environmental Protection Agency pursuant to the CWA and regulations adopted thereunder.

15. Taste or odor-producing substances to impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin or to cause nuisance or adversely affect beneficial uses.

16. The fecal coliform concentration in any 30-day period to exceed a geometric mean of 200 MPN/100 mL or cause more than 10 percent of total samples to exceed 400 MPN/100 mL.

F. Groundwater Limitations: The release of waste constituents from any storage, treatment, or disposal component of the WWTP or DLDA shall not, in combination with other sources, cause the following in groundwater:

1. Beneficial uses to be adversely impacted or water quality objectives to be exceeded.

2. Any constituent concentration, when compared with background, to be incrementally increased beyond the current concentration.

3. Total coliform organisms to equal or exceed a most probable number of 2.2/100 mL over any seven-day period.

G. Provisions:

1. The Discharger shall comply with Monitoring and Reporting Program No. R5-2003-0151, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

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

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

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

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

5. **Copper, Zinc, Dichlorobromomethane Effluent Limitation Time Schedules**: Effluent Limitations B.1., B.2., and B.3. require the Discharger to comply with new monthly average and daily maximum effluent limitations for CTR Pollutants including total copper, total zinc, and dichlorobromomethane. The new final water quality based effluent limitations for these CTR pollutants required by this Order shall become effective on **1 October 2008**. The Discharger shall comply with the following time schedule in order to study and implement measures necessary to comply with these new limitations, or comply with alternative final limitations developed using a methodology prescribed by Section 1.4 of the SIP:

Task	Compliance Date
Submit Compliance Alternatives Study Workplan	**1 March 2004**
Submit Compliance Alternatives Study Report	**1 July 2005**
Select Alternative(s)	**1 October 2005**
Submit Implementation Plan and Time Schedule for Selected Alternative(s)	**1 January 2006**
Achieve Full Compliance	**1 October 2008**

The Discharger shall submit to the Regional Board on or before each compliance report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated, plus an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

As this schedule is greater than one year, the Discharger shall submit semi-annual progress reports on **15 January** and **15 July** each year until the Discharger achieves compliance with the final water quality based effluent limitations for these pollutants.

6. **Dilution/Mixing Zone Study**: The Discharger shall conduct a *Dilution/Mixing Zone Study* to address requirements of SIP Section 1.4.2, including, but not limited to, whether the

discharge to the Calaveras River is completely or incompletely mixed and mixing zone conditions specified by SIP Section 1.4.2.2. This study shall also specifically address dilution and mixing zone issues as they pertain to final effluent limitations for copper, zinc, dichlorobromomethane, bis(2-ethylhexyl) phthalate, aluminum, ammonia, nitrates + nitrites, iron, manganese, MBAS, and diazinon. This Study shall also include recommendations for receiving water monitoring which can be used to determine compliance with final limitations. Within **one (1) month** of adoption of this Order the Discharger shall complete and submit a *Study Workplan*. The final *Dilution/Mixing Zone Study* shall be completed and submitted within **ten (10) months** of adoption of this Order. The results of this *Study*, in combination with the requirements of Provision E.4., shall be sufficient, considering water year classifications, to conduct the determination of effluent limitations required by Section 1.3 of the SIP and to calculate water quality based effluent limitations in accordance with Section 1.4 of the SIP. In some instances, interim performance-based effluent limits shall be in effect until this *Study* is completed and the permit is reopened to incorporate final effluent limits. This Order may be reopened after review of the final *Study*, and findings and limitations incorporated into the Order as appropriate.

7. **Data Collection, Final/Interim Limits:** The Discharger shall submit within **ten (10) months** of adoption of this Order a ***Pollutant Data Collection Report*** summarizing pollutant data collected pursuant to MRP No. R5-2003-XXX, a part of this Order. This report shall include ambient Calaveras River pollutant data and, in combination with the *Dilution/Mixing Zone Study* requirements of Provision G.6. and results of effluent monitoring, shall be sufficient to calculate final water quality based or performance based interim or final effluent limitations for several constituents including dichlorobromomethane, bis(2-ethylhexyl) phthalate, nitrates + nitrites, iron, manganese, MBAS, diazinon, copper, zinc, aluminum and ammonia. This Order may be reopened upon review of additional data collected pursuant to MRP No. R5-2003-XXX or this summary report to include new findings and limitations if appropriate.

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

9. **Adoption of new Minimum Level's (ML's):** Where an approved laboratory analytical method and associated ML cannot, at this time, determine whether a CTR constituent is present in the discharge above the applicable criteria, the Discharger shall resample for these constituents if new ML's are adopted by the SWRCB.

10. **Reopeners**: This Order may be reopened and effluent and/or receiving water limitations modified based on new information, including information on copper, zinc, dichlorobromomethane, bis(2-ethylhexyl) phthalate, aluminum, ammonia, nitrates + nitrites, iron, manganese, MBAS, diazinon, and carbofuran, supplied as required by this Order.

11. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."

12. The Discharger shall use the best practicable control to limit mineralization to no more than a reasonable increment.

13. This Order expires on **15 October 2008** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

14. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of or clearance from the SWRCB (Division of Water Rights).

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

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

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 17 October 2003.

_____
THOMAS R. PINKOS, Executive Officer

Amended : JME

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0151

NPDES NO. CA0079464
FOR
SAN ANDREAS SANITARY DISTRICT
WASTEWATER TREATMENT PLANT
CALAVERAS COUNTY

This Monitoring and Reporting Program is issued pursuant to California Water Code Sections 13267 and 13383. For purposes of evaluating compliance with the limitations of Order No. R5-2003-0151, the Discharger shall conduct monitoring and submit reports as specified below. To evaluate compliance with the limitations of this Order, monitoring should occur within a brief enough period to be able to evaluate the effect of the effluent on the ambient water quality. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program.

Section 13267 of the California Water Code states, in part, "(a) A regional board, in establishing waste discharge requirements may investigate the quality of any waters of the state within its region" and "(b)(1) In conducting an investigation ... , the regional board may require that any person who ... discharges ... waste ... that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires." This Monitoring and Reporting Program to monitor groundwater and surface water required by Order No. R5-2003-0151 is necessary to assure compliance with Order No. R5-2003-0151. The Discharger operates the facility that discharges waste subject to Order No. R5-2003-0151.

INFLUENT MONITORING

(year-round)

When discharging to San Andreas Creek or the Calaveras River, influent samples shall be collected at approximately the same time as effluent samples and should be representative of the influent. Influent monitoring shall be conducted regardless of whether the discharge is to land or surface waters, and shall include at least the following:

Constituent	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
20^{o} C BOD_5	mg/L, lbs/day	24 hr. Composite	Weekly
Suspended Solids	mg/L, lbs/day	24 hr. Composite	Weekly
Specific Conductivity[1]	µmhos/cm	Grab	Weekly
pH[1]	pH Units	Grab	Weekly
Ammonia (Total, as N)	mg/L	Grab	Monthly
Aluminum	µg/L, lbs/day	Grab	Monthly
Copper (Total)[2]	µg/L, lbs/day	Grab	Monthly
Zinc (Total)[2]	µg/L, lbs/day	Grab	Monthly
Bis(2-ethylhexyl) phthalate[2]	µg/L, lbs/day	Grab	Monthly
Iron	µg/L, lbs/day	Grab	Monthly
Manganese	µg/L, lbs/day	Grab	Monthly
MBAS	µg/L, lbs/day	Grab	Monthly

Constituent	Units	Type of Sample	Sampling Frequency
Diazinon[3]	µg/L, lbs/day	Grab	Twice Yearly

[1] Field Measurements.

[2] At a minimum the Discharger shall comply with the Monitoring Requirements for these constituents as outlined in Section 2.3 and 2.4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), adopted 2 March 2000 by the State Water Resources Control Board. For each priority pollutant use an analytical method from the SIP, Appendix 4 with a Minimum Level (ML) below all applicable pollutant criteria. In accordance with Section 2.4.2 of the SIP, the Discharger is to instruct the laboratory analyzing samples for priority pollutants to establish calibration standards so that the ML is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve. Report all peaks identified by the EPA test methods

[3] Discharger must submit report outlining sample collection, Analytical test methods, and detection limits within 60 days of permit adoption for approval. Report all peaks identified by the EPA test methods.

EFFLUENT MONITORING
DISCHARGE TO SAN ANDREAS CREEK OR CALAVERAS RIVER
(from ponds when discharging to surface waters)

During the period of 1 November through 30 April of each year, effluent samples shall be collected from the outfall when discharging to San Andreas Creek or the Calaveras River. Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall to San Andreas Creek or the Calaveras River. Time of collection of samples shall be recorded. Samples collected from the outfall having passed through the poliching ponds, shall be considered adequately composited. The Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
Chlorine Residual	µg/L/, lbs/day	Grab	Daily
Temperature[1]	ºF	Meter	Daily
Dissolved Oxygen[1]	mg/L	Meter	Daily
pH[1, 2]	pH Units	Meter	Daily
20^{o} C BOD_5	mg/L, lbs/day	24 hr. Composite	Weekly
Total Suspended Solids	mg/L, lbs/day	24 hr. Composite	Weekly
Settleable Solids	ml/L	Grab	Weekly
Electrical Conductivity @ 25^{o} C[1]	µmhos/cm	Grab	Weekly
Ammonia (Total, as N)	mg/L, lbs/day	Grab	Weekly
Total Coliform Organisms	MPN/100 mL	Grab	Weekly
Copper (Total)[4]	µg/L, lb/day	Grab	Twice Monthly
Zinc (Total)[4]	µg/L, lb/day	Grab	Twice Monthly
Dichlorbromomethane[4]	µg/L, lbs/day	Grab	Twice Monthly
Bis(2-ethylhexyl) phthalate[4]	µg/L, lbs/day	Grab	Twice Monthly
Nitrate + Nitrite	mg/L, lbs/day	Grab	Twice Monthly
Aluminum (Total)	µg/L, lbs/day	Grab	Twice Monthly
Iron (Total)	µg/L, lbs/day	Grab	Twice Monthly
Manganese (Total)	µg/L, lbs/day	Grab	Twice Monthly

Constituent	Units	Type of Sample	Sampling Frequency
MBAS	µg/L, lbs/day	Grab	Twice Monthly
Hardness (as CaCO3) [5]	mg/L	Grab	Twice Monthly
Turbidity	NTU	Grab	Monthly
Oil and Grease	mg/L	Grab	Monthly
Diazinon[7]	µg/L	Grab	Monthly
Acute Toxicity[6]	% Survival	Grab	Quarterly
Standard Minerals[8]	mg/L, as appropriate	Grab	Twice Yearly
Priority Pollutants[4]	[4]	Grab	[9]

[1] Field Measurements.
[2] Concurrent with ammonia monitoring.
[3] Concurrent with ammonia monitoring.
[4] At a minimum the Discharger shall comply with the Monitoring Requirements for these constituents as outlined in Section 2.3 and 2.4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), adopted 2 March 2000 by the State Water Resources Control Board. For each priority pollutant use an analytical method from the SIP, Appendix 4 with a Minimum Level (ML) below all applicable pollutant criteria. In accordance with Section 2.4.2 of the SIP, the Discharger is to instruct the laboratory analyzing samples for priority pollutants to establish calibration standards so that the ML is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve. Report all peaks identified by the EPA test methods.
[5] Concurrent with metals monitoring.
[6] The acute bioassays samples shall be analyzed using EPA-821-R-02-012, Fifth Edition, or later amendment with Board staff approval. Temperature and pH shall be recorded at the time of bioassay sample collection. Test species shall be fathead minnows (Pimephales promelas).
[7] Discharger must submit report outlining sample collection, Analytical test methods, and detection limits within 60 days of permit adoption for approval. Report all peaks identified by the EPA test methods.
[8] Standard Minerals shall include pH, hardness, silica, calcium, magnesium, hardness, phosphate, sodium, potassium, bicarbonate alkalinity, carbonate alkalinity, sulfate, and chloride and include verification that the analysis is complete (i.e. cation/anion balance).
[9] Priority Pollutant monitoring to be conducted twice during the life of the permit.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed above, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge. In no event shall the Discharger be required to monitor and record data more often than twice the frequencies listed in the schedule.

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples and be collected only during time of discharge to surface waters. When discharge occurs to San Andreas Creek, the Discharger shall monitor receiving water stations R-1 and R-2. When discharge occurs to the Calaveras River, the Discharger shall monitor receiving water stations R-3 and R-4. Receiving water monitoring shall include:

Station	Description
R-1	100 feet upstream from the point of discharge in San Andreas Creek
R-2	500 feet downstream from the point of discharge in San Andreas Creek
R-3	100 feet upstream from the point of discharge in the Calaveras River
R-4	Downstream from the point of discharge in the Calaveras River, at defined edge of Mixing Zone

Constituents	**Units**	**Station**	**Sampling Frequency**
Flow	cfs or mgd	R-1 or R-3	Daily
Dilution Factor	River Flow/Effluent Flow	R-1 or R-3/Effluent	Daily
Dissolved Oxygen[1]	mg/L	R-1 and R-2 or R-3 and R-4	Weekly
Temperature[1]	°F	R-1 and R-2 or R-3 and R-4	Weekly
Electrical Conductivity @25°C[1]	µmhos/cm	R-1 and R-2 or R-3 and R-4	Weekly
pH[1,2]	pH Units	R-1 and R-2 or R-3 and R-4	Weekly
Turbidity	NTU	R-1 and R-2 or R-3 and R-4	Twice Monthly
Hardness, as CaCO3[5]	mg/L	R-1 or R-3	Twice Monthly
Fecal Coliform Organisms	MPN/100 ml	R-1 and R-2 or R-3 and R-4	Monthly
Ammonia (Total as N)	mg/L	R-1 and R-2 or R-3 and R-4	Monthly
Copper (Total) [4]	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
Zinc (Total) [4]	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
Dichlorbromomethane[4]	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
Bis(2-ethylhexyl) phthalate[4]	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
Nitrate + Nitrite	mg/L	R-1 and R-2 or R-3 and R-4	Monthly
Aluminum (Total)	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
Iron (Total)	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
Manganese (Total)	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
MBAS	µg/L	R-1 and R-2 or R-3 and R-4	Monthly
Diazinon[6]	µg/L	R-1 and R-2 or R-3 and R-4	Monthly

Constituents	Units [4]	Station	Sampling Frequency [7]
Priority Pollutants[4]		R-1/R-3	

