CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2005-0037

NPDES NO. CA0081507

WASTE DISCHARGE REQUIREMENTS
FOR
SHASTA COUNTY SERVICE AREA NO. 17
COTTONWOOD WASTEWATER TREATMENT PLANT
SHASTA COUNTY

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

REPORT OF WASTE DISCHARGE

1. The Shasta County Service Area No. 17 (Cottonwood Wastewater Treatment Plant, hereafter Discharger, submitted a complete report of waste discharge (ROWD) on 21 October 2003, under the National Pollutant Discharge Elimination System (NPDES), and applied for a permit renewal to discharge treated wastewater (effluent) to Cottonwood Creek, a tributary of the Sacramento River.

WASTEWATER TREATMENT, WASTEWATER COLLECTION, AND GENERAL SITE INFORMATION

2. The community of Cottonwood is located in southern Shasta County approximately 15 miles south of the city of Redding, along Interstate 5. The population of Cottonwood is approximately 2960 people, based on the year 2000 U.S. Census. Cottonwood is located at an approximate elevation of 420 feet MSL and receives an average of 30 inches of rain per year.

3. The treatment plant is located in Section 12, T29N, R4W, MDB&M, as shown on Attachment A, a part of this Order. The treatment plant is located within the Lower Cottonwood Hydrologic Sub Area No. 508.20, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

4. The treatment plant discharges to Cottonwood Creek approximately 5 miles upstream from its confluence with the Sacramento River. The discharge point, D001, is located at 40^{o}22' 40" latitude and 122^{o} 16' 15" longitude.

5. The wastewater treatment plant consists of: a headworks with bar screen and Parshall flume with ultrasonic level sensor; two, parallel oxidation ditches with aerators; two, parallel secondary clarifiers with skimmers; traveling-bridge sand filter unit; chlorine disinfection with chlorine gas; serpentine chlorine contact chamber; dechlorination by addition of sulfur dioxide; an outfall line and diffuser to Cottonwood Creek; a northern 4.3 acre-feet sludge settling basin (formerly 0.83 acre-feet), a southern 0.63 acre-feet sludge settling basin; and four, sludge/sand drying beds. A schematic of the treatment plant layout is shown in Attachment B.

6. In March 2002, the north sludge storage basin (SSB) was detected to be leaking. The north SSB was replaced by the end of December 2002. The original south SSB is now empty, as it is also suspected of leaking. The expanded north SSB has sufficient capacity to handle the current treatment plant design flow. However, the south SSB may need to be repaired in order to provide redundancy and allow the north SSB to be periodically taken offline for maintenance.

7. The summer and fall flow in Cottonwood Creek provides somewhat limited dilution to the treatment plant effluent discharge. Dilution in the winter and spring is adequate. Accurate low flow data for Cottonwood Creek in the vicinity of the discharge is required in order to determine available dilution and determine if the discharge is in compliance with the Basin Plan and other guidance. If the Discharger chooses to do a dilution and mixing zone study, adequate flow information will also be required.

8. The effluent diffuser located in Cottonwood Creek has been damaged. Reportedly, it is not currently providing any diffusion function. This Order requires the Discharger to repair or replace the diffuser.

9. The chlorination and dechlorination chemical feed controls at the wastewater treatment plant are designed to be automatically paced based on flow or concentration. Currently, the equipment is not functioning and the chemical dosing equipment is set manually. Manual operation of this equipment is not in accordance with the original plant design, and threatens to cause an effluent violation due to over- or under-dosing. This Order requires the Discharger to repair or replace this equipment.

10. The Discharger is required to analyze effluent samples for chronic toxicity and some of these analyses have documented adverse effects to the test organisms in the presence of the effluent. If additional information indicates that the discharge threatens to cause chronic toxicity in the receiving water, then the Discharger may be required to conduct a Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE). Additionally, this Order may be reopened and an effluent limit for the constituent(s) causing the toxicity added, as appropriate.

11. Discharge from the wastewater treatment plant is presently regulated by Waste Discharge Requirements Order No. 98-233 (NPDES No. CA0081507), adopted by the Board on 11 December 1998.

12. The ROWD describes the treatment plant effluent as follows:

    Annual Average Daily Flow (average of last three years): 0.289 million gallons per day (mgd)
    Daily Peak Flow (highest of last three years): 0.373 mgd
    Design Flow: 0.43 mgd
    pH: 6.0 minimum, 6.8 maximum

Constituent	mg/L	lbs/day
Average BOD[1]	2	7 [3]
Average TSS[2]	2	7 [3]

[1] 5-day, 20°C biochemical oxygen demand.
[2] Total suspended solids.
[3] Based upon permitted flow of 0.43 mgd.

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

WATER QUALITY CONTROL PLAN, NATIONAL TOXICS RULE, AND CALIFORNIA TOXICS RULE

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

15. The USEPA adopted the National Toxics Rule (NTR) on 5 February 1993 and the California Toxics Rule (CTR) on 18 May 2000 (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) that contains guidance on implementation of the NTR and the CTR.

16. On 8 December 2000, the Discharger was issued a letter under the authority of California Water Code (CWC) Section 13267 requiring effluent and receiving water monitoring to meet the data collection requirements of the SIP. The Discharger sampled effluent from the treatment plant and receiving water on two occasions to determine if the priority pollutants established in the CTR and NTR were detected. A listing of all priority pollutants in the NTR and CTR that were detected by the Discharger's sampling, and the water quality objective for the pollutant are presented in the attached Information Sheet. This data was used to determine the necessity of including effluent limitations for priority pollutants in this permit.

BENEFICIAL USES OF THE RECEIVING WATER

17. The Basin Plan on page II-2.00 states: "Existing and potential beneficial uses which 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."

18. The Basin Plan identifies the following beneficial uses for Cottonwood Creek: municipal and domestic supply (MUN); irrigation and stock watering agricultural supply (AGR); industrial process supply (PROC); industrial service supply (IND), hydropower generation (POW); water

contact and noncontact recreation (REC-1 and REC-2); warm and cold freshwater habitat (WARM and COLD); cold water migration of aquatic organisms (MIGR); warm and cold water spawning, reproduction, and/or early development (SPWN); and, wildlife habitat (WILD). Upon review of the flow conditions, habitat values, and beneficial uses of Cottonwood Creek, the Regional Board finds that the beneficial uses identified in the Basin Plan for Cottonwood Creek are applicable.

19. The Basin Plan defines beneficial uses 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.

20. Unless designated otherwise by the Regional Board, the beneficial uses of groundwater of the Central Valley Region are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL

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

22. Federal regulations contained in 40 CFR Part 122.44 (d) require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numerical water quality standard (reasonable potential). A Basin Plan standard is defined as the beneficial use and the water quality objective that will protect that beneficial use.

23. Determining reasonable potential for pollutants other than those contained in the CTR and NTR is accomplished by analyzing treatment plant operations, past effluent monitoring results, and other pertinent factors. In addition, the USEPA has provided guidance for the analysis of reasonable potential in their *Technical Support Document* for *Water Quality Based Toxics Control (TSD)*(EPA/505/2-90-101), which has been considered in this permit for developing effluent limitations for pollutants other than those in the CTR and NTR.

24. In determining effluent limits, the Regional Board did not allow credit for the dilution of effluent with the receiving water. Effluent limits, therefore, have been established to meet the water quality standard at the point of discharge (end-of-pipe"). The Regional Board may grant a dilution credit and a mixing zone only if a sufficient study and demonstration is made that a dilution credit and mixing zone are appropriate and protective of receiving water beneficial uses.

25. In consideration of the above beneficial use designations, lack of proven, available dilution, and determination of reasonable potential, effluent limitations for the following non-priority pollutants have been established in this Order:

a. *Total and Fecal Coliform Organisms*

In a letter to the Regional Board dated 8 April 1999, the California Department of Health Services indicated that DHS would consider wastewater discharged to water bodies with identified beneficial uses of irrigation, contact recreation, or a drinking water source to be adequately disinfected if: 1) the wastewater receives dilution of more than 20:1; 2) the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median; and 3) the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period. Municipal water supply is a beneficial use of Cottonwood Creek, as noted above. DHS recommends that samples be obtained for coliform at least twice per week if this coliform effluent limitation is used.

The effluent limit for total coliform in the previous Order was 23 MPN/100mL as a monthly median, and 500 MPN/100mL as a daily maximum. This effluent limit does not meet the current recommendation by DHS, nor does it guarantee that the Basin Plan receiving water objective will be met. Therefore, this Order establishes an effluent limit for total coliform of 23 MPN/100mL as a 7-day median, 240 MPN/100mL may only be exceeded one time during any 30-day period, and 500 MPN/100mL as a daily maximum. Additionally, during the summer and fall seasons, a 20:1 dilution of effluent in Cottonwood Creek may not be achievable, which would potentially necessitate alternative disposal solutions or more stringent treatment and disinfection requirements. As the fecal coliform concentration of any sample is less than or equal to the total coliform concentration in accordance with the bacteriological definition of coliform and analytical detection procedures for these bacteria, these effluent limitations will implement the Basin Plan water quality objective for fecal coliform.

b. *Toxic compounds:* Aquatic habitat based upon the WARM and COLD designations is a beneficial use of Cottonwood Creek. The Basin Plan narrative toxicity standard requires that "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life."

- *Chlorine*-The Discharger disinfects treated effluent with chlorine, which is toxic to aquatic organisms. The USEPA has developed recommended chlorine ambient water quality criteria to protect freshwater aquatic organisms. Their criterion is used in this Order to implement the narrative toxicity objective of the Basin Plan. The USEPA's ambient water quality criteria for total residual chlorine for protection of aquatic life are 11 ug/L as a 4-day average (chronic) concentration, and 19 ug/L as a one-hour average (acute) concentration. This permit contains effluent discharge limitations for total residual chlorine of 0.01 mg/L as a four-day average, and 0.02 mg/L as a maximum 1-hour average, based on the USEPA ambient criteria to protect aquatic life. The one-hour average limitation, rather than an instantaneous or daily maximum, will be applied for compliance determinations. A one-hour average limitation allows for continuous monitoring anomalies while protecting aquatic organisms against toxicity.

- *Ammonia*- Domestic wastewater treatment plants that do not nitrify (convert ammonia to nitrate) generally produce effluent with ammonia concentrations exceeding USEPA recommended freshwater criteria. Although the wastewater treatment plant is capable of nitrification, nitrification may not fully occur year-round. The toxicity of ammonia depends on such factors as fish life stages present, receiving water temperature, and receiving water pH. Therefore, there may be a reasonable potential for effluent ammonia to cause or contribute to an in-stream excursion above the Basin Plan narrative toxicity objective if there is inadequate dilution and mixing of effluent in Cottonwood Creek. The USEPA has published revised ambient water quality criteria for ammonia (*1999 Ammonia Update*). This Order contains requirements for monitoring effluent ammonia, and a reopener to set ammonia effluent limitations if it is determined that ammonia in the effluent presents a reasonable potential for exceedance of a water quality objective.

c. Electrical Conductivity

The Basin Plan does not specify a water quality objective for electrical conductivity (EC) in Cottonwood Creek. The Basin Plan does contain a water quality objective for EC for the portion of the Sacramento River to which Cottonwood Creek is tributary. This objective is 230 micromhos/cm as a 50^{th} percentile. No data has been obtained regarding the EC level in the discharge or in Cottonwood Creek. This proposed Order requires the Discharger to obtain data on effluent and receiving water EC to confirm that water quality in Cottonwood Creek and the downstream Sacramento River will not be unacceptably impacted by EC.

d. BOD and Total Suspended Solids

This permit contains effluent limits for BOD and total suspended solids (TSS). Federal regulations in 40 Code of Federal Regulations (CFR) Part 133 provide technology based effluent limitations for BOD and TSS for secondary treatment. Pursuant to the regulations at 40 CFR Parts 133.105(a), (b), and 133.103, the BOD and TSS 30-day average discharge limitations for secondary treatment shall not exceed 30 mg/L, the 7-day average shall not exceed 45 mg/L, and the 30-day BOD and TSS removal shall not be less than 85 percent.

e. pH

The Basin Plan requires that the pH of any receiving water not be greater than 8.5 nor lower than 6.5 units. The Report of Waste Discharge submitted by the Discharger indicates the lowest and highest pH values of 6.0 and 6.8 in the effluent, respectively. These readings indicate that the current wastewater treatment activity has a reasonable potential to generate effluent with pH values that could adversely affect beneficial uses. The Federal Clean Water Act, Section 301, requires that not later than 1 July 1977, publicly owned wastewater treatment works meet effluent limitations based on secondary treatment or any more stringent limitation necessary to meet water quality

standards. Federal Regulations, 40 CFR, Part 133, establish the minimum level of effluent quality attainable by secondary treatment for pH.

26. On 27 February 2001, 12 July 2001 (for dioxin congeners only), and 11 January 2002, the Discharger collected effluent and receiving water samples for analyses of the CTR toxic priority pollutants. Analyses were performed for volatile and semi-volatile substances, metals, 2,3,7,8-TCDD dioxin, and sixteen other dioxin congeners and reported in accordance with procedures established by the SIP.

Methodology described in Section 1.3 of the SIP was used to evaluate the Discharger's monitoring data for the CTR priority toxic pollutants. No credit for dilution of the effluent with the receiving water was considered. Copper, zinc, cyanide, bromodichloromethane, chloroform, and bis-2-ethylhexylphthalate were detected at concentrations that may cause or contribute to an in-stream excursion above a numerical water quality standard of the CTR or the Basin Plan.

Final water quality based effluent limitations for copper and zinc are included in this Order, as described below. Effluent limitations for cyanide, bromodichloromethane, chloroform, and bis-2-ethylhexylphthalate are not established in this Order because insufficient information exists at this time to determine if an effluent limit is necessary for these pollutants, as discussed below.

Copper

The CTR and Basin Plan include hardness-dependent standards for the protection of freshwater aquatic life for copper. Freshwater aquatic habitat is a beneficial use of the receiving water. U.S. EPA recommends conversion factors (translators) to translate dissolved concentrations of certain metals to total recoverable concentrations. The translator for copper in freshwater is 0.960 for both the acute and the chronic criteria. Using a water hardness of 94 mg/L as $CaCO_3$ (the lowest hardness value observed in the receiving water), the most stringent applicable water quality standards for copper are 8.5 and 12.2 ug/L (dissolved) based on the CTR chronic and Basin Plan acute criteria, respectively, for protection of aquatic life. The highest observed concentrations were in samples collected on 11 January 2002, where copper (total recoverable) was measured at 12 and 3.6 ug/L in the effluent and receiving water, respectively. After applying the translator, these highest effluent or receiving water samples concentrations exceed the most stringent water quality standards and therefore, effluent limitations are required. Determination of reasonable potential and calculation of effluent limits is further explained in the attached Information Sheet for this Order.

The effluent limitation for copper is a new requirement in this Order. 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*." However, in accordance with the Regional Board's *Policy for Application of Water Quality Objectives*, presented in Chapter IV of the Basin Plan, schedules for compliance with final effluent limitations for copper, which are based on water quality criteria or objectives

adopted before 25 September 1995, may not be authorized in an NPDES permit. Therefore, the final effluent limits established in this Order for copper, become immediately applicable on the effective date of this Order. However, the Regional Board may adopt other Orders, such as a Cease and Desist Order, allowing the Discharger a period of time to fully comply with the effluent limit for copper.

Zinc

The CTR and Basin Plan include hardness-dependent standards for the protection of freshwater aquatic life for zinc. Freshwater aquatic habitat is a beneficial use of the receiving water. U.S. EPA recommends conversion factors (translators) to translate dissolved concentrations of certain metals to total recoverable concentrations. The translator for zinc in freshwater is 0.978 and 0.986 for the acute and the chronic criteria, respectively. Using a water hardness of 94 mg/L as $CaCO_3$ (the lowest hardness value observed in the receiving water), the most stringent applicable water quality standards for zinc are 112 and 32.5 ug/L (dissolved) based on the CTR chronic and Basin Plan acute criteria, respectively, for protection of aquatic life. The highest observed concentrations were in samples collected on 11 January 2002, where zinc (total recoverable) was measured at 52 and 18 ug/L in the effluent and receiving water, respectively. After applying the translator, these highest effluent or receiving water samples concentrations exceed the most stringent water quality standards and therefore, effluent limitations are required. Determination of reasonable potential and calculation of effluent limits is further explained in the attached Information Sheet for this Order.

The effluent limitation for zinc is a new requirement in this Order. 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*." However, in accordance with the Regional Board's *Policy for Application of Water Quality Objectives*, presented in Chapter IV of the Basin Plan, schedules for compliance with final effluent limitations for zinc, which are based on water quality criteria or objectives adopted before 25 September 1995, may not be authorized in an NPDES permit. Therefore, the final effluent limits established in this Order for zinc, become immediately applicable on the effective date of this Order. However, the Regional Board may adopt other Orders, such as a Cease and Desist Order, allowing the Discharger a period of time to fully comply with the effluent limit for zinc.

Cyanide

Cyanide was detected in the effluent sample collected on 27 February 2001 at a concentration of 54 ug/L, and in the receiving water at 5 ug/L. The CTR chronic and acute criteria (independent of hardness) for the protection of freshwater aquatic life are 5.2 ug/L and 22 ug/L, respectively. The Basin Plan (Table III-1) instantaneous maximum (acute) objective is 10 ug/L, independent of hardness. Therefore, the most stringent, applicable water quality standard for cyanide is the CTR chronic criteria of 5.2 ug/L for the protection of freshwater aquatic life. The analytical laboratory that performed the cyanide analyses for the Discharger originally reported incorrect results and later issued revised results. The reported presence of cyanide in the effluent at 54 ug/L, and especially the reported presence in the receiving water is somewhat

unexpected, and when considered with the laboratory reporting problems, the data is unreliable. Therefore, insufficient information exists to determine if an effluent limit for cyanide is appropriate. This Order requires the effluent to be monitored for cyanide, and if, after sufficient information has been collected, it can be determined that reasonable potential exists for the effluent to exceed a water quality standard for cyanide, this Order may be reopened and an effluent limit for cyanide added, as appropriate.

Bromodichloromethane

Bromodichloromethane was detected in the effluent sample collected on 11 January 2002 at a concentration of 3 ug/L. It was not detected in the effluent sample collected on 27 February 2001, however. The CTR human health criteria for consumption of water and organisms is 0.56 ug/L. Although the Basin Plan does not include numerical water quality criteria for bromodichloromethane, there is a narrative water quality objective of the Basin Plan for toxicity, which states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. To interpret this narrative objective, the Regional Board relies on its *Compilation of Water Quality Goals* (2000), which includes the Cal/EPA Cancer Potency Factor, established by the Office of Environmental Health Hazard Assessment (OEHHA), of 0.27 ug/L for bromodichloromethane. Because the health-based criteria maintained by the OEHHA are used as a basis for California state regulatory action, in accordance with the Regional Board's policy, this criterion is given preference when interpreting narrative water quality objectives. [Central Valley Regional Water Quality Control Board, A Compilation of Water Quality Goals, at page 15 (2000)] Additionally, a California Primary MCL of 100 ug/L has been established for Total Trihalomethanes (bromoform, bromodichloromethane, chloroform, and dibromochloromethane). The Basin Plan states that, "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)...incorporated by reference into this plan."

The most stringent, applicable water quality standard for bromodichloromethane is the CTR Human Health criteria for consumption of water and organisms of 0.56 ug/L. The Cal/EPA Cancer Potency Factor of 0.27 ug/L should also be considered.

Trihalomethanes, comprised of the typical chlorination byproduct compounds bromoform, bromodichloromethane, chloroform and dibromochloromethane can be formed in the chlorination process at wastewater treatment plants. While it is not unexpected that trihalomethanes would be present in the effluent, insufficient information exists at this time to establish an effluent limitation. Therefore, this Order requires the effluent to be monitored for trihalomethanes, and if, after sufficient information has been collected, it can be determined that reasonable potential exists for the effluent to exceed a water quality standard for any of the trihalomethane compounds, this Order may be reopened and an effluent limit for the compound(s) added, as appropriate.

Chloroform

Chloroform was detected in the effluent samples collected on 27 February 2001 and 11 January 2002 at concentrations of 2.2 ug/L and 20 ug/L, respectively. Although the CTR does not include numerical water quality criteria for chloroform, there is a narrative water quality objective of the Basin Plan for toxicity, which states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. To interpret this narrative objective, the Regional Board relies on its *Compilation of Water Quality Goals* (2000), which includes the Cal/EPA Cancer Potency Factor, established by the Office of Environmental Health Hazard Assessment (OEHHA), of 1.1 ug/L for chloroform. Because the health-based criteria maintained by the OEHHA are used as a basis for California state regulatory action, in accordance with the Regional Board's policy, this criterion is given preference when interpreting narrative water quality objectives. [Central Valley Regional Water Quality Control Board, A Compilation of Water Quality Goals, at page 15 (2000)] Additionally, a California Primary MCL of 100 ug/L has been established for Total Trihalomethanes (bromoform, bromodichloromethane, chloroform, and dibromochloromethane). The Basin Plan states that, "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)...incorporated by reference into this plan."

The most stringent, applicable water quality standard for chloroform is the Cal/EPA Cancer Potency Factor of 1.1 ug/L.

Trihalomethanes, comprised of the typical chlorination byproduct compounds bromoform, bromodichloromethane, chloroform and dibromochloromethane can be formed in the chlorination process at wastewater treatment plants. While it is not unexpected that trihalomethanes would be present in the effluent, insufficient information exists at this time to establish an effluent limitation. Therefore, this Order requires the effluent to be monitored for trihalomethanes, and if, after sufficient information has been collected, it can be determined that reasonable potential exists for the effluent to exceed a water quality standard for any of the trihalomethane compounds, this Order may be reopened and an effluent limit for the compound(s) added, as appropriate.

Bis-2-Ethylhexylphthalate

Bis-2-ethylhexylphthalate was detected in the effluent and receiving water samples collected on 11 January 2002 at concentrations of 2 ug/L and 10 ug/L, respectively. It was not detected in either the effluent or receiving water samples collected on 27 February 2001. The CTR Human Health Criteria for consumption of water and organisms is 1.8 ug/L. Additionally, a California Primary MCL of 4 ug/L has been established for bis-2-ethylhexylphthalate. The Basin Plan states that, "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) ...incorporated by reference into this plan."

The most stringent, applicable water quality standard for bis-2-ethylhexylphthalate is the CTR Human Health criteria for consumption of water and organisms of 1.8 ug/L.

Bis-2-ethylhexylphthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and it is therefore possible that the contaminant is not truly present in the receiving water or effluent discharge. This Order requires the Discharger to take steps to assure that sampling containers and apparatus are not the source of this contaminant. If changes in sampling and/or analytical procedures and equipment indicate that bis-2-ethylhexylphthalate is not actually present in the effluent or receiving water samples at concentrations that trigger reasonable potential according to the SIP, then effluent limits are not necessary. If bis-2-ethylhexylphthalate continues to be detected in the effluent and/or receiving water, then this Order may be reopened and modified to include an appropriate effluent limitation for bis-2-ethylhexylphthalate.

27. Section 1.4 of the SIP establishes procedures for calculating effluent limitations. Included in the procedures is determination of a dilution credit, which the Regional Board may approve or disapprove at its discretion. However, the Discharger has not developed the information needed to determine a dilution credit, and based on the limited information that is available, it appears that the receiving water may have very limited dilution capacity during the low flow seasons. Consequently, this Order establishes final effluent limitations based on zero dilution. This Order also has a reopener that allows new effluent limitations to be adopted if a mixing zone and dilution study demonstrates that dilution credits are appropriate.

28. As stated in Standard *Provisions and Reporting Requirements, For Waste Discharge Requirements, 1 March 1991, General Provisions, No. 13*, this Order prohibits bypass from any portion of the treatment facility. Federal Regulations, 40 CFR 122.41 (m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the Federal Regulations, 40 CFR 122.41 (m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Board's prohibition of bypasses, the State Water Resources Control Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the Federal Regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation. In the case of United States v. City of Toledo, Ohio (63 F. Supp 2d 834, N.D. Ohio 1999) the Federal Court ruled "*any bypass which occurs because of inadequate plant capacity is unauthorized…to the extent that there are 'feasible alternatives', including the construction or installation of additional treatment capacity.*"

29. This Order contains provisions and monitoring program requirements that require the Discharger to conduct additional sampling to provide information on the concentrations of all priority pollutants in the discharge.

30. Section 13263.6(a), CWC, requires that "the regional board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW [Publicly Owned Treatment Works] for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community

Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRKA) indicate as discharged into the POTW, for which the state board or the regional board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective." Review of the available toxic release reporting data for 1998 through 2003 did not reveal any release of toxic chemicals to the treatment plant. Therefore, under the requirements of EPCRKA, there is no requirement for setting of effluent limitations for any toxic chemical regulated in accordance with this section of the Water Code.

COMPLIANCE WITH STATE AND FEDERAL POLICIES REGARDING WATER QUALITY DEGRADATION

31. The permitted discharge is consistent with the anti-degradation provisions of 40 CFR Part 131.12 and with SWRCB Resolution 68-16 (Policy with Respect to Maintaining High Quality Water of Waters in California). 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.

SEWER SYSTEM OVERFLOW PREVENTION

32. The Discharger's sanitary sewer system collects wastewater using sewers, gravity and pressure piping, pumps, and/or other conveyance systems and directs this raw sewage to the treatment plant. A "sanitary sewer overflow" is defined as a discharge to ground or surface water from the sanitary sewer system at any point upstream of the wastewater treatment plant. Temporary storage and conveyance facilities (such as wet wells, regulated impoundments, tanks, highlines, etc.) may be part of a sanitary sewer system and discharges to these facilities are not considered sanitary sewer overflows, provided that the waste is fully contained within these temporary storage/conveyance facilities.

33. The potential causes of sanitary sewer overflows that may affect this sewer system include grease blockages, root blockages, debris blockages, air relief/vacuum valve failures, vandalism, storm or groundwater inflow/infiltration, snow melt infiltration, lift station pump failure or blockage, and lack of capacity, both hydraulic capacity of the sewer and pumping station capacity. Sanitary sewer overflows pose a threat to public health, may adversely affect aquatic life, and may impair the recreational use and aesthetic enjoyment of surface waters in the area.

34. Adequate steps must be taken to maintain and operate the sewer system and prevent sewer system overflows. This Order requires the Discharger to prepare and implement sewer system operation, maintenance, overflow prevention, and overflow response plans for the sewer collection system.