[1] Field Measurements.
[2] Concurrent with ammonia monitoring.
[3] Concurrent with ammonia monitoring.
[4] At a minimum the Discharger shall comply with the Monitoring Requirements for these constituents as outlined in Section 2.3 and 2.4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), adopted 2 March 2000 by the State Water Resources Control Board. For each priority pollutant use an analytical method from the SIP, Appendix 4 with a Minimum Level (ML) below all applicable pollutant criteria. In accordance with Section 2.4.2 of the SIP, the Discharger is to instruct the laboratory analyzing samples for priority pollutants to establish calibration standards so that the ML is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve. Report all peaks identified by the EPA test methods.
[5] Concurrent with metals monitoring.
[6] Discharger must submit report outlining sample collection, Analytical test methods, and detection limits within 60 days of permit adoption for approval. Report all peaks identified by the EPA test methods.
[7] Priority Pollutant monitoring to be conducted twice during the life of the permit.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-1 and R-2 when discharging to San Andreas Creek, or R-3 and R-4 when discharging to the Calaveras River. Attention shall be given to the presence of:

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

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

THREE SPECIES CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to San Andreas Creek or the Calaveras River. The testing shall be conducted as specified in USEPA Method EPA-821-R-02-013, Fourth Edition, or later amendment. Chronic toxicity samples shall be collected at the outfall prior to its entering either San Andreas Creek or the Calaveras River. Grab samples shall be representative of the volume and quality of the discharge. Time of collection samples shall be recorded. The effluent tests must be conducted with concurrent reference toxicant tests. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days. Chronic toxicity monitoring shall include the following:

Species: *Pimephales promelas, Ceriodaphnia dubia, and Selenastrum capricornutum*
Frequency: Annually

The Discharger shall conduct the chronic toxicity test using two controls and a minimum of 5 effluent concentrations, using the dilution series listed below:

Dilution Series:	Dilutions (%)					Controls	
	100	50	25	12.5	6.25	Creek or River Water	Lab Water
% Effluent	100	50	25	12.5	6.25	0	0
% Dilution Water*	0	50	75	87.5	93.75	100	0
% Lab Water	0	0	0	0	0	0	100

* Dilution water shall be receiving water from San Andreas Creek or the Calaveras River taken upstream from the discharge point.

DISCHARGE TO LAND

The following shall constitute the minimum monitoring of effluent discharged to the Designated Land Disposal Area.

Constituents	**Units**	**Type of Sample**	**Sampling Frequency**
20°C BOD_5	mg/L	24 hr. Composite	Weekly
Settleable Solids	ml/L	Grab	Weekly
Total Coliform Organisms	MPN/100 mL	Grab	Weekly
Electrical Conductivity @25°C	µmhos/cm	Meter	Weekly
Flow to storage ponds	mgd	Meter	Continuous
Flow to disposal trenches	mgd	Meter	Daily

SLUDGE MONITORING

A composite sample of sludge shall be collected annually in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the following metals:

Cadmium	Copper	Nickel
Chromium	Lead	Zinc

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.

GROUNDWATER MONITORING

The Discharger shall conduct a groundwater-monitoring program to determine whether wastewater treatment and storage units are impacting underlying groundwater. Monitoring of the three groundwater-monitoring wells (1 up gradient and 2 down gradient) shall be initiated by **1 January 2004**, to assess the groundwater quality down gradient from the treatment plant, storage basins and wastewater disposal trenches, and shall include at least the following:

Constituents	**Units**	**Frequency**
Ground water elevation[1]	feet	Quarterly
Electrical conductivity	µmhos/cm	Quarterly
Total Dissolved Solids	mg/L	Semi-annually
pH	pH units	Quarterly
Total coliform organisms	MPN/ 100 ml	Semi-annually
Nitrate (as N)	mg/L	Semi-annually
Standard Minerals[2]	mg/L	Every odd year

[1] The groundwater elevation shall be used to calculate the direction and gradient of ground water flow, which must be reported.

[2] Standard Minerals shall include pH, hardness, silica, calcium, magnesium, hardness, phosphate, sodium, potassium, bicarbonate alkalinity, carbonate alkalinity, sulfate, and chloride and include verification that the analysis is complete (i.e. cation/anion balance).

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following:

Constituents	**Units**	**Sampling Frequency**
Standard Minerals[3]	mg/L	Annually[1]
Electrical Conductivity[2] @ 25°C	µmhos/cm	Annually
Total Dissolved Solids	mg/L	Annually

[1] Concurrent with effluent and receiving water samples.

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

[3] Standard Minerals shall include pH, hardness, silica, calcium, magnesium, hardness, phosphate, sodium, potassium, bicarbonate alkalinity, carbonate alkalinity, sulfate, and chloride and include verification that the analysis is complete (i.e. cation/anion balance).

REPORTING

Monitoring reports shall be submitted to the Regional Board by the **first day** of the second month following sample collection. Annual monitoring results shall be submitted by the **first day of the second month following each calendar year,** respectively.

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

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

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

a. The names, certificate grades, and general responsibilities of all persons employed at the WWTP (Standard Provision A.5).

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

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

d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

The Discharger may also be requested to submit an annual report to the Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

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

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

Ordered By: THOMAS R. PINKOS, Executive Officer

17 October 2003
(Date)

JME

INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2003-0151
SAN ANDREAS SANITARY DISTRICT
SAN ANDREAS WASTEWATER TREATMENT PLANT
CALAVERAS COUNTY

Site Description and Background

The San Andreas Sanitary District Wastewater Treatment Plant (WWTP) is a publicly owned and operated facility located in San Andreas, Calaveras County. The San Andreas Sanitary District was formed as a public agency in the early 1950's. The District includes all of San Andreas as well as some outside areas, encompassing approximately 1,260 acres. The WWTP provides sewer services to approximately 2,700 residents. There are approximately 1140 service connections, of which approximately 1000 are residential users and 140 are commercial users. No industries are connected to the system. San Andreas is the county seat of Calaveras County and experiences a substantial influx in population during the day because of the high school, government centers and tourism.

The District (hereafter Discharger) has made significant improvements to the treatment facilities in 1969 and in 1982, which were paid with public funds (Bonds) that are currently being repaid through monthly user fees and property taxes. Funds provided in a grant from the State Water Resources Control Board (SWRCB) in November 1992 were used for the rehabilitation of the headworks and the primary clarifier, and expansion of the trickling filter. These modifications were completed during the summer and fall of 1994. In 1994, grant funding from the State of California Small Community Grant Program was used to increase the WWTP's wet weather capacity. The Discharger's collection system was experiencing high inflow/infiltration during the wet weather in excess of the treatment plant capacity. State funding was used to construct bypass appurtenances above both the primary clarifier and trickling filter. Peak flows in excess of the treatment capacity of either treatment component may now be bypassed to an irrigation basin which was converted to a wet weather equalization holding basin. Excess wastewater is now stored during high flow events, and is pumped back to the headworks for treatment when excess influent flows subside.

The Discharger's collection system consists of approximately 18 miles of publicly owned sanitary sewer pipe ranging in size from 4 inches to 12 inches. The Discharger also maintains five lift stations. The current average dry weather flow to the treatment plant is approximately 0.3 million gallons per day (mgd). Actual peak influent flows have not exceeded 0.9 mgd since the Discharger completed various inflow/infiltration corrective actions in the 1990's. The Discharger has implemented a continuing sewer line preventative maintenance program, which includes video surveillance of the sewer lines and cleaning and repairs as necessary. The average dry weather flow capacity of the WWTP is currently 0.4 mgd. The design flow capacity of the main WWTP is 0.9 mgd. As currently configured, the design hydraulic capacity of the WWTP is 1.5 mgd (0.9 mgd in the main WWTP treatment train + 0.6 mgd in the peak flow treatment train).

Treatment Plant Description

The WWTP components include a grit removal chamber, mechanical screen (for solids removal) Parshall flume, flow metering, storm flow by-pass device for diverting excessive storm inflow to the high flow treatment system and storage reservoir, pre-aeration basin, primary clarifier, re-circulating trickling filter, secondary clarifier, sodium hypochlorite contact chamber, sodium bisulfite dechlorination unit, heated unmixed anaerobic digester, sludge drying beds, three post-secondary

effluent polishing ponds, and a 6 million gallon storage reservoir. A diesel power generator is on site and used in the event of electrical power loss. The Plant lay out and wastewater flow diagram is shown in Attachment A, a part of this Order.

Dry Season Discharge (1 May – 31 October)
Disposal of treated wastewater is accomplished exclusively to land from 1 May through 31 October of each year. The Discharger owns approximately 180 acres of land for disposal, known as the Dedicated Land Disposal Area (DLDA). Presently, the Discharger uses about 70 of those acres, as the other 110 acres were recently purchased and are currently unimproved land. The treated wastewater is first held in the effluent storage reservoir, then pumped to on-site evaporation, transpiration and percolation ditches. The disposal ditches have a total length of approximately two miles, and vary in depth from about 1.5 to 3.0 feet and in width from about 2 to 4 feet. Storm water run off, or excess effluent from the trenches is returned to the storage reservoir via a return ditch. Vegetation control in the DLDA is accomplished through prescribed burns by the local public fire agency.

Wet Season Discharge (1 November – 30 April)
From 1 November through 30 April, secondary treated effluent is discharged to the DLDA to the extent feasible. Treated effluent that cannot be discharged to land is currently discharged to San Andreas Creek, a tributary to Murray Creek, a tributary of the North Fork of the Calaveras River. Using the effluent polishing ponds for storage, the WWTP is capable of discharging up to a maximum of 1.5 mgd of treated effluent depending upon receiving water flows and considering the minimum 20:1 dilution requirement. Discharge to surface waters is prohibited during the period of 1 May through 31 October of each year.

The discharge to San Andreas Creek is disinfected secondary treated wastewater, which requires that adequate dilution water be available in the creek at the time of discharge. Previous Order No. 5-01-118 required the Discharger to install a stream gauge monitor in Murray Creek to assure that when discharges occur, the stream flows of the creek would provide at least a 20:1 (receiving water:effluent) dilution ratio. The Department of Health Services has recommended that discharges of secondary treated domestic wastewater, when not diluted by receiving water flows of at least 20:1, be tertiary treated to reduce the concentration of human pathogens.

In previous Order No. 5-01-118, the Discharger proposed moving the point of effluent discharge from San Andreas Creek, to Murray Creek, where it was expected that a larger watershed would provide for higher sustained flows and a consistent minimum 20:1 dilution ratio. After installing a stream gauge monitor on Murray Creek, the Discharger determined that moving the effluent discharge point downstream from San Andreas Creek to Murray Creek might not result in a consistent minimum 20 to 1 dilution of receiving water to effluent recommended by the California Department of Health Services. The Discharger subsequently completed studies to evaluate all available effluent disposal options. In the February 2003 Effluent Disposal Options Assessment Report, the Discharger considered reclamation, land disposal, winter only surface water discharge, and year-round surface water discharge options. Results of this report indicate viable reclamation alternatives do not exist, and the complete containment of wastewater on land during typical wet winters is infeasible. Considering these findings, and the location of the WWTP in the rolling hills of the Sierra Foothills, this Report concluded that dry

season land disposal, combined with maximizing winter land disposal supplemented with a winter surface water discharge was the superior option with regards to public health, the environment, and economics. For the wet season surface water discharge portion of this option, the Discharger determined that moving the point of effluent discharge downstream in the watershed, to the confluence of Murray Creek and the North Fork of the Calaveras River, would provide a consistent minimum dilution of 20 to 1 throughout the wet season period of discharge. The Discharger has proposed moving the discharge location from San Andreas Creek to the Calaveras River 1 November 2004. The Discharger has also proposed that the water will enter the Calaveras River via a 'cross river diffuser'.

A California Environmental Quality Act (CEQA) Mitigated Negative Declaration was prepared by the Discharger in support of the proposal to move the point of effluent discharge downstream to the Calaveras River. This Mitigated Negative Declaration was approved by the Lead Agency (the Discharger) on 19 March 2003. The Discharger has filed the Notice of Determination with the County Clerk and Office of Planning and Research.

Beneficial Uses

Calaveras River

The existing **beneficial uses** of the Calveras River, from its source to New Hogan Reservoir, as identified in Table II-1 of the Basin Plan include; body contact recreation, canoeing and rafting, (REC-1); and other non-body contact recreation (REC-2); warm freshwater aquatic habitat (WARM); cold freshwater aquatic habitat (COLD); migration of aquatic organisms (MIGR) in warm habitat, warm and cold habitat spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). Agricultural supply (AGR) including both irrigation and stock watering, is not identified in Table II-1 of the Basin Plan as an existing beneficial use of the Calaveras River. However, active water rights permits (stockwatering), have been identified downstream of the point of discharge along Murray Creek and the North Fork Calveras River. The Regional Board is required to apply the beneficial uses of municipal and domestic supply to the Calaveras River based on SWRCB Resolution No. 88-63 which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, provides that "*Where a a body of water is not currently designated as MUN* (municipal and domestic supply beneficial use) *but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation*. " Based upon ambient receiving water data collected by the Discharger, the North Fork Calveras River, from its source to New Hogan Reservoir, is suitable for MUN, therefore the MUN use is also designated as a beneficial use of this water body. Also, the State Water Resources Control Board (State Board) maintains an active water rights permit for domestic and irrigation supply use from New Hogan Reservoir, downstream of the discharge.

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

San Andreas Creek/Murray Creek
The Basin Plan at page II-2.00 states that: "Existing and potential beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for San Andreas or Murray Creek, but the Basin Plan does identify existing beneficial uses for the Calaveras River, as noted above, to which they are tributary.