MANAGEMENT OF STORM WATER

35. The USEPA, on 16 November 1990, promulgated storm water regulations (40 CFR Parts 122, 123, and 124) that require specific categories of industrial facilities which discharge storm

water to obtain NPDES permits and to implement Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to reduce or eliminate industrial storm water pollution. Wastewater treatment plants with design flows of less than on million gallons per day are not required to obtain an NPDES permit for storm water discharges. The design flow of the Cottonwood Wastewater Treatment Plant is 0.43 mgd. Therefore, the Discharger is not required to obtain an NPDES permit for storm water discharges.

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT, NOTIFICATION REQUIREMENTS, AND MISCELLANEOUS

36. Monitoring is required by this Order for the purposes of assessing compliance with permit limitations and water quality objectives and gathering information to evaluate the need for additional limitations.

37. 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. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports."* The attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The Discharger is responsible for the discharges of waste at the facility subject to this Order.

38. The Regional Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The Information Sheet, Monitoring and Reporting Program No. R5-2005-0037, and Attachments A through E are a part of this Order.

39. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the CWC. The treatment plant is also an existing facility, which exempts it from CEQA.

40. 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.

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

42. 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 the USEPA has no objections.

IT IS HEREBY ORDERED that Order No. 98-233 is rescinded, and the Shasta County Service Area No. 17 (Cottonwood Wastewater Treatment Plant), their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the CWA and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. The discharge of effluent at a location or in a manner different from that described in the Findings, is prohibited.

2. The by-pass or overflow of wastes, except as allowed by Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES) A.13, is prohibited.

3. Discharge of materials, other than storm water, that are not otherwise permitted by this Order to surface waters or surface water drainage courses, is prohibited.

4. Discharge of wastewater from sewage holding tanks into the treatment plant or collection system, without prior approval from the Executive Officer of the Regional Board, or his designee, is prohibited.

B. Effluent Limitations

1. The effluent discharge to Cottonwood Creek shall not exceed the following limitations:

Constituent	Units	Monthly Average	Weekly Average	Monthly Maximum[5]	Daily Maximum	Hourly Average	4-day Average
BOD[1]	mg/L	10	15	--	30	--	--
	lbs/day[2]	36	54	--	108	--	--
Total Suspended Solids	mg/L	10	15	--	30	--	--
	lbs/day[2]	36	54	--	108	--	--
Settleable Solids	mL/L	0.1	--	--	0.2	--	--
Chlorine Residual[3]	mg/L	--	--	--	--	0.02	0.01
Total Coliform Organisms[3,4]	MPN/ 100 mL	--	23[6]	240[5]	500	--	--

Constituent	Units	Monthly Average	Weekly Average	Monthly Maximum[5]	Daily Maximum	Hourly Average	4-day Average
Copper (Total Recoverable)	ug/L	Must Calculate. See Attachment C.	--	--	Must Calculate. See Attachment C.	--	--
	lbs/day[2]	Must Calculate. See footnote 2.	--	--	Must Calculate. See footnote 2.	--	--
Zinc (Total Recoverable)	ug/L	Must Calculate. See Attachment D.	--	--	Must Calculate. See Attachment D.	--	--
	lbs/day[2]	Must Calculate. See footnote 2.	--	--	Must Calculate. See footnote 2.	--	--

[1] 5-day, 20°C biochemical oxygen demand
[2] Based upon a design flow of 0.43 mgd. Calculate lbs/day by multiplying concentration (mg/L) by 0.43 mgd flow and by 8.34 conversion factor.
[3] Chlorine residual and total coliform shall be measured at the chlorine contact chamber discharge or other location approved by the Executive Officer. Effluent chlorine residual shall be measured continuously.
[4] The effluent coliform sample shall be taken during the period when the highest daily effluent flow occurs.
[5] Shall not exceed more than once in any 30 day period.
[6] As a 7-day median average.

2. The arithmetic mean BOD in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples (85 percent removal).

3. The discharge shall not have a pH less than 6.0 nor greater than 9.0 units.

4. The 30-day average daily dry weather (May through October) discharge flow to Cottonwood Creek shall not exceed 0.43 million gallons.

5. Survival of test fishes in 96-hour bioassays of undiluted effluent shall be no less than:

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

6. The Discharger shall use the best practicable cost-effective control technique currently available to limit mineralization of Cottonwood Creek to no more than a reasonable increment.

C. Discharge Specifications

1. Objectionable odors originating at the treatment plant shall not be perceivable beyond the property.

2. Public contact with wastewater shall be precluded to the best practicable extent possible through such means as fences, signs, and other acceptable alternatives

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

D. Sludge Disposal

1. Collected screenings, sludge, 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 USEPA 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 Part 503.

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

5. By **30 January of each year**, the Discharger shall submit a revised sludge management and disposal plan describing the annual volume of sludge generated by the treatment plant and specifying the sludge disposal practices. Refer to the Monitoring and Reporting Program for additional information on the required monitoring and reporting for sludge.

E. Receiving Water Limitations

Receiving water limitations are based upon water quality objectives contained in the Basin Plan. As such, they are a required part of this permit.

The discharge shall not cause the following in Cottonwood Creek:

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

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

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

4. Aesthetically undesirable discoloration.

5. Fungi, slimes, or other objectionable growths.

6. 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.

    In determining compliance with the above limitations, appropriate averaging periods may be applied upon approval by the Executive Officer.

7. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units. In determining compliance with the above limitations, appropriate averaging periods may be applied upon approval by the Executive Officer.

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

9. The normal ambient temperature to be altered by more than 5°F.

10. 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.

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

12. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or to cause nuisance or adversely affect beneficial uses.

13. 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 the samples taken in any 30-day period to exceed 400 MPN/100 mL.

14. 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.

15. Violations of any applicable water quality standard for receiving waters adopted by the Regional Board or the SWRCB pursuant to the CWA and regulations adopted thereunder.

F. Groundwater Limitations

Release of waste constituents from any storage, treatment, or disposal component associated with the treatment plant, in combination with other sources of waste constituents, shall not cause the following in groundwater:

1. Beneficial uses to be unreasonably affected, water quality objectives to be exceeded, or cause a condition of pollution or nuisance.

2. Any increase in total coliform organisms to exceed 2.2 MPN/100 mL over any seven-day period.

G. Pretreatment Program Provisions

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

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

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

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

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

e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the treatment works is designed to accommodate such heat;

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

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

h. Any trucked or hauled pollutants, except at points predesignated by the Discharger, and approved by the Executive Officer of the Regional Board, or his designee.

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

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

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

H. Provisions

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

2. 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.

3. The Discharger shall conduct the acute toxicity testing specified in Monitoring and Reporting Program No. R5-2005-0037. If the testing indicates that the discharge causes unacceptable exceedances of the acute toxicity effluent limitation or water quality objective, the Discharger shall submit a workplan to conduct a Toxicity Reduction

Evaluation (TRE) **within 90 days of that determination** and upon Executive Officer review conduct the TRE **within 180 days**. After completion of the TRE this Order may be reopened and a toxicity limitation included and/or a limitation for the specific toxicant(s) identified in the TRE included.

4. The Discharger shall conduct the chronic toxicity testing specified in Monitoring and Reporting Program No. R5-2005-0037. 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 submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) **within 90 days of that determination** and upon Executive Officer review conduct the TRE **within 180 days**, and this Order may be reopened and a toxicity limitation included and/or a limitation for the specific toxicant(s) 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.

5. The Discharger shall comply with the attached Monitoring and Reporting Program No. R5-2005-0037, which is a 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.

6. The Discharger shall provide certified wastewater treatment plant operators in accordance with regulations adopted by the SWRCB.

7. The Discharger shall maintain all portions of the wastewater collection system to assure compliance with this Order. Collection system overflows and/or discharges are prohibited by this Order. All violations of this Order must be reported as specified in the Standard Provisions and the public shall be notified, in coordination with the Health Department, in areas that have been contaminated with sewage. All parties with a reasonable potential for exposure to a sewage overflow event shall be notified.

8. **Within 12 months of the adoption of this Order**, the Discharger shall submit a report to the Executive Officer of the Regional Board that either establishes a management strategy for the acceptable operation of the treatment plant with only the new north sludge storage basin in operation, or that outlines a workplan and time schedule no longer than 36 months from the date this Order is adopted for repair/replacement of the south sludge storage basin. If improvements in addition to the north sludge storage basin are required, such improvements shall be completed and functioning **within 36 months of adoption of this Order**. The report shall be prepared and submitted by a California registered civil engineer, unless otherwise approved.

9. **Within 12 months of the adoption of this Order**, the Discharger shall submit a workplan and time schedule no longer than 36 months from the date this Order is adopted

for the repair/replacement of the damaged effluent diffuser in Cottonwood Creek. The diffuser shall be repaired/replaced according to the original design specifications or an improved design approved by the Executive Officer of the Regional Board, or his designee. The repaired/replaced diffuser shall be installed and functioning **within 36 months of the adoption of this Order**. The workplan and diffuser design shall be prepared and submitted by a California registered civil engineer, unless otherwise approved.

10. This Order requires the Discharger to report accurate receiving water stream flow measurements. If the Discharger is not able to utilize existing gage facilities, or is unable to provide accurate and timely data, then **within 18 months of the adoption of this Order**, the Discharger shall submit a workplan and time schedule no longer than 36 months from the date this Order is adopted for the installation of a stream flow gage in Cottonwood Creek. The gage shall be located in the vicinity and preferably upstream of the discharge location and shall accurately and reliably provide stream flow measurements throughout the low and very low flow seasons. The Discharger may be able to cooperatively install or upgrade an existing gage with another government entity, but shall remain responsible for ensuring the proper operation of the gage. The new or upgraded gage shall be installed and functioning **within 36 months of the adoption of this Order**. The workplan and gage design shall be prepared and submitted by a California registered civil engineer, unless otherwise approved.

11. **Within 24 months of the adoption of this Order**, the Discharger shall repair or replace the dosing controls for the chlorination/dechlorination processes at the treatment plant. The controls shall be automatically operated based on flow or concentration. Documentation of such repair/replacement shall be submitted to the Regional Board following completion of this task.

12. **Within 24 months of the adoption of this Order**, the Discharger shall install an electronic, real-time residual chlorine analyzer on the treatment plant effluent following the dechlorination process. The device shall continuously measure and record the chlorine residual and automatically notify the treatment plant operator of errors and effluent violations. The device shall have the sensitivity and accuracy to demonstrate compliance with the effluent limits for chlorine residual contained in this Order. Documentation of such installation shall be submitted to the Regional Board following completion of this task.

13. **Bis-2-ethylhexylphthalate Verification**
In order to verify if bis-2-ethylhexylphthalate is truly present in the receiving water or effluent discharge, the Discharger shall take steps to assure that sample containers, sampling apparatus, and analytical equipment are not sources of the detected contaminant. If changes in sampling and/or analytical procedures and equipment indicate that bis-2-ethylhexylphthalate is not present in the effluent or receiving water samples at concentrations that cause reasonable potential as defined by the SIP, then effluent limits are not necessary. If bis-2-ethylhexylphthalate continues to be detected in the effluent

and/or receiving water, then this Order may be reopened and modified by adding an appropriate effluent limitation for bis-2-ethylhexylphthalate.

14. The Discharger shall conduct the monitoring and reporting specified in the attached Monitoring and Reporting Program. If sufficient information is collected and indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numerical water quality standard, then this Order may be reopened to include effluent limit(s) to achieve water quality standards. Additionally, if pollutants are detected in discharges from the Discharger's facility, but insufficient information exists to establish an effluent limit or determine if an effluent limit is necessary, the Discharger may be required to conduct additional monitoring to provide sufficient information.

15. If applicable, the Discharger shall comply with the requirements of Division 20, Chapter 6.67 of the Health and Safety Code, known as the Aboveground Petroleum Storage Act. These requirements include preparation of a Spill Prevention Control and Countermeasure Plan in accordance with 40 CFR Part 112.

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

17. 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 a part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provision(s)."

18. The Discharger may be required to submit technical reports as directed by the Executive Officer.

19. This Order expires on **1 March 2010**, and the Discharger must file a ROWD in accordance with Title 23, CCR, not later than **180 days** in advance of such date as application for issuance of new waste discharge requirements.

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

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

22. To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must

contain the requesting entity's full legal name; the state of incorporation, if a corporation; the address and telephone number of the persons responsible for contact with the Regional 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 March 2005.

THOMAS R. PINKOS
Executive Officer

BJS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2005-0037

NPDES NO. CA CA0081507

FOR

SHASTA COUNTY SERVICE AREA NO. 17
COTTONWOOD WASTEWATER TREATMENT PLANT
SHASTA COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to California Water Code Sections 13267 and 13383 and describes requirements for monitoring domestic wastewater, treated effluent, and receiving water. The Discharger shall not implement any changes to this MRP unless and until the Regional Board or Executive Officer approves such changes. Regional Board staff shall approve specific sample station locations prior to implementation of sampling activities.

All samples shall be representative of the volume and nature of the discharge or material sampled. The time, date, and location of each sample shall be recorded on a chain of custody form for the sample.

All water quality sampling and analyses shall be performed in accordance with the Monitoring and Reporting Requirements as outlined in the Standard Provisions of this Order. Water quality sample collection, storage, and analyses shall be performed according to 40 CFR Part 136, or other methods approved and specified by the Executive Officer. Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DHS), except when a certified laboratory is not reasonably available to the Discharger, in which case a non-certified laboratory operating in compliance with an approved Quality Assurance-Quality Control program may be used.

Field test instruments (such as those used to test temperature, pH, dissolved oxygen, or other constituents amenable to such instrumentation) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;

2. The instruments are calibrated in accordance with the manufacturers recommendations and the method has been accepted by Regional Board staff;

3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and

4. Field calibration reports are submitted as described in the “Reporting” section of this MRP.

INFLUENT MONITORING

Samples shall be representative of the influent for the period sampled. The following shall constitute the influent monitoring program:

Constituent	Unit	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
20°C, BOD_5	mg/L, lbs/day	24-Hr. Composite	Weekly
Total Suspended Solids	mg/L, lbs/day	24-Hr. Composite	Weekly

EFFLUENT MONITORING

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall. Effluent samples should be representative of the volume and nature of the discharge. Composite samples may be taken by a proportional sampling device approved by the Executive Officer, or by grab samples composited in proportion to the flow. For grab samples, the sampling interval shall not exceed 1 hour. The time of collection of grab samples shall be recorded. The following shall constitute the effluent monitoring program:

Constituent	Unit	Type of Sample	Sampling Frequency
Chlorine Residual[1]	mg/L	Flow through	Continuous
pH	pH Units	Grab	Daily
Flow	MGD	Cumulative	Daily
Settleable Solids	mL/L	Grab	Weekly
20°C, BOD_5	mg/L, lbs/day	24-hour composite	Weekly
Total Suspended Solids	mg/L, lbs/day	24-hour composite	Weekly
Temperature	°F	Grab	Weekly
Total Coliform[2]	MPN/100 mL	Grab	Weekly
Total Copper	ug/L	Grab	Monthly
Total Zinc	ug/L	Grab	Monthly
Cyanide	ug/L	Grab	Monthly
Bromoform	ug/L	Grab	Monthly
Bromodichloromethane	ug/L	Grab	Monthly
Chloroform	ug/L	Grab	Monthly
Dibromochloromethane	ug/L	Grab	Monthly
Bis-2-Ethylhexylphthalate[3]	ug/L	Grab	Monthly
Ammonia Nitrogen [4,5]	mg/L, lbs/day	Grab	Quarterly
Electrical Conductivity	umho/cm	Grab	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly
Nitrate Nitrogen	mg/L, lbs/day	Grab	Quarterly
TKN	mg/L, lbs/day	Grab	Quarterly
Acute Toxicity [6]	% Survival	---	Quarterly
Chronic Toxicity [7]	---	---	Annually

Constituent	Unit	Type of Sample	Sampling Frequency
Total Phosphorus	mg/L	Grab	Annually
Oil and Grease	mg/L	Grab	Annually
Priority Pollutants[8]	---	Grab	As described below

[1] Daily grab sample shall be adequate until installation of continuous measurement device is installed, as required by this Order.
[2] Coliform samples shall be obtained during the peak hourly flow for the day.
[3] Monitoring for bis-2-ethylhexylphthalate may be eliminated if it is not detected above the laboratory ML for a period of 24 months.
[4] Concurrent with biotoxicity monitoring.
[5] Report as both total and un-ionized ammonia.
[6] The acute bioassay samples shall be analyzed using EPA/821-R-02-12, Fifth Edition, or later amendment with Regional Board approval. Temperature and pH shall be recorded at the time of bioassay sample collection. Test species shall be salmonids, with no pH adjustment unless approved by the Executive Officer. Sample concurrent with ammonia sampling. Effluent shall be monitored in accordance with procedures described below.
[7] Effluent shall be monitored in accordance with procedures described below.
[8] Samples shall be analyzed for the toxic priority pollutants identified by the California Toxics Rule at 40 CFR 131.38. Effluent samples shall be collected simultaneously with receiving water samples to be analyzed for the CTR pollutants. Monitoring shall be conducted in accordance with procedures described below.

UNDERDRAIN SYSTEM DISCHARGE MONITORING

Underdrain system discharge samples shall be collected when the system is discharging. Monitoring shall include at least the following:

Constituent	Unit	Type of Sample	Sampling Frequency
Flow	gpm	Volume/Time Calc.	Weekly
Total and Fecal Coliform[1]	MPN/100 mL	Grab	Monthly

[1]When discharging. If the detected Fecal Coliform concentration exceeds 200 MPN/100mL, then the monitoring frequency shall be increased to weekly, until the Fecal Coliform concentration falls below 200 MPN/100mL for 4 consecutive weekly measurements, or the Executive Officer of the Regional Board authorizes an alternate sampling program.

SLUDGE MONITORING

A composite sample of sludge shall be collected annually, during any year that sludge is removed from the sludge drying beds, in accordance with USEPA's *POTW Sludge Sampling and Analysis Guidance Document, August 1989*, and tested for the following metals:

Cadmium	Lead
Chromium	Nickel
Copper	Zinc

Sampling records shall be retained for a minimum of 5 years. A log shall be kept of sludge quantities generated, and of handling and disposal activities. The log should be complete enough to serve as a basis for part of the annual report.

The Discharger shall submit a Sludge Management and Disposal Plan annually by **30 January** that includes:

1. Annual sludge production in dry tons and percent solids.

2. A schematic diagram showing sludge-handling facilities and a solids flow diagram.

3. Depth of application and drying time for sludge-drying beds.

4. A description of disposal methods, including the following information related to the disposal methods used at the facility. If more than one method is used, include the percentage of annual sludge production disposed by each method.

    a. For **landfill disposal**, include: (1) the Board's waste discharge requirement numbers that regulate the landfill(s) used; (2) the present classifications of the landfill(s) used; and (3) the names and locations of the facilities receiving sludge.

    b. For **land application**, include: (1) the location of the site(s); (2) the Board's waste discharge requirement numbers that regulate the site(s); (3) the application rate in lbs/acre/year (specify wet or dry); and (4) subsequent uses of the land.

    c. For **other disposal methods**, include: (1) the location of the site(s); and (2) the Board's waste discharge requirement numbers that regulate the site(s).

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Receiving water samples shall be taken from the following:

Station	Description
R-1	Approximately 100 feet upstream of discharge.
R-2	Approximately 100 feet downstream of discharge.

Constituent	Unit	Station	Sampling Frequency
Flow[1]	cfs	See Order	Daily
Dissolved Oxygen	mg/L	R-1, R-2	Weekly
Total and Fecal Coliform	MPN/100 mL	R-1, R-2	Weekly
pH	pH Units	R-1, R-2	Weekly
Turbidity	NTU	R-1, R-2	Weekly
Chlorine Residual	mg/L	R-2	Weekly

Constituent	Unit	Station	Sampling Frequency
Hardness	mg/L	R-1	Monthly
Temperature	°F	R-1, R-2	Monthly
Total and Dissolved Copper	ug/L	R-1	Quarterly
Total and Dissolved Zinc	ug/L	R-1	Quarterly
Electrical Conductivity	µmho/cm	R-1, R-2	Quarterly
[1] If existing stream flow gage information is not accurate, an estimate of the receiving water flow shall be adequate until installation of a permanent stream flow gage is completed, as required by the Order.			

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions at the monitoring stations. Notes on receiving water conditions shall be summarized in the monitoring report. Receiving water shall be inspected for the presence or absence of:

a. Floating or suspended matter
b. Discoloration
c. Bottom deposits
d. Aquatic life

ACUTE TOXICITY MONITORING

Acute bioassay samples shall be collected once during each calendar quarter. If any acute toxicity bioassay test result is less than 70 percent survival, or the results of the three previous samples indicate a median survival of less than 90 percent, the Discharger shall conduct three additional tests over a six-week period. The Discharger shall ensure that results of a failing acute toxicity test are received within 24 hours of the completion of the test, and the additional tests shall begin within 3 business days of the receipt of the result. If the additional tests indicate compliance with acute toxicity limitation, the Discharger may resume regular testing. Of the three accelerated tests, if the results of any single test is less than 70 percent survival, or any two tests are less than 90 percent survival, then the Discharger shall conduct a Toxicity Reduction Evaluation in accordance with the provisions of the Order.

CHRONIC TOXICITY MONITORING

Chronic toxicity monitoring shall be conducted to determine whether the effluent is contributing toxicity to the receiving water. The testing shall be conducted as specified in USEPA 821-R-02-013 or its most recent edition. Samples shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. The effluent tests must be conducted with concurrent reference toxicant tests. Monthly laboratory reference toxicant tests may be substituted upon approval. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the USEPA chronic manual. If the test acceptability criteria are not achieved, then the Discharger must resample and retest within 14 days. If undiluted effluent exhibits toxicity, the Discharger shall conduct the test again, using a dilution series bracketing the concentration of effluent in the receiving water. Dilution water shall be receiving water from Cottonwood Creek, taken at R-1, upstream from the discharge point. Laboratory water may be used for dilution water if upstream water exhibits toxicity. Chronic toxicity monitoring shall include the following:

Species: Pimephales promelas, Ceriodaphnia dubia, and Selenastrum capricornutum

Frequency: Once during each calendar year.

PRIORITY POLLUTANT MONITORING

The State Implementation Policy (SIP) requires periodic testing for the toxic priority pollutants established by the CTR in 40 CFR 131.48. The Discharger shall conduct two additional sampling events to provide additional information on effluent priority pollutants.

The Discharger shall conduct two sampling events and analyses for the CTR pollutants in receiving water and effluent. The first sampling event shall be conducted **within one year of the adoption of this Order**. The second sampling event shall be conducted no later than **one year prior to permit expiration**. Receiving water samples shall be collected upstream at receiving water station R-1. Receiving water and effluent samples shall be collected simultaneously, and analyzed for the CTR pollutants (identified in Attachment E) plus pH and hardness. The Discharger is not required to perform dioxin and asbestos monitoring. All analyses shall be performed at a laboratory certified by the California Department of Health Services. The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each of the analytes. Laboratory methods and limits shall be as described in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (2000), unless a variance has been approved by the Executive Officer. If, after a review of the monitoring results, it is determined that the discharge causes, has the reasonable potential to cause, or contributes to in-stream excursions above water quality objectives, this Order will be reopened and limitations based on those objectives will be included. Additionally, if pollutants are detected, but insufficient information exists to establish an effluent limit or determine if an effluent limit is necessary, then additional monitoring will be required to provide sufficient information. Results shall be reported within **90 days of sample collection.**

All organic analyses shall be by Gas Chromatography/Mass Spectrometry (GCMS), Method 8260B for volatiles and Method 8270C for semi-volatiles. Pesticides shall be analyzed by Method 8081A. Dioxins shall be analyzed by Method 1613/8290. If organic analyses are run by Gas Chromatography (GC) methods, any detectables are to be confirmed by GCMS. Inorganics shall be analyzed by the following methods:

Metals shall be analyzed by the US EPA methods listed below. Alternative analytical procedures may be used with approval by the Regional Board if the alternative method has the same or better detection level than the method listed.

{PRIVATE } Method Description	EPA Method	Constituents
Inductively Coupled Plasma/Mass Spectrometry (ICP/MS)	1638	Antimony, Beryllium, Cadmium, Copper, Lead, Nickel, Selenium, Silver, Thallium, Total Chromium, Zinc
Cold Vapor Atomic Absorption (CVAA)	1631	Mercury
Gaseous Hydride Atomic Absorption (HYDRIDE)	206.3	Arsenic
Flame Atomic Absorption (FAA)	218.4	Chromium VI
Colorimetric	335./ 2 or 3	Cyanide

Analysis for the dioxin congeners shall be performed as described in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* using High Resolution Mass Spectrometry.

The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each constituent. The MDL should be as close as practicable to the U.S. EPA MDL determined by the procedure found in 40 CFR Part 136. The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory.

b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration." Numerical estimates of data quality may be by percent accuracy (+ or – a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

d. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

COLLECTION SYSTEM OVERFLOW MONITORING

The Discharger shall report any collection system overflows in accordance with the Standard Provisions, and discuss the overflows in the monthly monitoring reports.

REPORTING

Monitoring results shall be submitted to the Regional Board by the **1st day of the second month** following sample collection (e.g., the January report is due by 1 March). Quarterly and annual monitoring results shall be submitted by the **1st day of the second month** following each calendar quarter and year, respectively. Effective in January 2004, any NPDES effluent monitoring report received more than 30 days after its due date is subject to a $3000 Mandatory Minimum Penalty [Water Code Section 13385]. An additional $3000 penalty is required for each 30 days a report is late. If you have no discharge, you must still submit a report indicating that no discharge occurred, or you will be subject to the $3000 Penalties.

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 the compliance with waste discharge requirements.

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 **30 January** of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

1. The names, certificate grades, and general responsibilities of all persons employed at the treatment plant (Standard Provision A.5).
2. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.
3. A statement certifying when flow meters and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.6).
4. 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 Regional 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 March 2005
(Date)

BJS

INFORMATION SHEET

ORDER NO. R5-2005-0037
NPDES NO. CA0081507
SHASTA COUNTY SERVICE AREA NO. 17
COTTONWOOD WASTEWATER TREATMENT PLANT
SHASTA COUNTY

GENERAL INFORMATION

The community of Cottonwood is located in southern Shasta County approximately 15 miles south of the city of Redding, along Interstate 5. The population of Cottonwood is approximately 2960 people, based on the year 2000 U.S. Census. Cottonwood is located at an approximate elevation of 420 feet MSL and receives an average of 30 inches of rain per year.