In reviewing what existing beneficial uses that may apply to San Andreas Creek and Murray Creek, the Regional Board has considered the following facts:

a. *Domestic, Municipal, and Agricultural Irrigation Supply*

The Regional Board is required to apply the beneficial uses of municipal and domestic supply to San Andreas Creek and Murray Creek based on SWRCB Resolution No. 88-63 which was incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056. The State Water Resources Control Board (SWRCB) has issued water rights permits to existing water users along Murray Creek and the Calaveras River downstream of the discharge for domestic and irrigation uses. Since San Andreas Creek and Murray Creek are ephemeral streams, the creeks likely provide groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in San Andreas Creek and Murray Creek.

b. *Groundwater Recharge*

In areas where groundwater elevations are below the stream bottoms, water from the streams will percolate to groundwater. Since San Andreas Creek and Murray Creek are at times almost dry, it is reasonable to assume that the stream water is lost by evaporation, flow downstream and percolation to groundwater thereby providing a source of domestic, municipal, and irrigation water supply.

c. *Freshwater Replenishment*

When water is present in San Andreas Creek and Murray Creek, there is hydraulic continuity between San Andreas Creek, Murray Creek and the Calaveras River. During periods of hydraulic continuity, San Andreas and Murray Creeks add to the water quantity and may impact the quality of water flowing downstream in the Calaveras River.

d. *Water Contact and Non-Contact Recreation and Esthetic Enjoyment*

The Regional Board finds that the discharge flows through areas where there is ready public access to San Andreas and Murray Creek. Exclusion of the public is unrealistic and contact recreational activities currently exist along the creeks. These uses are likely to increase as the population in the area grows.

e. *Preservation and Enhancement of Fish, Wildlife and Other Aquatic Resources.*

San Andreas Creek and Murray Creek flow to the Calaveras River. The California Department of Fish and Game (DFG) has verified that the fish species present in San Andreas and Murray Creeks and downstream waters are consistent with both cold and warm water fisheries, and that a cold water species has been found both upstream and downstream of the wastewater treatment plant. The Basin Plan (Table II-1) designates the Calaveras River source to New Hogan Reservoir, as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to San Andreas and Murray Creeks. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l. This approach recognizes that, if the naturally occurring in-stream dissolved oxygen concentration is below 7.0 mg/l, the Discharger is not required to improve the naturally occurring level.

Upon review of the flow conditions, habitat values, existing and potential beneficial uses of the Calaveras River, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Calaveras River, from it's source to New Hogan Reservoir, are applicable to San Andreas Creek and Murray Creek. In addition, beneficial uses not specifically identified in the Basin Plan, as indicated above, exist or potentially exist in San Andreas Creek and Murray Creek and must be protected.

The Board also finds that based on the available information and on the Discharger's application, that San Andreas Creek and Murray Creek, absent the discharge, are at times ephemeral streams. At other times, natural flows within San Andreas Creek and Murray Creek help support the cold-water aquatic life. Both conditions may exist within a short time span, where the Creeks would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Calaveras River. Dry conditions occur primarily in the summer months, but dry conditions, and low flow conditions, may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water-related uses, agricultural water uses, and aquatic life. Significant dilution may occur during and immediately following high rainfall events.

New Information- CTR/NTR and Other Pollutants

On 10 September 2001 the Executive Officer of the Regional Board issued a letter pursuant to Section 13267 of the California Water Code (CWC) requiring all NPDES Dischargers to conduct effluent and receiving water monitoring and submit results of this monitoring in accordance with a time schedule provided in the letter. The Discharger conducted a study to determine whether levels of NTR, CTR, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives. Results of this study were submitted in March 2003 with the new Report of Waste Discharge (RWD) that proposed moving the point of discharge to the Calaveras River.

Consideration of Effluent and Receiving Water Limitations

Evaluation of Dilution Credit

San Andreas Creek/Murray Creek
While the Discharger has proposed moving the point of effluent discharge downstream to the Calaveras River, extension of the pipeline and completion of the project will not be complete until at least November 2004. Until that time, the Discharger will continue to discharge treated effluent during the wet season at the historical location in San Andreas Creek. Only limited information regarding flows in San Andreas Creek or Murray Creek is available, and no information is available regarding critical flow conditions or flow conditions during extended dry periods. Limited flow data from Murray Creek indicates that a consistent 20:1 dilution ratio cannot be maintained during all flow conditions. Considering the limited watershed supporting San Andreas Creek and Murray Creek, it is likely that flows during a dry fall/winter period could be negligible. Considering these conditions, and given the new information on pollutant concentrations in the effluent, the reasonable potential analysis for pollutants in the effluent discharged to San Andreas Creek, and the development of associated effluent limitations, was accomplished considering no credit for dilution.

Previous Order No. 5-01-118 included a time schedule requiring tertiary treatment of any effluent discharged that does not receive 20:1 dilution by **1 April 2006**. This Order retains that time schedule.

Calaveras River
This Order requires a minimum dilution ratio of 20:1 (receiving water to effluent) for the discharge of treated secondary effluent to the Calaveras River. Development and consideration of dilution credits in establishing and determining compliance with water quality-based effluent limitations for priority pollutants is described in Section 1.4.2. of the SIP. Dilution credit, mixing zones and mixing zone analyses methods are also presented in Section 2 and Section 4 of the TSD. Considering minimum dilution ratio of 20:1 required by this Order, a maximum dilution credit of 20 has been used in accomplishing the reasonable potential analysis and developing effluent limitations where appropriate.

As the outfall and diffuser configuration and design have not been completed, the Discharger shall be required, prior to commencing the discharge, to conduct a *Dilution/Mixing Zone Study* to verify complete mixing of the discharge and characterize the extent of actual dilution. Points in the receiving water where the applicable criteria/objective shall be met must also be defined in this study. This Order may be reopened if the study indicates the discharge is not completely mixed, or if site specific conditions concerning the discharge and the receiving water indicate that a smaller dilution credit is necessary to protect beneficial uses and meet the conditions of the SIP. This study shall be completed prior to discharge from the new outfall to the Calaveras River.

Concerning mixing zones, the SIP provides that a mixing zone shall be as small as practicable, and "*The following conditions shall be met in allowing a mixing zone:*

A. A mixing zone shall not:
(1) compromise the integrity of the entire waterbody;

(2) cause acutely toxic conditions to aquatic life passing through the mixing zone;
(3) restrict the passage of aquatic life
(4) adversely impact biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws;
(5) produce undesirable or nuisance aquatic life;
(6) result in floating debris, oil, or scum;
(7) produce objectionable color, odor, taste, or turbidity;
(8) cause objectionable bottom deposits;
(9) cause nuisance;
(10) dominate the receiving water body or overlap a mixing zone from different outfalls; or
(11) be allowed at or near any drinking water intake.. "

Considering these conditions, where applicable, maximum daily effluent limitations have been developed for discharge to the Calaveras River considering acute criteria, an acute waste load allocation, and no dilution credit, to prevent acutely toxic conditions at the point of discharge. Also where applicable, average monthly effluent limitations have been developed considering chronic criteria, a chronic wasteload allocation, and available dilution.

Consideration of Technology Based Effluent Limitations/Previous Permit Limits

Conventional Pollutants- Biochemical Oxygen Demand (BOD), Total Suspended Solids (TSS)
Technology-based treatment requirements under section 301(b) of the CWA represent the minimum level of control that must be imposed in a permit issued under section 402 of the CWA. Regulations promulgated at 40 CFR 122.44 (a) require technology-based effluent limitations to be placed in NPDES permits based on national effluent limitations guidelines and standards, best professional judgment (BPJ), or a combination of the two.

40 CFR Part 133 provides information on the level of effluent quality attainable through the application of secondary of equivalent treatment. 40 CFR Part 133.102 describes the minimum level of effluent quality attainable in terms of the parameters for biochemical oxygen demand (BOD), suspended solids (SS), and pH.

	BOD (mg/l)	**Suspended Solids (mg/l)**
30 Day Average	30	30
7 Day Average	45	45
30 Day Average % Removal	85%	85%

Effluent pH shall be maintained between 6.0 and 9.0

Results of monitoring indicate the Discharger is capable of meeting these limitations. Effluent limitations for these conventional pollutants using these levels of effluent quality established in 40 CFR Part 133.102 have been retained in the Order.

Disinfection
Previous Order No. 5-01-118 included an effluent limitation for total coliform, with a total coliform count not to exceed 23 MPN (Most Probable Number)/100 ml (milliliters) as a monthly median limitation, and 230 MPN/100ml as a daily maximum, with 20:1 dilution. These limitations were established considering recommendations from the California Department of Health Services. Beneficial uses of the Calaveras River, San Andreas Creek, and Murray Creek include body contact recreation (REC-1) and other non-contact recreation (REC-2), and public access is not restricted up or downstream in the vicinity of the discharge. Other beneficial uses include agricultural supply (AGR) and municipal and domestic supply (MUN). The limitations of Order No. 5-01-118 are retained in this new Order. As noted previously, limited flow information from San Andreas Creek and Murray Creek indicate there may be instances where the dilution ratio falls below 20:1. As noted previously, this Order includes a time schedule requiring tertiary treatment of any effluent discharged that does not receive 20:1 dilution by 1 April 2003.

Consideration of Water Quality-Based Effluent Limitations
Federal regulations, 40 CFR Part 122.44 (d)(1)(i), require that NPDES permit effluent limitations must control all pollutants which are or may be discharged at a level which will cause or have the reasonable potential to cause or contribute to an in-stream excursion above any State water quality standard, including any narrative criteria for water quality. Beneficial uses, together with their corresponding water quality objectives or promulgated water quality criteria, can be defined per federal regulations as water quality standards.

The Porter Cologne Water Quality Control Act defines water quality objectives as *"…the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area*". Water quality objectives designed to protect beneficial uses and prevent nuisances are found in the Basin Plan, and may be stated in either numerical or narrative form.

In determining whether a discharge has the reasonable potential to contribute to an in-stream excursion, the dilution of the effluent in the receiving water may be considered where areas of dilution are defined. The available dilution may also be used to calculate protective effluent limitations by applying water quality criteria at the edge of the defined mixing zone. These calculations include receiving water pollutant concentrations which are typically based on worst-case conditions for flow and concentration.

If limited or no dilution is available, effluent limitations are set equal to the applicable water quality objective or criteria which are applied at the point of discharge so the discharge will not cause the receiving stream to exceed water quality objectives or promulgated criteria established to protect the beneficial uses. In situations where receiving water flows are substantially greater than effluent flows, as is required for the discharge to the Calaveras River, dilution may be considered in establishing effluent limitations. However, when a receiving water is impaired by a particular pollutant or stressor, limited or no pollutant assimilative capacity may be available in spite of the available dilution. In these instances, and depending upon the nature of the pollutant, effluent limitations may be set equal to or less than the applicable water quality objectives or criteria which are applied at the point of discharge such that the discharge will not cause or contribute to the receiving stream excursion above water quality

objectives or promulgated criteria established to protect the beneficial uses. At this time, the characteristics of the effluent and receiving water mixing zone in the Calaveras River have not been fully defined.

Priority Pollutants
Section 1.3 of the SIP requires a water quality based effluent limitation when the maximum effluent concentration (MEC) or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion. Based upon the study conducted by the Discharger, the MEC's of copper, zinc, dichlorobromomethane, and bis(2-ethylhexyl) phthalate have exceeded applicable pollutant criteria of the CTR/NTR. Therefore, water quality-based effluent limitations for these pollutants are required.

When required, Section 1.4 of the SIP provides four methods that may be used to develop effluent limitations. These four methods include: (1) assigning a loading allocation based upon a completed TMDL; (2) use of a steady state model; (3) use of a dynamic model; or, (4) establishing effluent limitations that consider intake water pollutants.

Water quality-based effluent limitations have been developed in this Order using the steady state model described in Section 1.4 of the SIP and the TSD. Since the discharge is permitted only under conditions of a minimum of 20:1 dilution, development of these limitations has, where applicable, considered dilution of the receiving water for pollutants with demonstrated assimilative capacity.

Data Adjustments
In most situations, USEPA's NPDES regulations require that limits for metals in permit's be stated as total recoverable. Since most water quality criteria are expressed in the dissolved form, it is necessary to translate between dissolved metal in ambient waters and total recoverable metal in effluent. USEPA guidance on the use of translators provides three options including, (1) assuming the translator equivalent to the criteria guidance conversion factor, (2) developing a translator directly as the ratio of dissolved to total recoverable metal, and/or, (3) developing a translator through the use of a partioning coefficient. Reasonable potential analysis for this permit was conducted using the first option, applying criteria guidance conversion factors. To assure that metals criteria are appropriate for the chemical conditions under which they are applied, USEPA also provides for adjustment of the criteria through application of the water-effect ratio (WER). The WER approach compares bioavailability and toxicity of a specific pollutant in receiving waters and in laboratory waters. For this permit, reasonable potential analysis was conducted using a WER default value of 1.

Effluent Limitations, CTR/NTR Aquatic Life Criteria

Copper
In studies conducted by the Discharger, the MEC for total copper was reported as 35 µg/L (ppb). The minimum hardness of the effluent was reported as 68 mg/L (ppm) hardness as CaCO3. This MEC exceeds the adjusted freshwater aquatic life water quality acute (Criterion Maximum Concentration, CMC) and chronic (Criterion Continuous Concentration, CCC) criteria for copper established in the USEPA's California Toxics Rule (9.7 µg/L (ppb) and 6.7 µg/L (ppb), respectively at 68 mg/L hardness

as CaCO3). As noted above, Section 1.3 of the SIP requires water quality-based effluent limitations when the maximum effluent concentration (MEC) or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion.

The maximum observed ambient background concentration (B) of total copper in the Calaveras River was reported as 1.8 µg/L (ppb), with a minimum observed ambient background hardness reported as 60 mg/L (as CaCO3). Considering the total copper adjusted freshwater aquatic life acute and chronic criteria at 60 mg/L hardness are 8.7 µg/L (ppb) and 6.0 µg/L (ppb) respectively, the data indicate that the Calaveras River does have assimilative capacity for copper.

To prevent acutely toxic conditions at the point of discharge to the Calaveras River and in the zone of initial dilution, a table expressing the maximum daily effluent limitation (MDEL) has been developed for copper considering the acute aquatic life criterion (CMC) without consideration of dilution. In accordance with Section 1.4 of the SIP, the acute effluent concentration allowance (ECA) shall be set equal to the CMC, adjusted using the observed corresponding effluent hardness. Effluent hardness is used in lieu of the receiving water hardness for the adjustment of the CMC since no credit was provided for dilution. As the number of data points for the calculation is less than 10, a default coefficient of variation (CV) of 0.6 shall be used in the calculation until sufficient data is collected. The MDEL shall be calculated using the CV and the multipliers in Tables 1 and 2 of the SIP as shown below:

WATER QUALITY -BASED MDEL- Calaveras River	
Copper (Total)	
ECA acute	CMC @ Observed Effluent Hardness as CaCO3
Coefficient of Variation (Default)	0.6
LTA (acute)	(ECA acute *Table 1 Acute Multiplier)
Sampling Frequency (n)	≤ 4
MDEL	(LTA*Table 2 MDEL Multiplier)

Attachment D provides an example of calculated MDEL's for copper based upon a range of effluent hardness values.