Prior to creation of the Shasta County Service Area (CSA) No. 17, and construction of the Cottonwood Wastewater Treatment Plant, the community relied upon individual, onsite septic tank/leachfield systems. These systems were inadequate because of high groundwater elevations, high population density due to small lot sizes, and inadequate system design and maintenance. On 22 October 1976, the Regional Water Quality Control Board (Regional Board) adopted Order No. 76-230, a prohibition (after 1 January 1981) of waste discharge from individual septic tank/leachfield systems in a specified area encompassing Cottonwood. Later, Cease and Desist Order No. 82-101 was issued by the Regional Board on 23 July 1982 against the County Water District and property owners in the prohibition area. In December 1983, a Clean Water grant was awarded to the County and for construction of a wastewater treatment plant and collection system. In January 1983, the Shasta County Board of Supervisors approved the formation of County Service Area No. 17 to serve as a special district and operate the facilities. CSA No. 17 is managed through the Shasta County Department of Public Works, Special Districts. The wastewater treatment plant began operation in October 1986. The wastewater treatment plant is regulated pursuant to Waste Discharge Requirements (WDRs) Order No. 98-233, which expired on 1 December 2003, but has been administratively extended until it is renewed.

The treatment plant is located in Section 12, T29N, R4W, MDB&M, as shown on Attachment A, a part of this Order. The treatment plant is located within the Lower Cottonwood Hydrologic Sub Area No. 508.20, as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986. The treatment plant discharges to Cottonwood Creek approximately 5 miles upstream from its confluence with the Sacramento River. The discharge point, D001, is located at 40^{o} 22' 40" latitude and 122^{o} 16' 15" longitude.

Due to the primarily residential and light commercial uses in the service area, the wastewater discharged to the treatment plant is predominantly domestic. The biochemical oxygen demand, total suspended solids, and settleable solids are therefore relatively predictable. Additionally, no significant concentrations of priority pollutants or other organic compounds should be expected in the treatment plant influent or effluent.

The design flow of the wastewater treatment plant is 0.430 mgd. In 2003, the maximum daily flow rate was 0.350 mgd. In 2003, the average daily flow rate was 0.286 mgd.

The wastewater treatment plant consists of:

- A headworks (manually or automatically cleaned bar screen, and a Parshall flume with an ultrasonic level sensor);
- Two, parallel oxidation ditches with aerators;
- Two, parallel secondary clarifiers with skimmers;
- Traveling-bridge sand filter unit;
- Chlorine disinfection with chlorine gas;
- A serpentine chlorine contact chamber;
- Dechlorination by addition of sulfur dioxide;
- An outfall line and diffuser to Cottonwood Creek;
- A northern 4.3 acre-feet sludge settling basin (formerly 0.83 acre-feet);
- A southern 0.63 acre-feet sludge settling basin; and
- Four, sludge/sand drying beds.

A schematic of the treatment plant layout is shown in Attachment B. Discharge from the wastewater treatment plant is presently regulated by Waste Discharge Requirements Order No. 98-233 (NPDES No. CA0081507), adopted by the Board on 11 December 1998.

RECEIVING WATER BENEFICIAL USES

Surface Water

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 describes an implementation program and policies to achieve water quality objectives for all waters of the Basin. This includes plans and policies adopted by the State Water Resources Control Board (State Board) and incorporated by reference, such as Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California. These requirements implement the Basin Plan.

The Basin Plan on page II-2.00 states that: "Existing and potential beneficial uses which 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 beneficial uses of Cottonwood Creek are specifically identified in the Basin Plan. The Basin Plan identifies the following existing and potential beneficial uses for Cottonwood Creek: municipal and domestic supply (MUN); irrigation and stock watering agricultural supply (AGR); industrial process supply (PROC); industrial service supply (IND), hydropower generation (POW); water contact and noncontact recreation (REC-1 and REC-2); warm and cold freshwater habitat (WARM and COLD); cold water migration of aquatic organisms (MIGR); warm and cold water spawning, reproduction, and/or early development (SPWN); and, wildlife habitat (WILD). Upon review of the flow conditions, habitat values, and beneficial uses of Cottonwood Creek, the Regional Board finds that the beneficial uses identified in the Basin Plan for Cottonwood Creek are applicable. The Basin Plan defines beneficial uses 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."

Groundwater

Unless designated otherwise by the Regional Board, the beneficial uses of groundwater of the Central Valley Region are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

Anti-Degradation

Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California, requires the Regional Board, in regulating the discharge of waste, to maintain high quality in surface and groundwaters of the State unless it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies (i.e., in no circumstances can this Order allow water quality to exceed the Regional Board's water quality objectives). The Regional Board finds that the discharge, as restricted by the prohibitions, limitations, specifications, and provisions of this Order, is consistent with Resolution No. 68-16. The impact on water quality will be insignificant.

TMDLs and 303(d) Listings

Section 303(d) of the CWA requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations by point sources. For all 303(d) - listed water bodies and pollutants, the State Board is required to develop and adopt Total Maximum Daily Loads (TMDLs) that will specify wasteload allocations for point sources and load allocations for non-point sources, as appropriate. The United States Environmental Protection Agency (U.S. EPA) has approved the State Board's 2002 303(d) list of impaired water bodies. This extensive list does not include Cottonwood Creek.

GROUNDWATER MONITORING

This Order does not require the Discharger to conduct groundwater monitoring. There is no current evidence to indicate that discharges from the facility pose a threat to groundwater quality. If information becomes available indicating adverse groundwater impacts attributable to discharges associated with the Discharger's activity, a groundwater investigation and subsequent monitoring may be required.

EFFLUENT LIMITS (NON-PRIORITY POLLUTANTS)

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.

Federal Regulations require that, in setting effluent limitations, the Regional Board assure that the Discharger meets the more stringent of the: 1) technology based effluent limitations found in 40 CFR Part 133; or 2) limitations developed to assure that water quality objectives are not exceeded when it is shown that there is a reasonable potential for the pollutant to cause such an exceedance. The latter requirement applies to both numeric and narrative water quality objectives.

Determining reasonable potential for pollutants other than those contained in the California Toxics Rule (CTR) is accomplished by analyzing treatment plant operations, past effluent monitoring results, and other pertinent factors. In addition, the U.S. EPA has provided guidance for the analysis of reasonable potential in their *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-101) or TSD, which has been considered in this permit for developing effluent limitations for pollutants other than those in the CTR and NTR. The TSD allows the use of a mixing zone (an area in the receiving water where the concentration of pollutants may exceed the water quality objective) in the determination of reasonable potential. Outside the mixing zone, the concentration of the pollutant must be less than the water quality objective. If a mixing zone is allowed, and it is determined that the concentration of the pollutant will not exceed the water quality objective outside the mixing zone, an effluent limitation is not required. The determination whether to allow a mixing zone and the determination of an effluent limitation are pollutant specific decisions.

The following sections discuss pollutants for which there are water quality objectives to protect a specified beneficial use (excepting priority pollutants, which, in accordance with the SIP, must be addressed differently), as well as pollutants that could cause exceedance of the Basin Plan's narrative toxicity objectives. If a technology based effluent limitation is required for the pollutant, this requirement is noted. The basis for the decision whether or not to set an effluent limitation is given, as well as the rationale for the numerical value of the effluent limitation, if one is established.

a. Coliform (Total and Fecal):

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states "The fecal coliform concentration [in surface waters] based on a minimum of not less that five samples for any 30-day period shall not exceed a geometric mean of 200 MPN/100 mL nor shall more than ten percent of the total number of samples taken during any 30-day period exceed 400 MPN/100 mL." In a letter to the Regional Board dated 8 April 1999, the California Department of Health Services indicated that DHS would consider wastewater discharged to water bodies with identified beneficial uses of irrigation, contact recreation, or a drinking water source to be adequately disinfected if: 1) the wastewater receives dilution of more than 20:1; 2) the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median; and, 3) the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30 day period.

Order effluent limitation: The current effluent limit for total coliform is 23 MPN/100mL as a monthly median, and 500 MPN/100mL as a daily maximum. This effluent limit does not meet the current recommendation by DHS, nor does it guarantee that the Basin Plan receiving water objective will be met. Therefore, this proposed Order establishes an effluent limit for total coliform of 23 MPN/100mL as a 7-day median, 240 MPN/100mL may only be exceeded one time during any 30-day period, and 500 MPN/100mL as a daily maximum. Additionally, during the summer and fall seasons, a 20:1 dilution of effluent in Cottonwood Creek may not be achievable, which would potentially necessitate alternative disposal solutions or more stringent treatment and disinfection requirements. Upon completion of the Cottonwood Creek flow analysis and dilution study required by this Order, this permit may be reopened and a revised effluent limitation for coliform may be adopted. As the fecal coliform concentration of any sample is less than or equal to the total coliform concentration in accordance with the bacteriological definition of coliform and analytical detection procedures for these bacteria, this effluent limitation will implement the Basin Plan water quality objective for fecal coliform.

b. Biostimulatory Substances:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states, "Water shall not contain biostimulatory substances which promote aquatic growth or in concentrations that cause nuisance or adversely affect beneficial uses." The primary constituents of concern for this objective are nitrogen and phosphorus.

Order effluent limitation: Although nutrients and other biostimulatory substances may be present in the discharge, no nuisance conditions such as excess algae growth are anticipated. In addition, this discharge has been occurring for many years, and there is no record in the case files of any complaints or problems with excessive aquatic growth. Neither have inspections by Regional Board staff revealed problems with algae or other aquatic growth. Therefore no effluent limitation for biostimulatory

substances is established in this permit. However, receiving water quality limitations prohibit the discharge from causing fungi, slimes, or other objectionable growths. After completion of studies on the flow and wastewater dilution available in Cottonwood Creek, this Order may be reopened and effluent limits established for nutrients, if necessary.

c. Chemical Constituents:

Technology based effluent limitation: None

Receiving water objective: At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limitations) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/L. The Regional Board acknowledges that specific treatment requirements are imposed by state and federal drinking water regulations on the consumption of surface waters under specific circumstances. To protect all beneficial uses the Regional Board may apply limitations more stringent than MCLs.

Order effluent limitation: Examination of the results of priority pollutant testing required by the CTR, as well as general information on water quality, illustrates that there should be no exceedance of primary or secondary MCLs in Cottonwood Creek (if effluent limitations in the Order are complied with). Therefore there are no effluent limitations for any of these chemical constituents, with the exception of copper and zinc. The proposed effluent limit for copper and zinc, however, is necessitated by the reasonable potential to exceed a water quality standard for aquatic life established in the CTR or Basin Plan, rather than the objective for drinking water. Establishment of effluent limits for copper and zinc are discussed below.

d. Color:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states that "Water shall be free of discoloration that causes nuisance or adversely affects beneficial uses."

Order effluent limitation: There is no significant coloration to the discharge; therefore no effluent limitations for color have been included in the Order.

e. Dissolved Oxygen (DO):

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states; "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 DO concentration 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"

During low flow periods in Cottonwood Creek, it is possible that background DO concentrations may fall below the Basin Plan objective, however, the failure is not due to the presence of the effluent discharge. The effluent discharge should not contribute to a decrease in DO in Cottonwood Creek, however, a receiving water limitation that implements the Basin Plan objective is included in this Order.

Order Effluent Limitation: No effluent limitation has been included in this Order for DO due to the lack of reasonable potential to cause a failure of the Basin Plan objective, however, a receiving water limitation is included.

f. Biochemical Oxygen Demand (BOD):

Technology based effluent limitation: Federal Regulations, 40 CFR, Part 133, provide technology based effluent limitations for BOD. Pursuant to the regulations at 40 CFR Parts 133.105(a), (b), and 133.103, the BOD 30-day average discharge limitation for a secondary treatment system shall not exceed 30 mg/L, the 7-day average shall not exceed 45 mg/L, and the 30-day BOD percent removal shall not be less than 85 percent.

Receiving water objective: There is no Basin Plan water quality objective for BOD. However, the level of BOD in the discharge could affect dissolved oxygen concentrations in the receiving water, and in fact is the main constituent that could reduce oxygen to unacceptably low levels. But as indicated in Item e. above, the discharge will not cause a significant decrease in the dissolved oxygen in the receiving water.

Order effluent limitation: The existing permit contains BOD effluent limits that are more stringent than the technology based limits because when the discharge was first permitted, it was recognized that dilution would be limited, and advanced secondary treatment processes were included in the design of the treatment plant. The reduced BOD concentration in the discharge also ensures that the receiving water DO concentration isn't adversely affected by the discharge. The Discharger has not had difficulty in achieving the more stringent BOD effluent limit, and therefore this proposed Order continues these effluent limits as 10 mg/L as a monthly average, 15 mg/L as a weekly average, and 30 mg/L as a daily maximum.

g. Floating Material:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states, "Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses." The Receiving Water Limitations in this permit prohibit floating material in amounts that exceed this Basin Plan water quality objective.

This discharge has been occurring for many years, and there is no record in the case files of any complaints or problems with excessive floating material. Neither have Regional Board staff inspections revealed problems with floating material.

Order effluent limitation: No effluent limit for floating material is established in this permit. However, receiving water quality limitations prohibit the Discharger from causing a nuisance or adversely affecting beneficial uses due to floating material.

h. Oil and Grease:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states "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."

The current wastewater treatment activity is not anticipated to generate any oils, greases, waxes, or other materials that can 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.

Order effluent limitation: No effluent limitation has been included in this Order due to the lack of reasonable potential for failure to achieve water quality objectives, and the lack of a technology based effluent limitation.

i. pH:

Technology based effluent limitation: From 6.0 to 9.0

Receiving water objective: 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.

The Report of Waste Discharge submitted by the Discharger indicates the lowest and highest pH values of 6.0 and 6.8 in the effluent, respectively. These readings indicate that the current wastewater treatment activity has a reasonable potential to generate effluent with pH values that could adversely affect beneficial uses.