The average monthly effluent limitation (AMEL) has been developed considering the chronic aquatic life criterion (CCC) for copper and a dilution credit of 20. In accordance with Section 1.4 of the SIP, the C (priority pollutant criterion) shall be set equal to the CCC, adjusted using the observed ambient background, receiving water hardness. The ECA shall be calculated using the formula ECA = C + D(C – B) where C represents the adjusted chronic copper criterion, D represents the dilution credit, and B represents the maximum observed ambient background concentration. As the number of data points for the calculation is less than 10, a default CV of 0.6 shall be used until sufficient data is collected. The AMEL shall then be calculated using the CV and the multipliers in Tables 1 and 2 of the SIP as shown below:

WATER QUALITY -BASED AMEL- Calaveras River	
Copper (Total)	
C (chronic pollutant criterion)	CCC @ Observed Receiving Water Hardness as CaCO3
D	Dilution Credit = 20
B	Maximum observed background concentration
ECA chronic	C + D(C – B)
Coefficient of Variation (Default)	0.6
LTA (chronic)	(ECA chronic *Table 1 Chronic Multiplier)
Sampling Frequency (n)	≤ 4
AMEL	(LTA*Table 2 AMEL Multiplier)

Attachment D provides an example of calculated AMEL's for copper based upon a range of receiving water hardness values.

For discharge to San Andreas Creek, an AMEL and MDEL have been developed for copper considering the critical ECA, and no dilution credit. Since a site-specific translator has not been developed for copper as described in the SIP Section 1.4.1, the USEPA conversion factor was used in expressing the dissolved copper criterion as total recoverable. Acute and chronic effluent concentration allowance's (ECA's) shall be set equal to the adjusted acute and chronic copper criterion (criterion adjusted based upon observed receiving water hardness), and the most limiting long-term average (LTA) discharge condition for copper determined using Table 1 of the SIP, using a default CV of 0.6. The AMEL and MDEL shall then be calculated using a steady state model (with no dilution credit) this CV and the multipliers in Table 2 of the SIP as shown in the example below which uses an observed receiving water hardness of 60 mg/L (as CaCO3):

WATER QUALITY BASED MDEL and AMEL- San Andreas Creek	
Copper (Total)	
Number of Observations	3
Effluent Maximum	35
Dilution Credit	0
ECA acute (@ 60 mg/L (ppm) hardness as CaCO3)	8.7 µg/L
ECA chronic (@ 60 mg/L (ppm) hardness as CaCO3)	6.0 µg/L
Coefficient of Variation (Default)	0.6
LTA acute	2.8
LTA chronic	3.2
Limiting LTA (acute) = (ECA acute *Table 1 Acute Multiplier)	2.8
Sampling Frequency (n)	≤ 4/mo
AMEL (LTA*Table 2 AMEL Multiplier)	**4.3 µg/L (ppb)**
MDEL (LTA*Table 2 MDEL Multiplier)	**8.7 µg/L (ppb)**

Using these calculations, a final AMEL of 4.3 µg/L (ppb) and MDEL of 8.7 µg/L (ppb) for copper (total) would result at an observed receiving water hardness of 60 mg/L (as CaCO3) in accordance with Sections 1.3 and 1.4 of the SIP using the adjusted copper criteria. The final AMEL and MDEL in this Order are to be adjusted accordingly with results of corresponding receiving water monitoring for upstream receiving water hardness as shown in Attachment C.

The Discharger cannot currently meet these limitations, whether discharging to San Andreas Creek, or the Calaveras River. The Discharger has no processes specific to the removal of copper. 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*." As the average monthly and maximum daily effluent limitations for copper are new requirements in this Order, the Discharger has not been afforded an opportunity to submit the compliance schedule justification required by the SIP (Section 2.1). This Order requires the Discharger to provide this information. Implementation of the new water quality based effluent limitations for copper become effective on **17 December 2003** if a compliance schedule justification is not completed and submitted by the Discharger to the Board. If a compliance schedule justification is completed and submitted by this date, the final water quality based effluent limitations for copper become effective **1 October 2008**, and this Order includes a Provision outlining studies and a time schedule for compliance with the new final effluent limitations for copper.

In accordance with the SIP, Sections 2.2.1 and 2.2.2, a numeric interim limitation for copper has been established in this Order based upon current facility performance. As shown below, this interim limitation consists of a projected monthly average effluent total copper concentration of 105 µg/L (ppb) derived using available effluent copper data (three data points), and applying the statistical methodologies for estimating maximum concentrations identified in Chapter 3 of USEPA's Technical Support Document for Water Quality-based Toxics Control (TSD, 1991). Derivation of this interim copper limitation is summarized below:

INTERIM EFFLUENT LIMITATION	
Copper (total)	
Number of Observations	3
Minimum (µg/L, ppb)	17
Observed Maximum (µg/L, ppb)	***35***
Coefficient of Variation (Default)	0.6
Multiplier[1]	3.0
Projected Monthly Average	**105 (µg/L, ppb)**

[1] From TSD Table 3-2

This Order includes new monitoring requirements for copper. The Order may be reopened to include a new interim effluent limitation for copper after additional effluent data have been collected.

Zinc

In studies conducted by the Discharger, the MEC for total zinc was reported as 170 µg/L (ppb). The minimum hardness of the effluent was reported as 68 mg/L (ppm) hardness as CaCO3. This MEC exceeds the adjusted freshwater aquatic life water quality acute CMC and chronic CCC criteria for zinc established in the USEPA's CTR (86 µg/L (ppb) and 86 µg/L (ppb), respectively at 68 mg/L hardness as CaCO3). As noted above, Section 1.3 of the SIP requires water quality-based effluent limitations when the MEC or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion.

The maximum observed ambient background concentration (B) of total zinc in the Calaveras River was reported as < 0.5 µg/L (ppb), with a minimum observed ambient background hardness reported as 60 mg/L (as CaCO3). Considering the total zinc adjusted freshwater aquatic life acute and chronic criteria at 60 mg/L hardness are 78 µg/L (ppb) and 78 µg/L (ppb) respectively, the data indicate that the Calaveras River does have assimilative capacity for zinc.

To prevent acutely toxic conditions at the point of discharge and in the zone of initial dilution, a table expressing the MDEL has been developed for zinc considering the acute aquatic life criterion (CMC) without consideration of dilution. In accordance with Section 1.4 of the SIP, the acute effluent concentration allowance (ECA) shall be set equal to the CMC, adjusted using the observed corresponding effluent hardness. Effluent hardness is used in lieu of the receiving water hardness for the adjustment of the CMC since no credit was provided for dilution. As the number of data points for the calculation is less than 10, a default coefficient of variation (CV) of 0.6 shall be used in the calculation until sufficient data is collected. The MDEL shall be calculated using the CV and the multipliers in Tables 1 and 2 of the SIP as shown below:

WATER QUALITY -BASED MDEL- Calaveras River	
Zinc (Total)	
ECA acute	CMC @ Observed Effluent Hardness as CaCO3
Coefficient of Variation (Default)	0.6
LTA (acute)	(ECA acute *Table 1 Acute Multiplier)
Sampling Frequency (n)	≤ 4
MDEL	(LTA*Table 2 MDEL Multiplier)

Attachment F provides an example of calculated MDEL's for zinc based upon a range of effluent hardness values.

The AMEL has been developed considering the chronic aquatic life criterion (CCC) for zinc and a dilution credit of 20. In accordance with Section 1.4 of the SIP, the C (priority pollutant criterion) shall be set equal to the CCC, adjusted using the observed ambient background, receiving water hardness. The ECA shall be calculated using the formula ECA = C + D(C – B) where C represents the adjusted chronic zinc criterion, D represents the dilution credit, and B represents the maximum observed ambient background concentration. As the number of data points for the calculation is less than 10, a default CV of 0.6 shall be used until sufficient data is collected. The AMEL shall then be calculated using the CV and the multipliers in Tables 1 and 2 of the SIP as shown below:

WATER QUALITY -BASED AMEL- Calaveras River	
Zinc (Total)	
C (chronic pollutant criterion)	CCC @ Observed Receiving Water Hardness as CaCO3
D	Dilution Credit = 20
B	Maximum observed background concentration
ECA chronic	C + D(C – B)
Coefficient of Variation (Default)	0.6
LTA (chronic)	(ECA chronic *Table 1 Chronic Multiplier)
Sampling Frequency (n)	≤ 4
AMEL	(LTA*Table 2 AMEL Multiplier)

Attachment F provides an example of calculated AMEL's for zinc based upon a range of receiving water hardness values.

For discharge to San Andreas Creek, an AMEL and MDEL have been developed for zinc considering the critical ECA, and no dilution credit. Acute and chronic effluent concentration allowance's (ECA's) shall be set equal to the adjusted acute and chronic zinc criterion (criterion adjusted based upon observed receiving water hardness), and the most limiting long-term average (LTA) discharge condition for zinc determined using Table 1 of the SIP, using a default CV of 0.6. The AMEL and MDEL shall then be calculated using a steady state model (with no dilution credit) this CV and the multipliers in Table 2 of the SIP as shown in the example below which uses an observed receiving water hardness of 60 mg/L (as CaCO3):

WATER QUALITY BASED MDEL and AMEL- San Andreas Creek	
Zinc (Total)	
Number of Observations	3
Effluent Maximum	170
Dilution Credit	0
ECA acute (@ 60 mg/L (ppm) hardness as CaCO3)	78 µg/L
ECA chronic (@ 60 mg/L (ppm) hardness as CaCO3)	78 µg/L
Coefficient of Variation (Default)	0.6
LTA acute	25
LTA chronic	41
Limiting LTA (acute) = (ECA acute *Table 1 Acute Multiplier)	25
Sampling Frequency (n)	≤ 4/mo
AMEL (LTA*Table 2 AMEL Multiplier)	**39 µg/L (ppb)**
MDEL (LTA*Table 2 MDEL Multiplier)	**78 µg/L (ppb)**

Using these calculations, a final AMEL of 39 µg/L (ppb) and MDEL of 78 µg/L (ppb) for zinc (total) would result at an observed receiving water hardness of 60 mg/L (as CaCO3) in accordance with Sections 1.3 and 1.4 of the SIP using the adjusted zinc criteria. These final limitations are to be adjusted accordingly with results of corresponding receiving water monitoring for upstream receiving water hardness as shown in Attachment E.

The Discharger cannot currently meet these limitations whether discharging to San Andreas Creek or the Calaveras River. The Discharger has no processes specific to the removal of zinc. 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*." As the average monthly and maximum daily effluent limitations for zinc are new requirements in this Order, the Discharger has not been afforded an opportunity to submit the compliance schedule justification required by the SIP (Section 2.1). This Order requires the Discharger to provide this information. Implementation of the new water quality based effluent limitations for zinc become effective on **17 December 2003** if a compliance schedule justification is not completed and submitted by the Discharger to the Board. If a compliance schedule justification is completed and submitted by this date, the final water quality based effluent limitations for zinc become effective **1 October 2008**, and this

Order includes a Provision outlining studies and a time schedule for compliance with the new final effluent limitations for zinc.

In accordance with the SIP, Sections 2.2.1 and 2.2.2, a numeric interim limitation for zinc has been established in this Order based upon current facility performance. As shown below, this interim limitation consists of a projected monthly average effluent total zinc concentration of 510 µg/L (ppb) derived using available effluent zinc data (three data points), and applying the statistical methodologies for estimating maximum concentrations identified in Chapter 3 of USEPA's TSD. Derivation of this interim zinc limitation is summarized below:

INTERIM EFFLUENT LIMITATION	
Zinc (total)	
Number of Observations	3
Minimum (µg/L, ppb)	98
Observed Maximum (µg/L, ppb)	***170***
Coefficient of Variation (Default)	0.6
Multiplier[1]	3.0
Projected Monthly Average	**510 (µg/L, ppb)**

[1] From TSD Table 3-2

This Order includes new monitoring requirements for zinc. The Order may be reopened to include a new interim effluent limitation for zinc after additional effluent data have been collected.

Effluent Limitations, CTR/NTR Human Health Criteria
As noted in the Order findings, the MUN beneficial use applies to San Andreas Creek, Murray Creek, and the Calaveras River. Section 1.1 of the SIP states in part that "*Designated beneficial uses to which human health criteria/objectives would apply include… municipal and domestic supply (MUN) and water contact recreation (REC 1). Human health criteria/objectives are differentiated by whether organisms alone from the water body are consumed compared to whether both organisms and water from the water body are consumed. Where MUN is designated, the latter situation applies*."

Dichlorobromomethane
A human health criterion for dichlorobromomethane of 0.56 µg/L (ppb), for consumption of both water and organisms, was established in the CTR. In studies conducted by the Discharger, the MEC for dichlorobromomethane was reported as 0.7 µg/L (ppb). This MEC exceeds the human health criterion for dichlorobromomethane established in the CTR. Section 1.3 of the SIP requires water quality-based effluent limitations when the MEC or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion.

The maximum observed ambient background concentration (B) of dichlorobromomethane in the Calaveras River was reported as < 0.46 µg/L (ppb). Considering this result assimilative capacity for dichlorobromomethane exists within the Calaveras River.

For discharge to the Calaveras River, an AMEL was developed considering the human health criterion for dichlorobromomethane and a dilution credit of 20 (minimum dilution ratio for discharge to the

Calaveras River). In accordance with Section 1.4 of the SIP, the C (priority pollutant criterion) was set equal to the human health criterion. The ECA was calculated using the formula ECA = C + D(C – B) where C represents the human health criterion, D represents the dilution credit, and B represents the ambient background arithmetic mean concentration (for pollutant criterion intended to protect human health from carcinogenic effects). Since the discharge to the Calaveras River occurs only under conditions of a minimum of 20 to 1 dilution (receiving water : effluent), a dilution credit of 20 was used in the ECA calculation. Concerning calculation of the arithmetic mean concentration (B), Section 1.4.3.2 of the SIP states: "*If all samples are below the reported detection limits, the ambient background concentration shall be set equal to the lowest of the individual reported detection limits*". Since results of both ambient background samples for dichlorbromomethane were less than detection limits, the lowest individual reported detection limit was used in the calculation (< 0.20 µg/L (ppb). In accordance with Section 1.4 of the SIP, the AMEL for dichlorbromomethane was then set equal to the calculated ECA. The MDEL for dichlorobromomethane was then calculated by multiplying the ECA by the ration of the MDEL multiplier to the AMEL multiplier using a default CV of 0.6, and a sampling frequency (n) of ≤ 4. These AMEL and MDEL calculations are summarized below:

WATER QUALITY -BASED AMEL and MDEL- Calaveras River	
Dichlorobromomethane	
C	Human health criterion (0.56 µg/L)
B	Arithmetic mean background concentration (0.20 µg/L)
D	Dilution Credit = 20
ECA = C + D(C – B)	ECA = 0.56 + 20(0.56 – 0.2) = 7.8 µg/L
AMEL = ECA	**7.8 µg/L**
Coefficient of Variation (Default)	0.6
Sampling Frequency (n)	≤ 4
MDEL = ECA (MDEL/AMEL multiplier)	7.8 (2.01) = **15.5 µg/L**

These water quality-based effluent limitations are substantially higher than the reported MEC of 0.7 µg/L (ppb). Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using the calculated AMEL and MDEL. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for dichlorobromomethane is needed prior to establishing a final effluent limitation for the discharge to the Calaveras River.

Concerning calculation of final effluent limitations for dichlorobromomethane, the SIP provides in Section 1.4 that "*If data are insufficient to calculate the effluent limitation, the RWQCB shall establish interim requirements in accordance with Section 2.2.2.*"

This Order includes a time schedule for the Discharger to collect sufficient information for the calculation of final effluent limitations prior to discharge to the Calaveras River. Pursuant to Section 2.2.1 of the SIP, the water quality to be achieved includes prevention of toxic conditions in the Calaveras River as a result of the discharge, and the maintenance of the highest quality water consistent with the maximum benefit to the people of the State. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because

insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for dichlorobromomethane as enforceable limitations.

For discharge to San Andreas Creek, an AMEL was developed considering the human health criterion for dichlorobromomethane and no dilution credit. In accordance with Section 1.4 of the SIP, the ECA was set equal to the C (priority pollutant criterion), and the AMEL was then set equal to the ECA. The MDEL for dichlorobromomethane was calculated by multiplying the ECA by the ration of the MDEL multiplier to the AMEL multiplier using a default CV of 0.6, and a sampling frequency (n) of $\leq$ 4. These AMEL and MDEL calculations are summarized below:

WATER QUALITY -BASED AMEL and MDEL- San Andreas Creek	
Dichlorobromomethane	
C	Human health criterion (0.56 µg/L)
ECA = C	ECA = 0.56 µg/L
AMEL = ECA	**0.56 µg/L**
Coefficient of Variation (Default)	0.6
Sampling Frequency (n)	$\leq$ 4
MDEL = ECA (MDEL/AMEL multiplier)	0.56 (2.01) = **1.1 µg/L**

The Discharger cannot currently meet these limitations when discharging to San Andreas Creek. The Discharger has no processes specific to the removal of dichlorobromomethane. 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*." As the average monthly and maximum daily effluent limitations for dichlorobromomethane are new requirements in this Order, the Discharger has not been afforded an opportunity to submit the compliance schedule justification required by the SIP (Section 2.1). This Order requires the Discharger to provide this information. Implementation of the new water quality based effluent limitations for dichlorobromomethane become effective on **17 December 2003** if a compliance schedule justification is not completed and submitted by the Discharger to the Board. If a compliance schedule justification is completed and submitted by this date, the final water quality based effluent limitations for dichlorobromomethane become effective **1 October 2008**, and this Order includes a Provision outlining studies and a time schedule for compliance with the new final effluent limitations for dichlorobromomethane.

In accordance with the SIP, Sections 2.2.1 and 2.2.2, a numeric interim limitation for dichlorobromomethane has been established in this Order based upon current facility performance. As shown below, this interim limitation consists of a projected AMEL dichlorobromomethane concentration of 2.1 µg/L (ppb) derived using available effluent dichlorobromomethane data (three data points), and applying the statistical methodologies for estimating maximum concentrations identified in Chapter 3 of USEPA's Technical Support Document for Water Quality-based Toxics Control (TSD, 1991). Derivation of this interim dichlorobromomethane limitation is summarized below:

INTERIM EFFLUENT LIMITATION	
Dichlorobromomethane	
Number of Observations	3
Minimum (µg/L, ppb)	< 0.46
Observed Maximum (µg/L, ppb)	***0.7***
Coefficient of Variation (Default)	0.6
Multiplier[1]	3.0
Projected Monthly Average	**2.1 (µg/L, ppb)**

[1] From TSD Table 3-2

Bis(2-ethylhexyl) phthalate

A human health criterion for bis(2-ethylhexyl) phthalate of 1.8 µg/L (ppb), for consumption of both water and organisms, was established in the NTR. In studies conducted by the Discharger, the MEC for bis(2-ethylhexyl) phthalate was reported as 3.6 µg/L (ppb). This MEC exceeds the human health criterion for bis(2-ethylhexyl) phthalate established in the NTR. Section 1.3 of the SIP requires water quality-based effluent limitations when the MEC or observed maximum background concentration (B) of a priority pollutant exceeds an appropriate pollutant criterion.

The maximum observed ambient background concentration (B) of bis(2-ethylhexyl) phthalate in the Calaveras River was reported as < 2.0 µg/L (ppb). Considering this result, it is unknown if and how much assimilative capacity exists within the Calaveras River if any. No information is available regarding ambient background concentrations of bis(2-ethylhexyl) phthalate in San Andreas Creek or Murray Creek.

Concerning calculation of final effluent limitations for bis(2-ethylhexyl) phthalate for discharge to the Calaveras River, the SIP provides in Section 1.4 that "*If data are insufficient to calculate the effluent limitation, the RWQCB shall establish interim requirements in accordance with Section 2.2.2.*"

This Order includes a time schedule for the Discharger to collect sufficient information for the calculation of final effluent limitations prior to discharge to the Calaveras River. Pursuant to Section 2.2.1 of the SIP, the water quality to be achieved includes prevention of toxic conditions in the Calaveras River as a result of the discharge, and the maintenance of the highest quality water consistent with the maximum benefit to the people of the State. The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for bis(2-ethylhexyl) phthalate as enforceable limitations.

In accordance with the SIP, Sections 2.2.1 and 2.2.2, for discharge to the Calaveras River, a numeric interim limitation for bis(2-ethylhexyl) phthalate has been established in this Order based upon current facility performance. As shown below, this interim limitation consists of a projected AMEL bis(2-ethylhexyl) phthalate concentration of 13.7 µg/L (ppb) derived using available effluent bis(2-ethylhexyl) phthalate data (two data points), and applying the statistical methodologies for estimating maximum concentrations identified in Chapter 3 of USEPA's Technical Support Document for Water Quality-

based Toxics Control (TSD, 1991). Derivation of this interim bis(2-ethylhexyl) phthalate limitation is summarized below:

INTERIM EFFLUENT LIMITATION	
Bis(2-ethylhexyl) phthalate	
Number of Observations	2
Minimum (µg/L, ppb)	< 2.0
Observed Maximum (µg/L, ppb)	***3.6***
Coefficient of Variation (Default)	0.6
Multiplier[1]	3.8
Projected Monthly Average	**13.7 (µg/L, ppb)**

[1] From TSD Table 3-2

For discharge to San Andreas Creek, an AMEL was developed considering the human health criterion for bis(2-ethylhexyl) phthalate and no dilution credit. In accordance with Section 1.4 of the SIP, the ECA was set equal to the C (priority pollutant criterion), and the AMEL was then set equal to the ECA. The MDEL for bis(2-ethylhexyl) phthalate was calculated by multiplying the ECA by the ration of the MDEL multiplier to the AMEL multiplier using a default CV of 0.6, and a sampling frequency (n) of ≤ 4. These AMEL and MDEL calculations are summarized below:

WATER QUALITY -BASED AMEL and MDEL- San Andreas Creek	
Bis(2-ethylhexyl) phthalate	
C	Human health criterion (1.8 µg/L)
ECA = C	ECA = 1.8 µg/L
AMEL = ECA	**1.8 µg/L**
Coefficient of Variation (Default)	0.6
Sampling Frequency (n)	≤ 4
MDEL = ECA (MDEL/AMEL multiplier)	1.8 (2.01) = **3.6 µg/L**

The Discharger cannot currently meet these limitations when discharging to San Andreas Creek. The Discharger has no processes specific to the removal of bis(2-ethylhexyl) phthalate. Compliance schedules described in Section 2.1 of the SIP exclude NTR pollutants, therefore this Order does not include a schedule of compliance with the final effluent limitation for bis(2-ethylhexyl) phthalate for discharge to San Andreas Creek.

Other Pollutants/Objectives

Narrative Toxicity

At p.III-8.00 the Basin Plan provides that relative to toxicity : *"All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." At page 1, the TSD provides that "*Where States have not developed chemical specific numeric criteria, States may interpret their narrative standards for specific chemicals by using EPA criteria updated with current quantitative risk values*." The TSD further states on page 1 "*The integrated approach must include the control of toxics through implementation of the "no toxics" criterion and/or numeric criteria for the parameter of toxicity, the control of individual pollutants for which specific chemical water quality criteria exist in a state's standard, as well as the use of biological*

criteria. Reliance solely on the chemical specific numeric criteria or the narrative criterion or biological criteria would result in only a partially effective State toxics control program."

Under the CWA Section 304(a), USEPA has developed methodologies and specific criteria guidance to protect aquatic life and human health. These methodologies are intended to provide protection for all surface waters on a national basis. The methodologies have been subject to public review, as have the individual criteria guidance documents. Water quality criteria developed under Section 304(a) of the CWA are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. Section 304(a) criteria do not reflect consideration of economic impacts or the technological feasibility of meeting the chemical concentrations in ambient water. Section 304(a) criteria provide guidance to States in adopting water quality standards that ultimately provide a basis for controlling discharges or releases of pollutants. Staff has used USEPA's ambient water quality criteria as a 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 objective of prohibiting toxic constituents in toxic amounts.

Aluminum
The Basin Plan does not provide a numeric water quality objective for aluminum. However, the USEPA has developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The USEPA has recommended, as a freshwater ambient water quality criteria for aluminum, a chronic, four day average criterion continuous concentration (CCC) of 87 µg/L, and an acute, one-hour average criterion maximum concentration (CMC) of 750 µg/L expressed in terms of total recoverable metal in the water column. In establishing these criteria, USEPA notes that there are three major reasons why the use of a water-effect ratio (WER) may be appropriate in applying the aluminum criteria including the fact that the 87 µg/L CCC was based on a toxicity test with striped bass in water with low pH and low hardness.

Results of monitoring conducted by the Discharger indicate effluent aluminum concentrations ranged from 160 µg/L to 580 µg/L. The minimum pH of the effluent has been reported as 6.8 pH units, and the minimum hardness of the effluent has been reported as 68 mg/L as CaCO3. Results of monitoring of the Calaveras River indicate ambient background concentrations of aluminum ranged from 40 µg/L to 80 µg/L. The minimum pH of the Calaveras River has been reported as 7.8 pH Units during the period of discharge (one data point), and the minimum hardness of the Calaveras River has been reported as 60 mg/L as CaCO3. No information is available on aluminum concentrations in San Andreas or Murray Creek. Results of ambient background pH monitoring in San Andreas Creek during the period of discharge from December 2002 through April 2003 have ranged from 6.9 to 7.2 pH Units.

Considering results of monitoring indicate periods of relatively low hardness and neutral pH, the MEC for total aluminum is over 6 times greater than the CCC, the maximum ambient background concentration of aluminum in the Calaveras River has been reported as high as 80 µg/L, the aquatic life beneficial use, the narrative toxicity objective of the Basin Plan, and, the USEPA chronic criterion for aluminum, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

An AMEL and MDEL have been developed for aluminum considering the chronic aquatic life criteria, a chronic waste load allocation, and discharge to the Calaveras River and available dilution. A steady state model was used to develop an ECA using the example from the SIP where the ECA or waste load allocation (WLA) = C + D(C – B) where C represents the chronic aluminum criterion, D represents the dilution credit, and B represents the maximum observed ambient background concentration. The AMEL and MDEL were then calculated using procedures in Section 5.4 and Appendix E of the TSD. As the number of data points for the calculation is less than 10, a default CV of 0.6 was used in the development of these limitations shown below:

WATER QUALITY -BASED AMEL and MDEL- Calaveras River	
Total Aluminum	
C	Chronic Aquatic Life Criterion (87 µg/L)
B	Maximum observed background concentration (80 µg/L)
D	Dilution Credit = 20
WLA/ECA (chronic) = C + D(C – B)	WLA/ECA = 87 + 20(87 – 80) = 227 µg/L
Coefficient of Variation (Default)	0.6
LTA (chronic)	$= \text{WLA}_c * e^{[0.5\sigma_4^2 - z\sigma_4]} = 227 * 0.527 = 120$
AMEL (95 Percentile, # samples = 2)	$= \text{LTA}_c * e^{[z\sigma_n - 0.5\sigma_n^2]} = 120 * 1.8 =$ **216 µg/L**
MDEL	$= \text{LTA}_c * e^{[z\sigma - 0.5\sigma^2]} = 120 * 3.11 =$ **373 µg/L**

For discharge to San Andreas Creek, an AMEL and MDEL have been developed for aluminum considering the chronic aquatic life criteria, a chronic waste load allocation, and no dilution credit. In this instance the WLA was set equal to the chronic aquatic life criterion, WLA = C. The AMEL and MDEL were then calculated using procedures in Section 5.4 and Appendix E of the TSD. As the number of data points for the calculation is less than 10, a default CV of 0.6 was used in the development of these limitations shown below:

WATER QUALITY -BASED AMEL and MDEL- San Andreas Creek	
Total Aluminum	
C	Chronic Aquatic Life Criterion (87 µg/L)
WLA(chronic) = C	WLA = 87 µg/L
Coefficient of Variation (Default)	0.6
LTA (chronic)	$= \text{WLA}_c * e^{[0.5\sigma_4^2 - z\sigma_4]} = 87 * 0.527 = 46$
AMEL (95 Percentile, # samples = 2)	$= \text{LTA}_c * e^{[z\sigma_n - 0.5\sigma_n^2]} = 46 * 1.8 =$ **83 µg/L**
MDEL	$= \text{LTA}_c * e^{[z\sigma - 0.5\sigma^2]} = 46 * 3.11 =$ **143 µg/L**

Based upon the results of effluent monitoring, the Discharger cannot currently comply with these new effluent limitations for aluminum. At Page IV-16.00 the Basin Plan states "*In no event shall an NPDES permit include a schedule of compliance that allows more than ten years (from the date of adoption of the objective or criteria) for compliance with water quality objectives, criteria or effluent limitations based on the objectives or criteria. Schedules of compliance are authorized by this provision only for those water quality objectives or criteria adopted after the effective date of this provision [25 September 1995*]." The narrative toxicity objective is not a new objective, therefore a schedule of compliance for

aluminum is not included in this Order. A separate Cease and Desist Order shall be proposed for compliance with the new aluminum effluent limitations.