Order effluent limitation: An effluent limitation for this criterion is set at 6.0 (daily minimum) and 9.0 (daily maximum), which is protective of receiving waters due to the

available (although limited) dilution in Cottonwood Creek, and complies with the technology based effluent limitation. This limit is reasonably achievable by the Discharger.

j. Pesticides:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan States; "1) No individual pesticide or combination of pesticides shall be present in concentrations that adversely affect beneficial uses; 2) Discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; 3) Total identifiable persistent chlorinated hydrocarbon pesticides shall not be present in the water column at concentrations detectable within the accuracy of analytical methods approved by the USEPA or the Executive Officer; 4) Pesticide concentrations shall not exceed those allowable by applicable antidegradation policies (see SWRCB Resolution 68-16 and 40 CFR Section 131.12.); 5) Pesticide concentrations shall not exceed the lowest levels technically and economically achievable; 5) Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of pesticides in excess of the Maximum Contaminant Levels set forth in California Code of Regulations, Title 22, Division 4, Chapter 15; and 6) Waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of thiobencarb in excess of 1.0 µg/L."

Order effluent limitation: In accordance with the California Toxics Rule, the Discharger has tested for multiple pesticides and herbicides, and none have been found to be present. Therefore there are no effluent limitations for pesticides in this Order.

k. Radioactivity:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan States; "Radionuclides shall not be present in concentrations that are harmful to human, plant, animal or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life. At a minimum, waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of radionuclides in excess of the maximum contaminant levels (MCLs) specified in Table 4 (MCL Radioactivity) of Section 64443 of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect."

Order effluent limitation: No unacceptable levels of radionuclides are expected in Cottonwood Creek or in the Discharger's effluent. Therefore, no effluent limitations for radionuclides are contained in this Order.

l. Salinity:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan does not specify a water quality objective for electrical conductivity (EC) in Cottonwood Creek. The Basin Plan does contain a water quality objective for EC for the portion of the Sacramento River to which Cottonwood Creek is tributary. This objective is 230 micromhos/cm as a 50^{th} percentile.

Order effluent limitation: No data has been obtained regarding the EC level in the discharge or in Cottonwood Creek. This proposed Order requires the Discharger to obtain data on effluent and receiving water EC to confirm that water quality in Cottonwood Creek and the downstream Sacramento River will not be unacceptably impacted by EC.

m. Total Suspended Matter:

Technology based effluent limitation: Federal regulations, 40 CFR, Part 133, provides technology based effluent limitations for total suspended solids (TSS). Pursuant to the regulations at 40 CFR Parts 133.105(a), (b), and 133.103, the TSS 30-day average discharge limitation for secondary systems shall not exceed 30 mg/L, the 7-day average shall not exceed 45 mg/L, and the 30-day TSS percent removal shall not be less than 45 percent.

Receiving water objective: Regarding suspended material, the Basin Plan states: "Waters shall not contain suspended material in concentrations that cause nuisance or adversely affect beneficial uses."

The current wastewater treatment process has a reasonable potential to generate suspended matter in quantities that would cause exceedance of the above narrative standard. Municipal wastewater contains suspended matter, some of which will escape the treatment and/or removal process. At times the treatment plant could discharge excessive solids due to process problems.

Order effluent limitation: The existing permit contains TSS effluent limits that are more stringent than the technology based limits because when the discharge was first permitted, it was recognized that dilution would be limited, and advanced secondary treatment processes were included in the design of the treatment plant. The Discharger has not had difficulty in achieving the more stringent TSS effluent limit, and therefore this proposed Order continues these effluent limits as 10 mg/L as a monthly average, 15 mg/L as a weekly average, and 30 mg/L as a daily maximum.

n. Temperature:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states: "The natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to

the satisfaction of the Regional Water Board that such alteration in temperature does not adversely affect beneficial uses. At no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5°F above natural receiving water temperature. In determining compliance with the water quality objectives for temperature, appropriate averaging periods may be applied provided that beneficial uses will be fully protected."

Order Effluent Limitation: The current practice of effluent discharge is not expected to cause variation in receiving water temperature by more than 5°F. However, to ensure that the receiving water objective is protected (among other reasons), repair or replacement of the effluent diffuser in Cottonwood Creek is required by this Order. No effluent limitation has been included in this Order for temperature.

o. Toxicity:

Technology based effluent limitation: None

Receiving water objective: 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. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances." The potential for human toxicity from individual pollutants is addressed in each of the individual pollutant sections in this Order. The potential for toxicity to plant and aquatic life is addressed by provisions that require characterization of the discharge for chronic and acute toxicity.

Order Effluent Limitation: The Discharger is required to conduct the acute and chronic toxicity testing as specified in the Monitoring and Reporting Program. Effluent must result in survival of test fishes in 96-hour bioassays of undiluted effluent be no less than:

Minimum for any one bioassay - - - - - - - - - - - - - - - - - 70 percent
Median for any three or more bioassays - - - - - - - - - - - -90 percent.

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, this Order requires the Discharger to initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger will submit a work plan to conduct a Toxicity Reduction Evaluation (TRE) and, after 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 State Board, this Order may be reopened and a limitation based on that objective included.

In addition, some compounds have been found to have a reasonable potential to exceed water quality objectives in the CTR in accordance with the SIP. The deleterious effects of these pollutants on Cottonwood Creek would primarily be due to toxicity to fish and other aquatic species. Effluent monitoring for these compounds is included in this permit as described below under "REASONABLE POTENTIAL ANALYSIS FOR CTR AND NTR CONSTITUENTS." Chlorine and ammonia are also compounds that may cause toxicity in Cottonwood Creek. Methods of addressing potential chlorine and ammonia toxicity are described in items q. and r.

p. Turbidity:

Technology based effluent limitation: None

Receiving water objective: The Basin Plan states: "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 limitations:

- Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU.
- Where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent.
- Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.
- Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."

Order Effluent Limitation: There may be a reasonable potential for the discharge from the treatment plant to exceed the receiving water turbidity criteria due to potential treatment process failures. Therefore, receiving water limitations have been incorporated into this Order in conformance with Basin Plan objectives. Averaging periods for compliance calculations are allowed if approved by the Executive Officer.

q. Chlorine:

Technology based effluent limitation: None

Receiving water objective: See the Basin Plan objective above under Toxicity. Chlorine can be toxic to aquatic life and has reasonable potential to be discharged at significant concentrations. The current effluent limitation for total chlorine residual is 0.1 mg/L as a daily maximum. The USEPA has developed ambient water quality criteria for chlorine to protect freshwater aquatic organisms. The 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 chlorine residual.

Order effluent limitation: This permit contains effluent discharge limitations for total chlorine residual of 0.01 mg/L as a 4-day average, and 0.02 mg/L as an hourly average based on the USEPA ambient criteria to protect aquatic life. Monitoring for this constituent is on a continuous basis.

r. Ammonia:

Technology based effluent limitation: None

Receiving water objective: See the Basin *Plan* objective above under Toxicity.

Ammonia concentrations in the effluent from domestic wastewater treatment plants without nitrification capabilities (conversion of ammonia to nitrate), in general, are higher than USEPA recommended freshwater criteria. Although the wastewater treatment plant is capable of nitrification, nitrification may not fully occur year-round. The toxicity of ammonia depends on such factors as fish life stages present, receiving water temperature, and receiving water pH. The USEPA has published revised ambient water quality criteria for ammonia (1999 Ammonia Update), superseding all previous USEPA recommended freshwater criteria for ammonia. The Discharger has not previously been required to monitor for ammonia in the discharge, however reasonable potential may exist for the discharge to cause the receiving water to exceed the USEPA criteria. Therefore, this Order requires the Discharger to monitor the discharge for ammonia. If monitoring indicates that the discharge has the reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan narrative toxicity objective, then this Order will be reopened and an appropriate effluent limit for ammonia will be added.

Order Effluent Limitation: This Order contains requirements for monitoring effluent ammonia, and a re-opener to set ammonia effluent limitations if it is determined that ammonia in the effluent presents a reasonable potential for exceedance of a water quality objective.

REASONABLE POTENTIAL ANALYSIS FOR CTR/NTR PRIORITY POLLUTANTS

U.S. EPA regulations at 40 CFR 122.4 (d) require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numerical water quality standard. The National Toxics Rule (NTR) establishes water quality criteria for toxic pollutants applicable to the Discharger at 40 CFR Part 131.36. On May 18, 2000 and by amendment on 13 February 2001, water quality criteria of the NTR were supplemented by criteria of the California Toxics Rule (CTR) at 40 CFR 131.38. The NTR, CTR, and the Basin Plan contain water quality standards applicable to the discharge.

The State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or

SIP), which contains guidance on implementation of the CTR, including the determination of reasonable potential for CTR pollutants. To determine reasonable potential for non-CTR pollutants, the Regional Board relies on methodology presented in U.S. EPA's *Technical Support Document for Water Quality Based Toxics Control* (TSD) (EPA/505/2-90-001, 1991). And, for interpretation of narrative water quality objectives, the Regional Board uses as a resource its *Compilation of Water Quality Goals* (2000).

On 27 February 2001, 12 July 2001 (for dioxin congeners only), and 11 January 2002, the Discharger collected effluent and receiving water samples for analyses of the CTR toxic priority pollutants. Analyses were performed for volatile and semi-volatile substances, metals, 2,3,7,8-TCDD dioxin, and sixteen other dioxin congeners and reported in accordance with procedures established by the SIP.

Methodology described in Section 1.3 of the SIP was used to evaluate the Discharger's monitoring data for the CTR priority toxic pollutants. No credit for dilution of the effluent with the receiving water was considered. Copper, zinc, cyanide, bromodichloromethane, chloroform, and bis-2-ethylhexylphthalate were detected at concentrations that may cause or contribute to an in-stream excursion above a numerical water quality standard of the CTR or the Basin Plan.

Final water quality based effluent limitations for copper and zinc are included in this Order, as described below. Effluent limitations for cyanide, bromodichloromethane, chloroform, and bis-2-ethylhexylphthalate are not established in this Order because insufficient information exists at this time to determine if an effluent limit is necessary for these pollutants, as discussed below. The following table summarizes the priority pollutants of concern, their corresponding water quality standards, and the maximum observed concentration in the discharge and receiving water.

Pollutant	**Most Stringent CTR Water Quality Criteria**	**Most Stringent Basin Plan Water Quality Objective**	**Maximum Observed Receiving Water or Effluent Concentration and Date Sampled**
Copper	8.49 ug/L chronic and 12.7 ug/L acute criteria (dissolved) for protection of freshwater aquatic life at 94 mg/L hardness as $CaCO_3$.	12.2 ug/L (dissolved), acute objective for the Sacramento River and its tributaries above State Hwy 32 bridge at Hamilton City, at 94 mg/L hardness as $CaCO_3$.	12 and 3.6 µg/L (total recoverable) effluent and receiving water, respectively, on 11 January 2002.
Zinc	112 ug/L chronic and 111 ug/L acute criteria (dissolved) for protection of freshwater aquatic life at 94 mg/L hardness as $CaCO_3$.	32.5 ug/L (dissolved), acute objective for the Sacramento River and its tributaries above State Hwy 32 bridge at Hamilton City, at 94 mg/L hardness as $CaCO_3$.	52 and 18 µg/L (total recoverable) effluent and receiving water, respectively, on 11 January 2002.
Cyanide	5.2 ug/L chronic and 22 ug/L acute criteria for protection of freshwater aquatic life.	10 µg/L acute objective for the Sacramento River from Keswick Dam to the I Street Bridge in Sacramento.	54 and 5 ug/L effluent and receiving water, respectively, on 27 February 2001.

Pollutant	Most Stringent CTR Water Quality Criteria	Most Stringent Basin Plan Water Quality Objective	Maximum Observed Receiving Water or Effluent Concentration and Date Sampled
		Independent of hardness.	
Bromodichloro-methane	0.56 µg/L (CTR human health criteria for consumption of water and organisms)	No chemical-specific objective. 0.27 ug/L Cal/EPA (OEHHA) Cancer Potency Factor.	3 µg/L effluent, on 11 January 2002.
Chloroform	No CTR criteria.	No chemical-specific objective. 1.1 ug/L Cal/EPA (OEHHA) Cancer Potency Factor.	20 ug/L in effluent on 11 January 2002.
Bis-2-Ethylhexyl-phthalate	1.8 µg/L (CTR human health criteria for consumption of water and organisms)	No chemical-specific objective. 4 µg/L California Primary MCL.	2 and 10 ug/L effluent and receiving water, respectively, on 11 January 2002.

Cyanide: Cyanide was detected in the effluent sample collected on 27 February 2001 at a concentration of 54 ug/L, and in the receiving water at 5 ug/L. The CTR chronic and acute criteria (independent of hardness) for the protection of freshwater aquatic life are 5.2 ug/L and 22 ug/L, respectively. The Basin Plan (Table III-1) instantaneous maximum (acute) objective is 10 ug/L, independent of hardness. Therefore, the most stringent, applicable water quality standard for cyanide is the CTR chronic criteria of 5.2 ug/L for the protection of freshwater aquatic life. The analytical laboratory that performed the cyanide analyses for the Discharger originally reported incorrect results and later issued revised results. The reported presence of cyanide in the effluent at 54 ug/L, and especially the reported presence in the receiving water is somewhat unexpected, and when considered with the laboratory reporting problems, the data is unreliable. Therefore, insufficient information exists to determine if an effluent limit for cyanide is appropriate. This Order requires the effluent to be monitored for cyanide, and if, after sufficient information has been collected, it can be determined that reasonable potential exists for the effluent to exceed a water quality standard for cyanide, this Order may be reopened and an effluent limit for cyanide added, as appropriate.