Ammonia

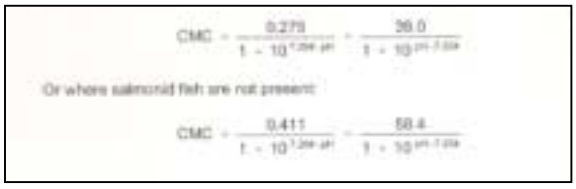
In December 1999, the U.S EPA published an Update of Ambient Water Quality Criteria for Ammonia (1999 Ammonia Update). The 1999 Ammonia Update contains EPA's most recent freshwater aquatic life criteria for ammonia, superseding all previous EPA recommended freshwater criteria for ammonia. The new criteria in the 1999 Ammonia Update 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. As a result of these revisions, the acute criterion for ammonia is now dependent on pH and fish species present, and the chronic criterion is dependent on pH and temperature. At lower temperatures, the chronic criterion is also dependent on the presence or absence of early life stages of fish (ELS).

The other significant revision in the 1999 Ammonia Update is EPA's recommendation of 30 days as the averaging period for the ammonia chronic criterion. In addition, EPA recommends that within the 30-day averaging period, no 4-day average concentration should exceed 2.5 times the chronic criterion (Criterion Continuous Concentration (CCC)).

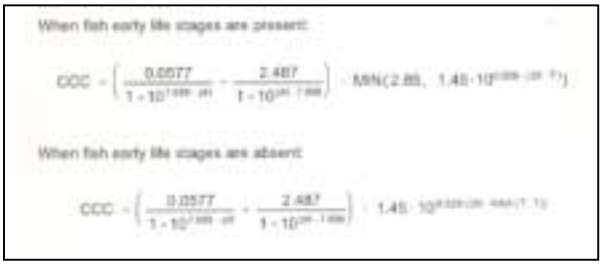
In natural waters ammonia exists in two forms, un-ionized ammonia (NH_3) and the ammonium ion (NH_4), with equilibrium controlled by temperature and pH. Whereas the 1984/1985 criteria were derived based on un-ionized ammonia, which required a relationship with temperature, the criteria used in the 1999 Update are expressed only as total (un-ionized plus ionized) ammonia.

The 1999 Update states in part that the available evidence indicates the toxicity of ammonia can depend on ionic composition, pH, and temperature. The 1999 Update further states that based upon available data for ammonia, evaluated using the procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses", that, except possibly where an unusually sensitive species is important at a site, freshwater aquatic life should be protected if **both** of the following conditions are satisfied for the temperature, T, and pH of the waterbody:

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equations. Where salmonid fish are present:



2A. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equations.



2B. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC.

Both the CMC and CCC for ammonia are expressed in milligrams ammonia nitrogen per liter (mg N/L).

The beneficial uses of the Calaveras River, from its source to New Hogan Reservoir, and San Andreas Creek include warm freshwater aquatic habitat (WARM), cold freshwater aquatic habitat (COLD), migration of aquatic organisms (MIGR) in warm habitat, warm and cold habitat spawning, and reproduction, and/or early development (SPWN). The early life stages of fish are likely present during the permitted period of discharge.

The reported MEC of total ammonia is 16 mg/L (as N), with an average daily concentration of effluent total ammonia reported as 2.2 mg/L (as N). The maximum effluent pH for the period of discharge from November 1999 through April 2003 was reported as 7.8 pH Units. Without regard to dilution, the discharge from the effluent has the reasonable potential to exceed the acute ambient water quality ammonia criteria for the protection of fresh water aquatic life at the point of discharge to the Calaveras River or San Andreas or Murray Creeks. The maximum total ammonia concentration reported in the Calaveras River was reported as 1.1 mg/L (as N), and the maximum pH was reported as 7.8 pH Units. Although simple steady state dilution calculations using the limited ambient data available indicate that assimilative capacity for chronic toxicity is available in the Calaveras River, sufficient information is not available to adequately determine mixing zone and dilution characteristics.

The Regional Board considered the level of ammonia in the effluent in light of the narrative toxicity objective in the Basin Plan. For determining whether there is reasonable potential for an excursion above this narrative objective, the Regional Board used the second method prescribed by 40 CFR 122.44(d)(vi) for determining reasonable potential, which relies on USEPA recommended criteria and other information. The Board chose this method because USEPA's recommended ambient water quality criteria for ammonia have been developed using methodologies that are subject to public review, as is the individual recommended criteria guidance document. Results of monitoring submitted by the Discharger indicate the effluent discharged to the Calaveras River has the reasonable potential to cause or contribute to an excursion above the acute ammonia criterion. Considering no dilution in San Andreas Creek, results of effluent monitoring submitted by the Discharger indicate the effluent discharged to San Andreas Creek has the reasonable potential to cause or contribute to an excursion above the acute and chronic ammonia criteria.

Accordingly, to prevent acutely toxic conditions at the point of discharge to the Calaveras River, a one hour maximum effluent limitation for total ammonia has been included in this Order based upon the EPA's ambient water quality acute toxicity criterion (Attachment H). Compliance with this limit will require recording of effluent pH at the time that the samples are collected for ammonia, and may require information regarding the presence or absence of salmonids in the Calaveras River. Because a minimum 20 to 1 dilution is required for discharge, acute toxicity is almost certainly the governing toxic criterion. The extent of the chronic toxicity mixing zone will be evaluated in the *Dilution/Mixing Zone Study*. Based upon the results on the *Dilution/Mixing Zone Study*, this Order may be reopened to include delineation of a chronic toxicity mixing zone and additional chronic effluent limitations for ammonia, if warranted.

To prevent chronic and acutely toxic conditions at the point of discharge to San Andreas Creek, a one hour maximum and AMEL for total ammonia have been included in this Order based upon the EPA's ambient water quality chronic and acute toxicity criteria (Attachment G and Attachment H). Compliance with these limits will require recording of effluent pH and temperature at the time that the samples are collected for ammonia, and may require information regarding the presence or absence of salmonids in San Andreas Creek.

Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for total ammonia. As noted previously, the narrative toxicity objective is not a new objective, therefore a schedule of compliance for ammonia is not included in this Order. A separate Cease and Desist Order shall be proposed for compliance with the new ammonia effluent limitations.

Chlorine
The Discharger uses chlorine for the disinfection of treated wastewater. The Basin Plan does not provide a numeric water quality objective for chlorine, but the Basin Plan does contain a narrative toxicity objective. For determining whether there is reasonable potential for an excursion above this narrative objective, the Regional Board used the second method prescribed by 40 CFR 122.44(d)(vi) for determining reasonable potential, which relies on USEPA criteria and other information. The Board chose this method because USEPA's recommended ambient water quality criteria for chlorine have been developed using methodologies that are subject to public review, as is the individual recommended criteria guidance document. USEPA's ambient water quality criteria for protection of aquatic life are 11 µg/L as a 4-day average (chronic) concentration, and 19 µg/L as a 1-hour average (acute) concentration for total residual chlorine. Continuous use of chlorine for the disinfection of the final effluent presents a reasonable potential for the discharge to cause or contribute to an excursion above the acute and chronic chlorine criteria. This Order includes new effluent limitations for chlorine based directly upon the USEPA's ambient water quality criteria. Based upon results of monitoring, and installation of the new dechlorination unit, the Discharger is capable of consistently meeting these limitations.

Chemical Constituents Objective
For Chemical Constituents at page III-3.00, the Basin Plan states '*At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations…*' Federal regulations at 40 CFR Section 122.44(d)(1)(vi)(A) allow the

state to establish effluent limitations using an explicit state policy interpreting its narrative objectives. Use of MCL's is appropriate to implement the chemical constituent objective of the Basin Plan. The Calaveras River, San Andreas Creek, and Murray Creek are designated for use as domestic or municipal supply (MUN).

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

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

Nitrate/Nitrite

The Basin Plan does not include a numeric objective for nitrate or nitrite. The USEPA has established a primary Maximum Contaminant Level (MCL) for nitrate of 10 mg/L (as nitrogen (N)), and a primary MCL for nitrite of 1 mg/L (as nitrogen (N)). USEPA has also established in the MCL a limit for total nitrate + nitrite of 10 mg/L. Additionally, USEPA's ambient water quality criteria for nitrate, protective of human health for consumption of water and organisms, is expressed also as a concentration of 10 mg/l (as N). In Title 22, Table 64431-A of the California Code of Regulations (CCR) the California DHS has established a primary MCL for nitrate + nitrite (sum as nitrogen) of 10 mg/L, and a primary MCL for nitrite (as nitrogen) of 1.0.

As reported by the Discharger, the MEC for nitrate + nitrite (as N) was 17.2 mg/L. Independently, the MEC for nitrate was reported as 17 mg/L (as N), and the MEC for nitrite was reported as 0.2 mg/L (as N). The average daily effluent concentration for nitrate + nitrite (as N) has been reported as 12.2 mg/L. These nitrate + nitrite effluent concentrations, without regard to dilution, exceed the California DHS primary MCL for nitrate + nitrite (as N). The maximum observed ambient background concentration of nitrate + nitrite (as N) in the Calaveras River was reported as 1.7 mg/L. Independently, the maximum observed ambient background concentration for nitrate was reported as 1.7 mg/L (as N), and the maximum observed ambient background concentration nitrite was reported as less than 0.03 mg/L (as N). The data indicate that the Calaveras River does have assimilative capacity for nitrate and nitrite. Dilution and/or assimilative capacity was not considered for discharge to San Andreas Creek.

Considering these effluent monitoring results, the MUN beneficial use, the chemical constituent objective of the Basin Plan, and the California DHS primary MCL for nitrate + nitrite, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

An AMEL and MDEL for discharge to the Calaveras River were considered for nitrate + nitrite (as N) developed using the USEPA recommendations for permitting for human health protection as described in Section 5.4.4 of the TSD. A steady state model was used to develop an ECA/WLA using the example from the SIP where the ECA or WLA = C + D(C – B) where C represents the nitrate + nitrite criterion, D represents the dilution credit, and B represents the arithmetic mean of the observed ambient background concentration. The AMEL was then set equal to the WLA. The MDEL was calculated using the multipliers in Table 5-3 of the TSD considering a default CV of 0.6 and the number of samples per month. Development of these limitations is shown below:

WATER QUALITY -BASED AMEL and MDEL- Calaveras River	
Nitrate + Nitrite	
C	Primary MCL (10 mg/L)
B	Arithmetic mean background concentration (1.0 mg/L)
D	Dilution Credit = 20
WLA/ECA (chronic) = C + D(C – B)	WLA/ECA = 10 + 20(10 – 1) = 190 mg/L
Coefficient of Variation (Default)	0.6
n (# of samples per month)	2
AMEL	**190 mg/L**
MDEL/AMEL ratio	Using 99th percentile multiplier From TSD Table 5.3 = 1.31
MDEL	190 (1.31) = **249 mg/L**

These water quality-based effluent limitations are substantially higher than the reported MEC of 17.2 mg/L (ppm). Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using the calculated AMEL and MDEL. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for nitrate + nitrite is needed prior to establishing a final effluent limitation for the discharge to the Calaveras River.

The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations for discharge to the Calaveras River at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to reopen this Order and include final water quality-based effluent limitations for nitrate + nitrite as enforceable limitations.

For discharge to San Andreas Creek, where dilution credit was not considered, an AMEL was developed considering the USEPA recommendations for permitting for human health protection provided in Section 5.4.4 of the TSD. The AMEL was set equal to the WLA, or in this case, the nitrate + nitirite MCL (10 mg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for nitrate + nitrite. As the chemical constituent objective is not a new objective, a schedule of compliance for nitrate + nitrite is not included in this Order. A separate Cease and Desist Order shall be proposed for compliance with the new AMEL.

Iron
In Title 22, Table 64449-A of the CCR, the California DHS has established a secondary MCL for iron of 300 µg/L considering consumer acceptance limits.

Results of monitoring conducted by the Discharger indicate effluent concentrations of iron ranged from 210 µg/L to 450 µg/L . The MEC, without regard to dilution, exceeds California DHS secondary MCL for iron. The maximum observed ambient background concentration of iron in the Calaveras River was reported as 130 µg/L. The data indicate that the Calaveras River does have assimilative capacity for iron. Dilution and/or assimilative capacity was not considered for discharge to San Andreas Creek.

Considering the MEC, the MUN beneficial use, the chemical constituents objective of the Basin Plan, and the California DHS secondary MCL for iron, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

The criterion used to determine reasonable potential for iron is not related to aquatic toxicity or human health. Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using a calculated AMEL and MDEL based upon a human health WLA. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for iron is needed prior to establishing a final effluent limitation for the discharge to the Calaveras River.

The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for iron as enforceable limitations.

For discharge to San Andreas Creek, where dilution credit was not considered, an AMEL was set equal to the WLA, or in this case, the iron secondary MCL (300 µg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for iron. As the chemical constituents objective is not a new objective, a schedule of compliance for iron is not included in this Order. A separate Cease and Desist Order shall be proposed for compliance with the new AMEL.

Manganese
In Title 22, Table 64449-A of the CCR, the California DHS has established a secondary MCL for manganese of 50 µg/L considering consumer acceptance limits.

Results of monitoring conducted by the Discharger indicate effluent concentrations of manganese ranged from 25 µg/L to 82 µg/L. The MEC, without regard to dilution, exceeds California DHS secondary MCL's for manganese. The maximum observed ambient background concentration of manganese in the Calaveras River was reported as 12 µg/L. The data indicate that the Calaveras River does have assimilative capacity for manganese. Dilution and/or assimilative capacity was not considered for discharge to San Andreas Creek.

Considering the MEC, the MUN beneficial use, the chemical constituents objective of the Basin Plan, and the California DHS secondary MCL for manganese, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

The criterion used to determine reasonable potential for manganese is not related to aquatic toxicity or human health. Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using a calculated AMEL and MDEL based upon a human health WLA. However, since only three effluent data points, and two receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for manganese is needed prior to establishing a final effluent limitation for the discharge to the Calaveras River.

The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for manganese as enforceable limitations.

For discharge to San Andreas Creek, where dilution credit was not considered, an AMEL was set equal to the WLA, or in this case, the manganese secondary MCL (50 µg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for manganese. As the chemical constituent objective is not a new objective, a schedule of compliance for manganese is not included in this Order. A separate Cease and Desist Order shall be proposed for compliance with the new AMEL.

Methylene Blue Active Substances (MBAS)
In Title 22, Table 64449-A of the CCR, the California DHS has established a secondary MCL for MBAS of 500 µg/L considering consumer acceptance limits.

Results of monitoring conducted by the Discharger indicate effluent concentrations of MBAS ranged from 2,000 µg/L to 500 µg/L . The MEC, without regard to dilution, exceeds California DHS secondary MCL for MBAS. The maximum observed ambient background concentration of MBAS in the Calaveras River was reported as less than 50 µg/L. The data indicate that the Calaveras River does have assimilative capacity for MBAS. Dilution and/or assimilative capacity was not considered for discharge to San Andreas Creek.

Considering the MEC, the MUN beneficial use, the chemical constituents objective of the Basin Plan, and the California DHS secondary MCL for MBAS, the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

The criterion used to determine reasonable potential for MBAS is not related to aquatic toxicity or human health. Considering the existing performance of the plant, and SWRCB Resolution No. 68-16, a final limit based upon statistics and the MEC would be more appropriate than using a calculated AMEL and MDEL based upon a human health WLA. However, since only three effluent data points, and two

receiving water data points are currently available, collection and evaluation of additional effluent and receiving water data for MBAS is needed prior to establishing a final effluent limitation for the discharge to the Calaveras River.

The reason that final water quality-based effluent limitations are not being incorporated into the permit as enforceable limitations at this time is because insufficient effluent and receiving water data exists for proper calculation of final limitations. When sufficient data are collected, it is the intent of the Regional Board to include final water quality-based effluent limitations for MBAS as enforceable limitations.

For discharge to San Andreas Creek, where dilution credit was not considered, an AMEL was set equal to the WLA, or in this case, the MBAS secondary MCL (500 µg/L). Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for MBAS. As the chemical constituents objective is not a new objective, a schedule of compliance for MBAS is not included in this Order. A separate Cease and Desist Order shall be proposed for compliance with the new AMEL.

Pesticides
The Basin Plan includes an objective for Pesticides, stating in part;

- *No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses*

- *Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses*

- *Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies*

- *Pesticide concentrations shall not exceed the lowest levels technically and economically achievable*

As noted previously, the Basin Plan also includes a narrative toxicity objective which states, in part, that: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*."

Diazinon
Diazinon is used for the control of pests in both agricultural and urban settings. For inland surface waters within the Region, there are currently no adopted numeric objectives for diazinon.
For diazinon, the USEPA has published a tentative one-hour maximum acute criterion of 0.09 µg/L. The California Department of Fish and Game (DFG) criteria published in March 2000 include a one-hour average acute value of 0.08 µg/L and a four-day average chronic value of 0.05 µg/L.

Results of three effluent sampling events indicated one instance where diazinon was detected, at a concentration of 1.6 µg/L. Results of two ambient background monitoring events in the Calaveras River indicate concentrations of diazinon were less than 0.1 µg/L. This information is not sufficient to

adequately assess whether the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard in the Calaveras River. This Order contains new monitoring requirements for diazinon, and may be reopened, and effluent limitations established for diazinon if appropriate, based upon additional data collection. Depending upon the nature of collected data, the Discharger may be required to implement a study and develop source control actions, and/or interim or final point of discharge effluent limitations may be established.

Considering the MEC, the aquatic life beneficial uses, the pesticide and narrative toxicity objectives of the Basin Plan, and the California DFG criteria for diazinon, the discharge to San Andreas Creek has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard.

An AMEL and MDEL have been developed for diazinon considering the most restrictive of a chronic or acute WLA. Since the limiting LTA is derived from consideration of a chronic WLA, the AMEL and MDEL have been developed for diazinon considering the chronic aquatic life criteria, a chronic waste load allocation, and no dilution credit. The AMEL and MDEL were then calculated using procedures in Section 5.4 and Appendix E of the TSD. A default CV of 0.6 was used in the development of these limitations shown below:

WATER QUALITY -BASED AMEL and MDEL- San Andreas Creek	
Diazinon	
WLA c = Cc	Chronic Aquatic Life Criterion (0.05 µg/L)
WLA a = Ca	Acute Aquatic Life Criterion (0.08 µg/L)
LTA c (99th Percentile)	= WLA c ∗ (.527) = 0.0263 µg/L
LTA a (99th Percentile)	= WLA a ∗ (.321) = 0.0257 µg/L
LTA min	= 0.0263 µg/L
Coefficient of Variation (Default)	0.6
MDEL (99th Percentile)	= LTA min (0.0263) ∗ (3.11) = 0.08 µg/L
AMEL (95 Percentile, # samples = 4)	= LTA min (0.0263) ∗ (1.55) = 0.04 µg/L

Based upon the results of effluent monitoring, the Discharger may not be able to consistently comply with these new limitations for diazinon. Additionally, based upon the use of current analytical methods, routine monitoring may be unable to determine compliance with these limitations. Analytical methods for compliance monitoring purposes will be specified in this Order. As the narrative toxicity and pesticide objectives are not new objectives, a schedule of compliance for diazinon is not included in this Order. A separate Cease and Desist Order shall be proposed for compliance with the new MDEL and AMEL.

Carbofuran

Carbofuran is a broad spectrum carbamate insecticide with applications for pest control in various food and feed crops. In Title 22, Table 64444-A of the CCR, the California DHS has established a primary MCL for carbofuran of 18 µg/L. The California Office of Environmental Health Hazard Assessment (OEHHA) has established a Public Health Goal for carbofuran in drinking water of 1.7 µg/L. In 1992, the California DFG published an interim criterion to protect freshwater aquatic life of 0.5 µg/L as an instantaneous maximum.

Results of three effluent sampling events indicated one instance where carbofuran was reported as greater than the analytical detection method limit, but less than the method reporting limit, at a detected, but not quantified (DNQ) concentration of 2.51 µg/L. Results from the two other rounds of effluent monitoring indicated carbofuran concentrations were less than 1.3 and less than 1.1 µg/L. Results of two ambient background monitoring events in the Calaveras River indicate concentrations of carbofuran were less than 0.5 µg/L and less than 1.1 µg/L. This information is not sufficient to adequately assess whether the discharge has the reasonable potential to cause or contribute to an in-stream excursion above a State water quality standard. This Order contains new monitoring requirements for carbofuran, and may be reopened, and effluent limitations established for carbofuran if appropriate, based upon additional data collection. Depending upon the nature of collected data, the Discharger may be required to implement a study and develop source control actions, and/or interim or final point of discharge effluent limitations may be established.

pH

The Basin Plan provides that the pH (of surface waters) shall not be depressed below 6.5 nor raised above 8.5 pH Units. The Basin Plan further provides that changes in normal ambient pH levels shall not exceed 0.5 pH Units in fresh waters with designated COLD or WARM beneficial uses. Although the discharge will occur under conditions of 20 to 1 dilution, pH can significantly affect the mobility of metals, and toxicity of ammonia, therefore the existing effluent limitation for pH has been retained in this Order. This Order also retains receiving water limitations and monitoring requirements for pH.

Dissolved Oxygen

At Page III-5.00, the Basin Pan provides surface water quality objectives for dissolved oxygen (DO), and states, in part: *For surface water bodies outside the legal boundaries of the Delta, the monthly median of the mean daily dissolved oxygen (DO) concentration shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation. The dissolved oxygen concentrations shall not be reduced below the following minimum levels at any time:*

Waters designated WARM 5.0 mg/l
Waters designated COLD 7.0 mg/l
Waters designated SPWN 7.0 mg/l

This Order retains the limitation that the discharge shall not cause the DO of the receiving water to fall below 7.0 mg/l, in support of the COLD and SPWN beneficial uses and associated Basin Plan objective.

Temperature

Effluent and receiving water temperature affect numerous water quality conditions including ammonia toxicity (increasing with increasing temperature) and oxygen saturation (decreasing with increasing temperature). Additionally, warm waters may cause detrimental conditions of aquatic aversion or attraction. The Basin Plan states that: *"At no time shall the temperature of…WARM intrastate waters be increased more than 5°F above natural receiving water temperature*". Through the use of the pond system, effluent temperatures are buffered, and under conditions of 20:1 dilution, the potential for the

discharge to increase the temperature of the Calaveras River or San Andreas Creek appears unlikely. However, this Order contains receiving water limitations inclusive of the Basin Plan objectives.

Turbidity
Basin Plan states that: "*Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

- *Where natural turbidity is between 0 and 5 (NTUs), increases shall not exceed 1 NTU*
- *Where natural turbidity is between 5 and 50 NTU's, increases shall not exceed 20 percent*
- *Where natural turbidity is between 50 and 100 NTU's, increases shall not exceed 10 NTU's*
- *Where natural turbidity is greater than 100 NTU's, increases shall not exceed 10 percent"*

This Order includes effluent and receiving water monitoring requirements for turbidity, and retains receiving water limitations and monitoring requirements for turbidity.

Oil and Grease
The Basin Plan states that "*Waters shall not contain oils, greases, waxes, or other materials in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses*." This Order includes effluent monitoring requirements for Oil and Grease.

Treatment and Storage Ponds, Groundwater
The beneficial uses of the underlying ground water are municipal and domestic, industrial service, industrial process and agricultural supply. The WWTP processes include the use of three polishing ponds, the equalization basin, and the DLDA.

SWRCB Resolution 68-16 requires the Regional Board, in regulating the discharge of waste, to maintain high quality waters of the State (i.e. background water quality) until it is demonstrated that any change in quality will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality les than that described in the Regional Board's policies (e.g. quality that exceeds objectives). Some degradation of groundwater beneath the WWTP and associated DLDA is consistent with Resolution 68-16 provided that:

a. the degradation is confined within a specified boundary;

b. The Discharger minimizes degradation by fully implementing, regularly maintaining, and optimally operating best practicable treatment and control (BPTC) measures;

c. The degradation is limited to waste constituents typically encountered in domestic wastewater as specified in the groundwater limitation in this Order; and,

d. The degradation does not result in water quality less than that prescribed in the Basin Plan.

Some degradation of groundwater by some of the typical waste constituents released with the discharge from a municipal wastewater utility, after effective source control, treatment, and control is consistent with the maximum benefit to the people of the State. The technology, energy, and waste management advantages of municipal utility service far exceed any benefits derived from a community otherwise reliant on numerous concentrated individual wastewater systems, and the impact on water quality will be substantially less. Degradation of groundwater by toxic pollutants other than those typically associated with a WWTP, and by pollutants that can be effectively removed by conventional treatment (e.g. total coliform bacteria) is prohibited. When allowed, the degree of degradation permitted depends upon many factors including; background water quality, the pollutant, the beneficial uses of groundwater and most stringent water quality objective, source control measures, and pollutant treatability. Economic prosperity of the local community is of maximum benefit to the people of the State, and therefore sufficient reason exists to accommodate growth and groundwater degradation around the WWTP, provided that the terms of the Basin Plan including SWRCB Resolution 68-16, are met.

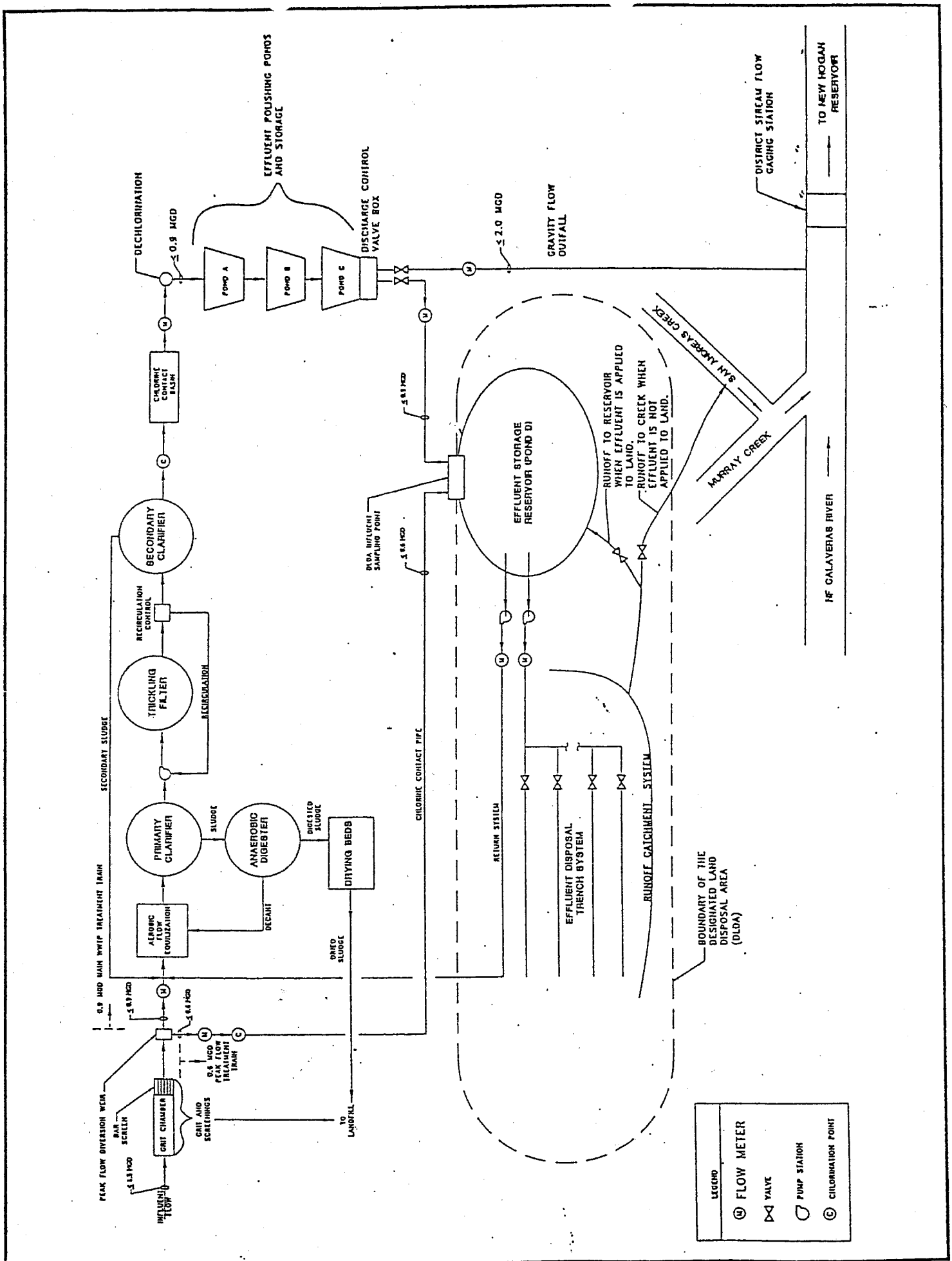
As required by previous Order No. 5-01-118, the Discharger is currently installing a series of three wells to assess and monitor the impact of the discharge on groundwater, if any. This Order includes groundwater limitations that allow groundwater to be degraded when compared to background groundwater quality, but not to exceed water quality objectives. If groundwater quality has been degraded by the operation of the WWTP beyond the quality described above, this Order may be reopened, and specific numeric limitations imposed.