Bromodichloromethane: Bromodichloromethane was detected in the effluent sample collected on 11 January 2002 at a concentration of 3 ug/L. It was not detected in the effluent sample collected on 27 February 2001, however. The CTR human health criteria for consumption of water and organisms is 0.56 ug/L. Although the Basin Plan does not include numerical water quality criteria for bromodichloromethane, there is a narrative water quality objective of the Basin Plan for toxicity, which states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. To interpret this narrative objective, the Regional Board relies on its *Compilation of Water Quality Goals* (2000), which includes the Cal/EPA Cancer Potency Factor, established by the Office of Environmental Health Hazard Assessment (OEHHA), of 0.27 ug/L for bromodichloromethane. Because the health-based criteria maintained by the OEHHA are used as a basis for California state regulatory action, in accordance with the Regional Board's policy, this criterion is given preference when interpreting narrative water quality objectives. [Central Valley Regional Water Quality

Control Board, A Compilation of Water Quality Goals, at page 15 (2000)] Additionally, a California Primary MCL of 100 ug/L has been established for Total Trihalomethanes (bromoform, bromodichloromethane, chloroform, and dibromochloromethane). The Basin Plan states that, "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)...incorporated by reference into this plan."

The most stringent, applicable water quality standard for bromodichloromethane is the CTR Human Health criteria for consumption of water and organisms of 0.56 ug/L. The Cal/EPA Cancer Potency Factor of 0.27 ug/L should also be considered.

Trihalomethanes, comprised of the typical chlorination byproduct compounds bromoform, bromodichloromethane, chloroform and dibromochloromethane can be formed in the chlorination process at wastewater treatment plants. While it is not unexpected that trihalomethanes would be present in the effluent, insufficient information exists at this time to establish an effluent limitation. Therefore, this Order requires the effluent to be monitored for trihalomethanes, and if, after sufficient information has been collected, it can be determined that reasonable potential exists for the effluent to exceed a water quality standard for any of the trihalomethane compounds, this Order may be reopened and an effluent limit for the compound(s) added, as appropriate.

Chloroform: Chloroform was detected in the effluent samples collected on 27 February 2001 and 11 January 2002 at concentrations of 2.2 ug/L and 20 ug/L, respectively. Although the CTR does not include numerical water quality criteria for chloroform, there is a narrative water quality objective of the Basin Plan for toxicity, which states that all waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. To interpret this narrative objective, the Regional Board relies on its *Compilation of Water Quality Goals* (2000), which includes the Cal/EPA Cancer Potency Factor, established by the Office of Environmental Health Hazard Assessment (OEHHA), of 1.1 ug/L for chloroform. Because the health-based criteria maintained by the OEHHA are used as a basis for California state regulatory action, in accordance with the Regional Board's policy, this criterion is given preference when interpreting narrative water quality objectives. [Central Valley Regional Water Quality Control Board, A Compilation of Water Quality Goals, at page 15 (2000)] Additionally, a California Primary MCL of 100 ug/L has been established for Total Trihalomethanes (bromoform, bromodichloromethane, chloroform, and dibromochloromethane). The Basin Plan states that, "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)...incorporated by reference into this plan."

The most stringent, applicable water quality standard for chloroform is the Cal/EPA Cancer Potency Factor of 1.1 ug/L.

Trihalomethanes, comprised of the typical chlorination byproduct compounds bromoform, bromodichloromethane, chloroform and dibromochloromethane can be formed in the chlorination process at wastewater treatment plants. While it is not unexpected that trihalomethanes would be

present in the effluent, insufficient information exists at this time to establish an effluent limitation. Therefore, this Order requires the effluent to be monitored for trihalomethanes, and if, after sufficient information has been collected, it can be determined that reasonable potential exists for the effluent to exceed a water quality standard for any of the trihalomethane compounds, this Order may be reopened and an effluent limit for the compound(s) added, as appropriate.

Bis-2-Ethylhexylphthalate: Bis-2-ethylhexylphthalate was detected in the effluent and receiving water samples collected on 11 January 2002 at concentrations of 2 ug/L and 10 ug/L, respectively. It was not detected in either the effluent or receiving water samples collected on 27 February 2001. The CTR Human Health Criteria for consumption of water and organisms is 1.8 ug/L. Additionally, a California Primary MCL of 4 ug/L has been established for bis-2-ethylhexylphthalate. The Basin Plan states that, "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) ...incorporated by reference into this plan."

The most stringent, applicable water quality standard for bis-2-ethylhexylphthalate is the CTR Human Health criteria for consumption of water and organisms of 1.8 ug/L.

Bis-2-ethylhexylphthalate is a common contaminant of sample containers, sampling apparatus, and analytical equipment, and it is therefore possible that the contaminant is not truly present in the receiving water or effluent discharge. This Order requires the Discharger to take steps to assure that sampling containers and apparatus are not the source of this contaminant. If changes in sampling and/or analytical procedures and equipment indicate that bis-2-ethylhexylphthalate is not actually present in the effluent or receiving water samples at concentrations that trigger reasonable potential according to the SIP, then effluent limits are not necessary. If bis-2-ethylhexylphthalate continues to be detected in the effluent and/or receiving water, then this Order may be reopened and modified to include an appropriate effluent limitation for bis-2-ethylhexylphthalate.

FINAL EFFLUENT LIMITS (CTR/NTR CONSTITUENTS)

As described above, the Regional Board has performed a Reasonable Potential Analysis (RPA) to determine what priority, toxic pollutants are discharged at a level that will cause or have the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numerical water quality standard. Copper and zinc were detected in the effluent at concentrations that, in accordance with methodology of the SIP, may cause or contribute to an in-stream excursion above a narrative or numerical water quality standard, and therefore, effluent limits for copper and zinc are implemented in this Order, as described below.

Dilution Considerations for Effluent Limit Calculations

In determining effluent limits, the Regional Board did not allow credit for the dilution of effluent with the receiving water. Effluent limits, therefore, have been established to meet the water quality standard at the point of discharge. The Regional Board may grant a dilution credit and a mixing zone only if a sufficient study and demonstration is made that a dilution credit is appropriate and protective of receiving water beneficial uses.

Copper

Hardness. The toxicity of certain metals, including copper, increases with decreasing water hardness concentrations. On 27 February 2001, hardness in the receiving water was measured at 94 mg/L as $CaCO_3$, and this figure has been used to determine reasonable potential for copper. As the toxicity of copper varies with water hardness, the effluent limits established for copper in this Order also vary as a function of receiving water hardness.

Translator. U.S. EPA regulations at 40 CFR 122.45 (c) require effluent limitations for metals to be expressed as total recoverable metal, and therefore, attention must be given to ensure that analytical data and water quality standards for metals are expressed accordingly. Appendix 3 of the SIP provides conversion factors (CFs) or translators, for certain metals including copper, to convert total recoverable concentrations to dissolved concentrations and vice versa. The CF for copper is 0.960 for both acute and chronic freshwater criteria.

Water Quality Criteria or Objective and Calculation of Effluent Limitations. The CTR chronic and acute criteria for copper for the protection of aquatic life are 8.49 and 12.7 ug/L, respectively, expressed as dissolved metal (dissolved), at a receiving water hardness of 94 mg/L as $CaCO_3$. The Basin Plan (Table III-1) instantaneous maximum (acute) concentration for copper is 12.2 ug/L (dissolved) at 94 mg/L as $CaCO_3$. The Regional Board has determined that the applicable water quality standards in these circumstances are the chronic criteria from the CTR and the instantaneous maximum (acute) objective from the Basin Plan.

For each water quality standard, an effluent concentration allowance (ECA) is calculated from the following equation to account for dilution and background levels of each pollutant.

> ECA = C + D (C – B), where C is the water quality criterion, D is the dilution credit, and B is the ambient background concentration. The ECA is also converted to total recoverable metal using the translator, as appropriate.

Because no credit for dilution is being allowed, D equals zero, and the ECA equals C. Here, $ECA_{chronic}$ = 8.85 ug/L and ECA_{acute} = 12.7 ug/L (total recoverable metal) at a water hardness of 94 mg/L as $CaCO_3$.

For each ECA based on an aquatic life criterion, the long-term average discharge condition (LTA) is determined by multiplying the ECA by a multiplier, taken from Table 1 of the SIP, to account for effluent variability. LTA multipliers are determined based on a coefficient of variation (CV) and on a specified probability of occurrence. The CV is a measure of the relative variations of a set of data. In the RPA for this facility, because there were fewer than 10 data points, the CV was set equal to a default value of 0.6. The ECA multipliers for calculating LTAs at the 99^{th} percentile occurrence probability are 0.321 (acute multiplier) and 0.527 (chronic multiplier). Here, $LTA_{chronic}$ = 4.66 ug/L, and LTA_{acute} = 4.07 ug/L (total recoverable metal) at a water hardness of 94 mg/L as $CaCO_3$.

Average monthly effluent limitations (AMELs) and maximum daily effluent limitations (MDELs) are calculated by multiplying the most limiting LTA (LTA_{acute} = 4.07) by a multiplier that accounts for averaging periods and exceedance frequencies of the effluent limitations, and for the AMEL, the effluent monitoring frequency. The CV was set equal to 0.6 and the sampling frequency was set equal to 4. A 99th percentile occurrence probability was used to determine the MDEL multiplier and a 95th percentile occurrence probability was used to determine the AMEL multiplier. From Table 2 of the SIP, the MDEL multiplier is 3.11, and the AMEL multiplier is 1.55. Final effluent limits for copper, derived from the Basin Plan (Table III-1) Instantaneous Maximum (acute) objective, are:

AMEL = 6.3 ug/L (total recoverable) at a water hardness of 94 mg/L as $CaCO_3$.
MDEL = 12.7 ug/L (total recoverable) at a water hardness of 94 mg/L as $CaCO_3$.

The final AMEL and MDEL are water hardness dependent, and therefore the AMEL and MDEL used for compliance determination are variable and must be calculated. Attachment C - Copper includes a pre-calculated table of copper AMELs and MDELs for various water hardness values.

Zinc

Hardness. The toxicity of certain metals, including zinc, increases with decreasing water hardness concentrations. On 27 February 2001, hardness in the receiving water was measured at 94 mg/L as $CaCO_3$, and this figure has been used to determine reasonable potential for zinc. As the toxicity of zinc varies with water hardness, the effluent limits established for zinc in this Order also vary as a function of receiving water hardness.

Translator. U.S. EPA regulations at 40 CFR 122.45 (c) require effluent limitations for metals to be expressed as total recoverable metal, and therefore, attention must be given to ensure that analytical data and water quality standards for metals are expressed accordingly. Appendix 3 of the SIP provides conversion factors (CFs) or translators, for certain metals including zinc, to convert total recoverable concentrations to dissolved concentrations and vice versa. The CFs for zinc are 0.978 and 0.986 for acute and chronic freshwater criteria, respectively.

Water Quality Criteria or Objective and Calculation of Effluent Limitations. The CTR chronic and acute criteria for zinc for the protection of aquatic life are 112 and 111 ug/L, respectively, expressed as dissolved metal (dissolved), at a receiving water hardness of 94 mg/L as $CaCO_3$. The Basin Plan (Table III-1) instantaneous maximum (acute) concentration for zinc is 32.5 ug/L (dissolved) at 94 mg/L as $CaCO_3$. The Regional Board has determined that the applicable water quality standards in these circumstances are the chronic criteria from the CTR and the instantaneous maximum (acute) objective from the Basin Plan.

For each water quality criterion, an effluent concentration allowance (ECA) is calculated from the following equation to account for dilution and background levels of each pollutant.

ECA = C + D (C – B), where C is the water quality criterion, D is the dilution credit, and B is the ambient background concentration. The ECA is also converted to total recoverable metal using the translator, as appropriate.

Because no credit for dilution is being allowed, D equals zero, and the ECA equals C. Here, $ECA_{chronic}$ = 114 ug/L and ECA_{acute} = 33.3 ug/L (total recoverable metal) at a water hardness of 94 mg/L as $CaCO_3$.

For each ECA based on an aquatic life criterion, the long-term average discharge condition (LTA) is determined by multiplying the ECA by a multiplier, taken from Table 1 of the SIP, to account for effluent variability. LTA multipliers are determined based on a coefficient of variation (CV) and on a specified probability of occurrence. The CV is a measure of the relative variations of a set of data. In the RPA for this facility, because there were fewer than 10 data points, the CV was set equal to a default value of 0.6. The ECA multipliers for calculating LTAs at the 99th percentile occurrence probability are 0.321 (acute multiplier) and 0.527 (chronic multiplier). Here, $LTA_{chronic}$ = 59.9 ug/L, and LTA_{acute} = 10.7 ug/L (total recoverable metal) at a water hardness of 94 mg/L as $CaCO_3$.

Average monthly effluent limitations (AMELs) and maximum daily effluent limitations (MDELs) are calculated by multiplying the most limiting LTA (LTA_{acute} = 10.7) by a multiplier that accounts for averaging periods and exceedance frequencies of the effluent limitations, and for the AMEL, the effluent monitoring frequency. The CV was set equal to 0.6 and the sampling frequency was set equal to 4. A 99th percentile occurrence probability was used to determine the MDEL multiplier and a 95th percentile occurrence probability was used to determine the AMEL multiplier. From Table 2 of the SIP, the MDEL multiplier is 3.11, and the AMEL multiplier is 1.55. Final effluent limits for zinc, derived from the Basin Plan (Table III-1) Instantaneous Maximum (acute) objective, are:

AMEL = 16.5 ug/L (total recoverable) at a water hardness of 94 mg/L as $CaCO_3$.
MDEL = 33.2 ug/L (total recoverable) at a water hardness of 94 mg/L as $CaCO_3$.