Sludge Disposal

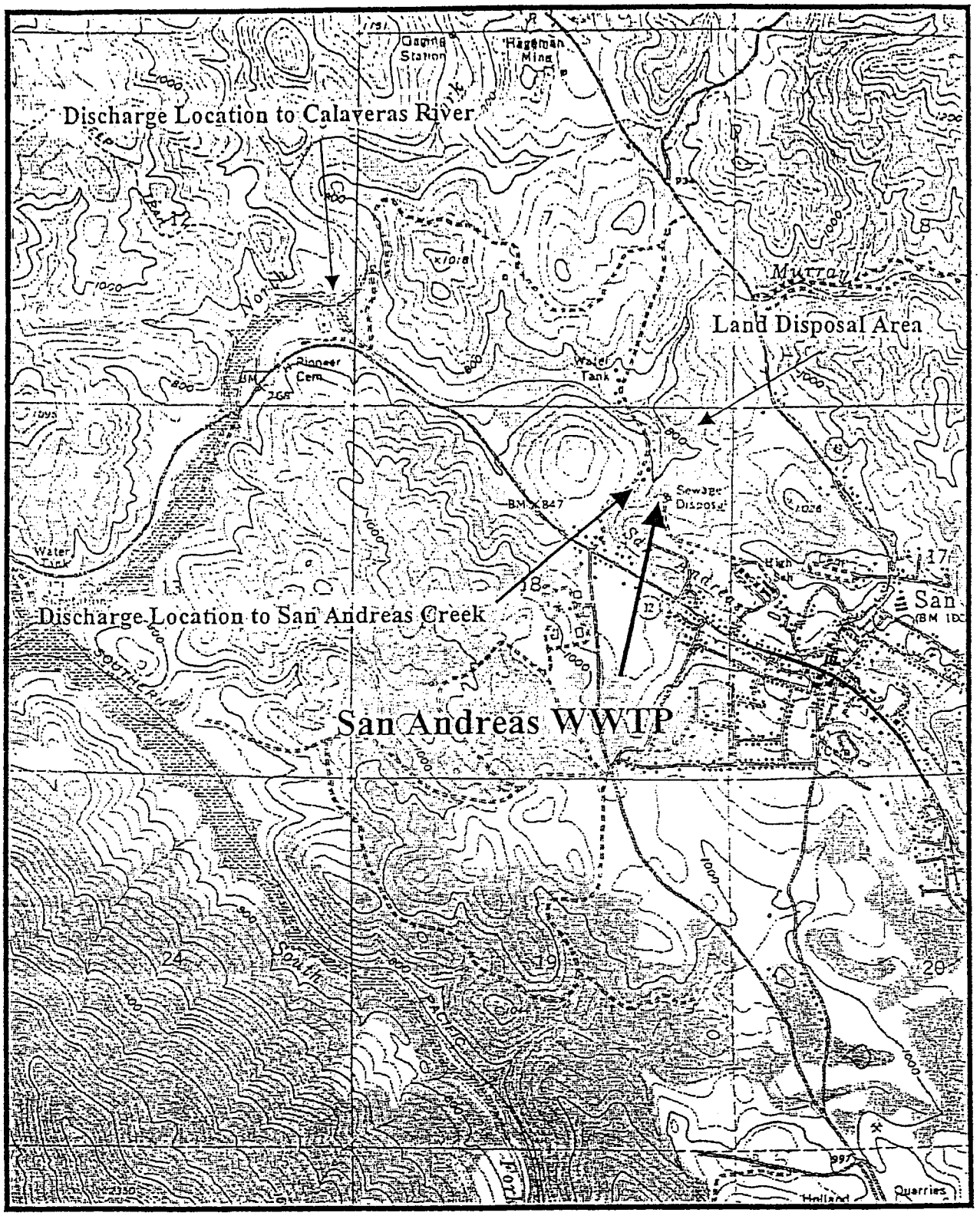
The Discharger treats all primary and secondary sludge in a heated unmixed anaerobic digester. Drying of digested sludge is accomplished by using sand-drying beds. Dried sludge is then stored on site, characterized, then disposed of at the Calaveras County Landfill.

JME

ATTACHMENT A



ATTACHMENT B



ATTACHMENT C

Exam Section 1.4 Maximum Daily Effluent Limitations (MDEL's) and Average Monthly Effluent Lim (AMEL's) for total Copper using CTR Water Quality Hardness-Dependent Values of the CCC (Continuous Concentration) and CMC (Criterion Maximum Concentration) for the Protection of Freshwater Aquatic Life

Whe effluent Concentration Allowance (ECA) = The total copper criterion (No Dilution Credit)

Copper sed as total recoverable, µg/l, Using Coefficient of Variation (CV) of 0.6						
Upst) H (mg/l)	CCC[1] 4-Day Avg (µg/L)	CMC[2] 1-hr Avg (µg/L)	LTA[3] (chronic) (µg/L)	LTA[4] (acute) (µg/L)	AMEL[5] (µg/L)	MDEL[6] (µg/L)
	Must calculate	Must calculate	Must calculate	Must calculate	Must calculate	
	2.4	3.1	1.3	1.0	1.6	3.1
	2.9	3.8	1.5	1.2	1.9	3.7
	4.5	6.3	2.4	2.0	3.1	6.2
	5.1	7.3	2.7	2.3	3.6	7.2
	7.3	10.7	3.8	3.4	5.3	10.6
	9.3	14.0	4.9	4.5	7.0	14.0
	10.1	15.3	5.3	4.9	7.6	15.2
	11	17	5.8	5.5	8.5	17.1
	12	18	6.3	5.8	9.0	18.0
	12	19	6.3	6.1	9.5	19.0
	13	21	6.9	6.7	10.4	21.0
	14	22	7.4	7.1	11.0	22.1
	15	23	7.9	7.4	11.5	23.0
	15	24	7.9	7.7	11.9	24.0
	16	26	8.4	8.3	12.9	25.8
	17	27	9.0	8.7	13.5	27.1
	19	30	10	9.6	14.9	30.0
	20	33	10.5	10.6	16.4	33.0
	22	36	11.6	11.6	18	36.1
	24	39	12.7	12.5	19.4	39

[1]CCC tot erage) = exp{0.8545[ln(hardness)] – 1.702}
[2]CMC tot rage) = exp{0.9422[ln(hardness)] – 1.700}
[3]LTA_c (Average chronic) = CCC x 0.527
[4]LTA_a (Average acute) = CMC x 0.321
[5]AMEL (onthly Effluent Limitation) = LTA (lowest) x 1.55
[6]MDEL (Daily Effluent Limitation) = LTA (lowest) x 3.11

Example SIP Section 1.4 Maximum Daily Effluent Limitations (MDEL's) and Average Monthly Effluent Limitations (AMEL's) for total Copper discharged to the Calaveras River using CTR Water Quality Hardness-Dependent Values of the CCC (Criterion Continuous Concentration) and CMC (Criterion Maximum Concentration) for the Protection of Freshwater Aquatic Life

The MDEL for total recoverable copper discharged to the Calaveras River shall be calculated using the Coefficient of Variation (CV) and the multipliers in Tables 1 and 2 of the SIP as shown below:

WATER QUALITY -BASED MDEL- Calaveras River Discharge	
Copper (Total)	
ECA acute	CMC @ Observed Effluent Hardness as CaCO3
Coefficient of Variation (Default)	0.6
LTA (acute)	(ECA acute *Table 1 Acute Multiplier)
Sampling Frequency (n)	≤ 4
MDEL	(LTA*Table 2 MDEL Multiplier)

Examples of calculated MDEL's for total copper based upon a range of effluent hardness values are shown below:

Effluent Hardness (mg/L as $CaCO_3$)	CMC[2] 1-hr Avg (µg/L)	LTA[4] (acute) (µg/L)	MDEL[6] (µg/L)
<10	Must calculate	Must calculate	Must calculate
20	3.1	1.0	3.1
25	3.8	1.2	3.7
43	6.3	2.0	6.2
50	7.3	2.3	7.2
75	10.7	3.4	10.6
100	14.0	4.5	14.0
110	15.3	4.9	15.2
120	17	5.5	17.1
130	18	5.8	18.0
140	19	6.1	19.0
150	21	6.7	21.0
160	22	7.1	22.1
170	23	7.4	23.0
180	24	7.7	24.0
190	26	8.3	25.8
200	27	8.7	27.1
225	30	9.6	30.0
250	33	10.6	33.0
275	36	11.6	36.1
300	39	12.5	39

Example SIP Section 1.4 Maximum Daily Effluent Limitations (MDEL's) and Average Monthly Effluent Limitations (AMEL's) for total Zinc using CTR Water Quality Hardness-Dependent Values of the CCC (Criterion Continuous Concentration) and CMC (Criterion Maximum Concentration) for the Protection of Freshwater Aquatic Life

Where the Effluent Concentration Allowance (ECA) = The total zinc criterion (No Dilution Credit)

Zinc expressed as total recoverable, µg/l, Using Coefficient of Variation (CV) of 0.6						
Upstream (R-1) Hardness (mg/L as $CaCO_3$)	CCC[1] 4-Day Avg (µg/L)	CMC[2] 1-hr Avg (µg/L)	LTA_c[3] (chronic) (µg/L)	LTA_a[4] (acute) (µg/L)	AMEL[5] (µg/L)	MDEL[6] (µg/L)
<10	Must calculate	Must calculate	Must calculate	Must calculate	Must calculate	
20	31	31	16	10	15.5	31
25	37	37	19.5	11.9	18.4	37
43	59	59	31.1	18.9	29.3	59
50	67	67	35	21.5	33.3	67
75	94	94	49.5	30	46.5	94
100	120	120	63.2	38.5	59.7	120
110	130	130	69	41.7	64.6	130
120	140	140	74	45	70	140
130	150	150	79.1	48	74.4	150
140	160	160	84	51.4	80	160
150	169	169	89.1	54	83.7	169
160	179	179	94.3	57.5	89	179
170	188	188	99.1	60	93	188
180	197	197	104	63	98	197
190	206	206	109	66	102	206
200	216	216	114	69	107	216
225	238	238	125	76.4	118	238
250	260	260	137	83.5	129	260
275	282	282	149	91	141	282
300	304	304	160	98	152	304

[1]CCC total (4-day average) = exp{0.8473[ln(hardness)] + 0.884}
[2]CMC total (1-hr average) = exp{0.8473[ln(hardness)] + 0.884}
[3]LTA_c (Long-Term Average chronic) = CCC x 0.527
[4]LTA_a (Long-Term Average acute) = CMC x 0.321
[5]AMEL (Average Monthly Effluent Limitation) = LTA (lowest) x 1.55
[6]MDEL (Maximum Daily Effluent Limitation) = LTA (lowest) x 3.11

Example SIP Section 1.4 Maximum Daily Effluent Limitations (MDEL's) and Average Monthly Effluent Limitations (AMEL's) for total Zinc discharged to the Calaveras River using CTR Water Quality Hardness-Dependent Values of the CCC (Criterion Continuous Concentration) and CMC (Criterion Maximum Concentration) for the Protection of Freshwater Aquatic Life

The MDEL for total recoverable zinc discharged to the Calaveras River shall be calculated using the Coefficient of Variation (CV) and the multipliers in Tables 1 and 2 of the SIP as shown below:

WATER QUALITY -BASED MDEL- Calaveras River	
Zinc (Total)	
ECA acute	CMC @ Observed Effluent Hardness as CaCO3
Coefficient of Variation (Default)	0.6
LTA (acute)	(ECA acute *Table 1 Acute Multiplier)
Sampling Frequency (n)	≤ 4
MDEL	(LTA*Table 2 MDEL Multiplier)

Examples of calculated MDEL's for total zinc based upon a range of effluent hardness values are shown below:

Effluent Hardness (mg/L as $CaCO_3$)	CMC[2] 1-hr Avg (µg/L)	LTA[4] (acute) (µg/L)	MDEL[6] (µg/L)
<10	Must calculate	Must calculate	Must calculate
20	31	10	31
25	37	11.9	37
43	59	18.9	59
50	67	21.5	67
75	94	30	94
100	120	38.5	120
110	130	41.7	130
120	140	45	140
130	150	48	150
140	160	51.4	160
150	169	54	169
160	179	57.5	179
170	188	60	188
180	197	63	197
190	206	66	206
200	216	69	216
225	238	76.4	238
250	260	83.5	260
275	282	91	282
300	304	98	304

Temperature and pH-Dependent Effluent Limits for Ammonia
Criterion Continuous Concentration (CCC), Chronic Criterion
Average Monthly Effluent Limitation (AMEL)

Ammonia Concentration AMEL (Total, mg as N/L)*										
Effluent pH	Effluent Temperature, °C									
	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.8	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	2.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

**Additionally, the highest four-day average within the 30-day period should not exceed 2.5 times the AMEL.*

pH-Dependent Effluent Limits for Ammonia
Criteria Maximum Concentration (CMC), Acute Criterion
Maximum 1 Hour Average, Salmonids Present

Effluent pH	Ammonia Concentration Limit (mg N/l)
6.5	32.6
6.6	31.3
6.7	29.8
6.8	28.0
6.9	26.2
7.0	24.1
7.1	21.9
7.2	19.7
7.3	17.5
7.4	15.3
7.5	13.3
7.6	11.4
7.7	9.64
7.8	8.11
7.9	6.77
8.0	5.62
8.1	4.64
8.2	3.83
8.3	3.15
8.4	2.59
8.5	2.14
8.6	1.77
8.7	1.47
8.8	1.23
8.9	1.04
9.0	0.885