The final AMEL and MDEL are water hardness dependent, and therefore the AMEL and MDEL used for compliance determination are variable and must be calculated. Attachment D - Zinc includes a pre-calculated table of zinc AMELs and MDELs for various water hardness values.

INTERIM EFFLUENT LIMITS (CTR/NTR CONSTITUENTS)

In accordance with the Regional Board's *Policy for Application of Water Quality Objectives*, presented in Chapter IV of the Basin Plan, schedules for compliance with final effluent limitations, which are based on water quality criteria adopted before 25 September 1995, cannot be authorized. Here, as final effluent limitations for copper and zinc are based on water quality criteria of the Basin Plan adopted before 25 September 1995, a compliance schedule and interim limits have not been considered, and final limitations for copper and zinc will become immediately effective upon adoption of this Order. However, the Regional Board may adopt other Orders, such as a Cease and

Desist Order, allowing the Discharger a period of time to fully comply with the effluent limits for copper and zinc.

FLOW RATE LIMITATION

The monthly average daily dry weather flow limitation of 0.43 mgd is based on the design capacity of the treatment facility and is consistent with the previous permit.

SLUDGE DISPOSAL

This Order requires the Discharger to develop and implement a Sludge Management and Disposal Plan to assure proper handling and disposal of solids that are collected and/or generated at the wastewater treatment plant. The Discharger is required to report any proposed change in sludge use or disposal practice 90 days in advance of change.

RECEIVING WATER LIMITATIONS

The receiving water limitations contained in this proposed Order are based on protecting the beneficial uses identified in the Basin Plan for Cottonwood Creek.

OTHER ISSUES OF CONCERN

Underdrain System

The wastewater treatment plant was installed with an underdrain system to maintain separation between the bottom of the treatment works and groundwater. The underdrain system discharges offsite to a drainage swale east of the facility. In approximately March 2002, discharge from the underdrain system appeared to increase. In addition to a dropping water level in the north sludge storage basin, this led to the discovery of leaks in at least the north (if not also the south) SSB. The north SSB has been replaced, as described below. Samples from the underdrain discharge were collected and analyzed for total and fecal coliform bacteria. High levels of fecal coliform were detected discharging offsite. In order to determine if replacement of the north SSB has adequately mitigated the elevated fecal coliform concentrations discharged from the underdrain system, this Order requires the Discharger to sample the discharge from the underdrain system and analyze it for total and fecal coliform bacteria at a frequency of once per month, when discharge from the underdrain system is occurring. If the fecal coliform concentration in the underdrain system discharge exceeds 200 MPN/100mL (based on the Basin Plan's REC-1 water quality objective of 200 MPN/100mL as a 30-day geometric mean and a 10 percent maximum of samples exceeding 400 MPN/100mL), then this Order requires the monitoring frequency to be increased to weekly. If, after sufficient information is collected, it is determined that the discharge threatens to cause an exceedance of the Basin Plan's REC-1 water quality objective for fecal coliform in the underdrain receiving water, this Order may be reopened and limitations added, as appropriate. Alternatively, a Cease and Desist Order could be adopted to require the Discharger to eliminate the discharge or reduce the fecal coliform concentration to an acceptable level. The Regional Board has proposed, but not yet approved, a Basin Plan amendment to change the REC-1 water quality objective for

bacteria from the Fecal Coliform indicator to the E. Coli indicator. If this proposed Basin Plan amendment is implemented during the term of this Order, the Discharger may be required to conduct additional monitoring for the new indicator organism.

Sludge Storage Basins (SSBs)

As stated above, in approximately March 2002, the north sludge storage basin (SSB) was detected to be leaking. The north SSB was replaced by the end of December 2002. The new north SSB is underlain by a 1-foot thick compacted clay liner under a base of 3-inch thick asphalt concrete with 3-inch thick shotcrete sides and an access ramp. The original capacity of the north SSB was 0.83 acre-feet, the new capacity is 4.3 acre-feet. The original south SSB is now empty, as it is also suspected of leaking. The expanded north SSB has sufficient capacity to handle the current treatment plant design flow. However, the south SSB may need to be repaired in order to provide redundancy and allow the north SSB to be periodically taken offline for maintenance, etc.

Dilution/Mixing in Cottonwood Creek and Streamflow Measurement

The summer and fall flow in Cottonwood Creek provides somewhat limited dilution to the treatment plant effluent discharge. Dilution in the winter and spring is adequate. The Implementation section of the Basin Plan states that the direct discharge of wastes to streams with "intermittent flow or limited dilution capacity" is "inappropriate as a permanent disposal method". Accurate low flow measurements of the receiving water streamflow are needed to ensure that adequate dilution of the effluent is occurring in the receiving water. The existing Cottonwood Creek streamflow gage is located downstream of the discharge location and requires frequent maintenance/calibration to provide reliable low flow information. This Order requires the Discharger to monitor and report the daily average flow in the receiving water. In order to ensure that the daily average flow data is immediately available to the Discharger, the Discharger may need to make arrangements with or enter into agreements with the operator of the gage. Alternatively, the Discharger may elect to install and operate its own streamflow gage. Accurate low flow data for Cottonwood Creek in the vicinity of the discharge is required in order to determine available dilution and determine if the discharge is in compliance with the Basin Plan and other guidance. If the Discharger chooses to do a dilution and mixing zone study, adequate flow information will also be required.

In determining effluent limits, the Regional Board did not allow credit for the dilution of effluent with the receiving water. Effluent limits, therefore, have been established to meet the water quality standard at the point of discharge ("end-of-pipe"). The Regional Board may grant a dilution credit and a mixing zone only if a sufficient study and demonstration is made that a dilution credit and mixing zone is appropriate and protective of receiving water beneficial uses.

Broken Diffuser

The effluent diffuser located in Cottonwood Creek has been damaged. Reportedly, it is not currently providing any diffusion function. This Order requires the Discharger to repair or replace the diffuser, to the original design specifications. Improvements to the original design may be required in order to address shifting streambed conditions.

Chlorination/Dechlorination Equipment

The chlorination and dechlorination chemical feed controls at the wastewater treatment plant are designed to be automatically paced based on flow or concentration. Currently, the equipment is not functioning and the chemical dosing equipment is set manually. Manual operation of this equipment is not in accordance with the original plant design, and threatens to cause an effluent violation due to over- or under-dosing. This Order requires the Discharger to repair or replace this equipment.

Chronic Toxicity

The Discharger is currently required to analyze effluent samples for chronic toxicity once per year. Some of these analyses have documented adverse effects to the test organisms in the presence of the effluent. However, the most recent chronic toxicity analysis indicated no adverse effects to the test organisms. This Order continues the annual testing frequency for chronic toxicity. If additional information indicates that the discharge threatens to cause chronic toxicity in the receiving water, then the Discharger may be required to conduct a Toxicity Identification Evaluation (TIE) and Toxicity Reduction Evaluation (TRE). Additionally, this Order may be reopened and an effluent limit for the constituent(s) causing the toxicity added, as appropriate.

Houseboat Wastewater Dump Station

Due to State and Federal requirements, the houseboating industry on the nearby Lake Shasta is developing alternatives for the disposal of wastewater (gray water and black water) from the houseboats' holding tanks. One alternative is to haul wastewater to a local wastewater treatment plant for disposal. The Discharger has expressed interest in accepting this waste at the Cottonwood Wastewater Treatment Plant via a dump station. The houseboat wastewater would be expected to exhibit higher strength characteristics compared to ordinary domestic wastewater, and would also contain various odor control chemicals typically used in wastewater holding tanks. It has not been determined if the wastewater treatment plant would be capable of adequately treating such wastewater. Considering the challenges currently facing the wastewater treatment plant, including new effluent limits, the underdrain system, the south sludge storage basin, dilution and stream flow issues, broken diffuser, inoperable chlorination/dechlorination equipment, and chronic toxicity issues, it would be inappropriate to allow any new, large discharge from outside the current service area, even if it could be shown that all contaminants in the houseboat wastewater could be adequately treated/removed by the wastewater treatment plant. Therefore, this Order specifically prohibits the Discharger from accepting wastewater from sewage holding tanks, unless prior authorization is granted by the Executive Officer of the Regional Board, or his designee.

PERMIT REOPENER

If after a review of any monitoring results, it is determined that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above an applicable water quality standard, this Order may be reopened and limitations based on those objectives included. Additionally, if pollutants are detected in discharges from the Discharger’s facility, but insufficient information exists to establish an effluent limit or determine if an effluent limit is necessary, then additional monitoring will be required to provide sufficient information.

The Discharger may conduct studies pertaining to facility operations, the effluent discharge, and the receiving water. For example, such studies may include a site-specific metals translator study, or a mixing zone and dilution study. If requested, the Regional Board will review such studies and if warranted, will reopen this permit to make appropriate changes.

PROCEDURES ON REACHING FINAL DECISION ON DRAFT PERMIT

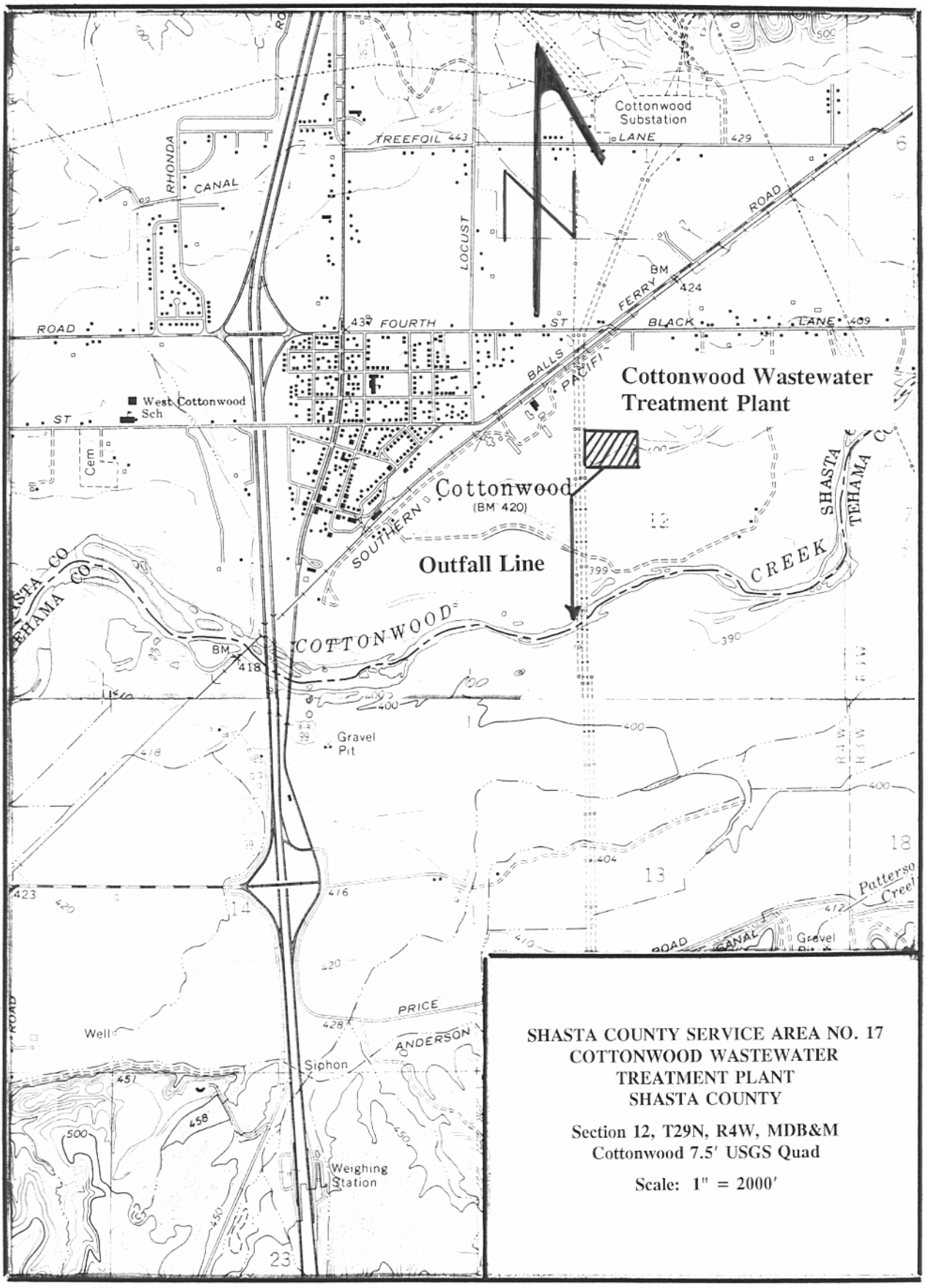
The tentative waste discharge requirements have been sent to the Discharger and interested parties for review (at least 30 days) prior to formal presentation to the Regional Board. Any contested items on the permit will be heard and considered for change prior to formal adoption at the Board Meeting.

FOR FURTHER INFORMATION

For further information or questions regarding the NPDES permit, contact Bryan J. Smith at the Regional Water Quality Control Board in Redding at (530) 226-3425, bsmith@waterboards.ca.gov, or at 415 Knollcrest Dr, Suite 100, Redding, CA, 96002.

BJS
03/17/2005

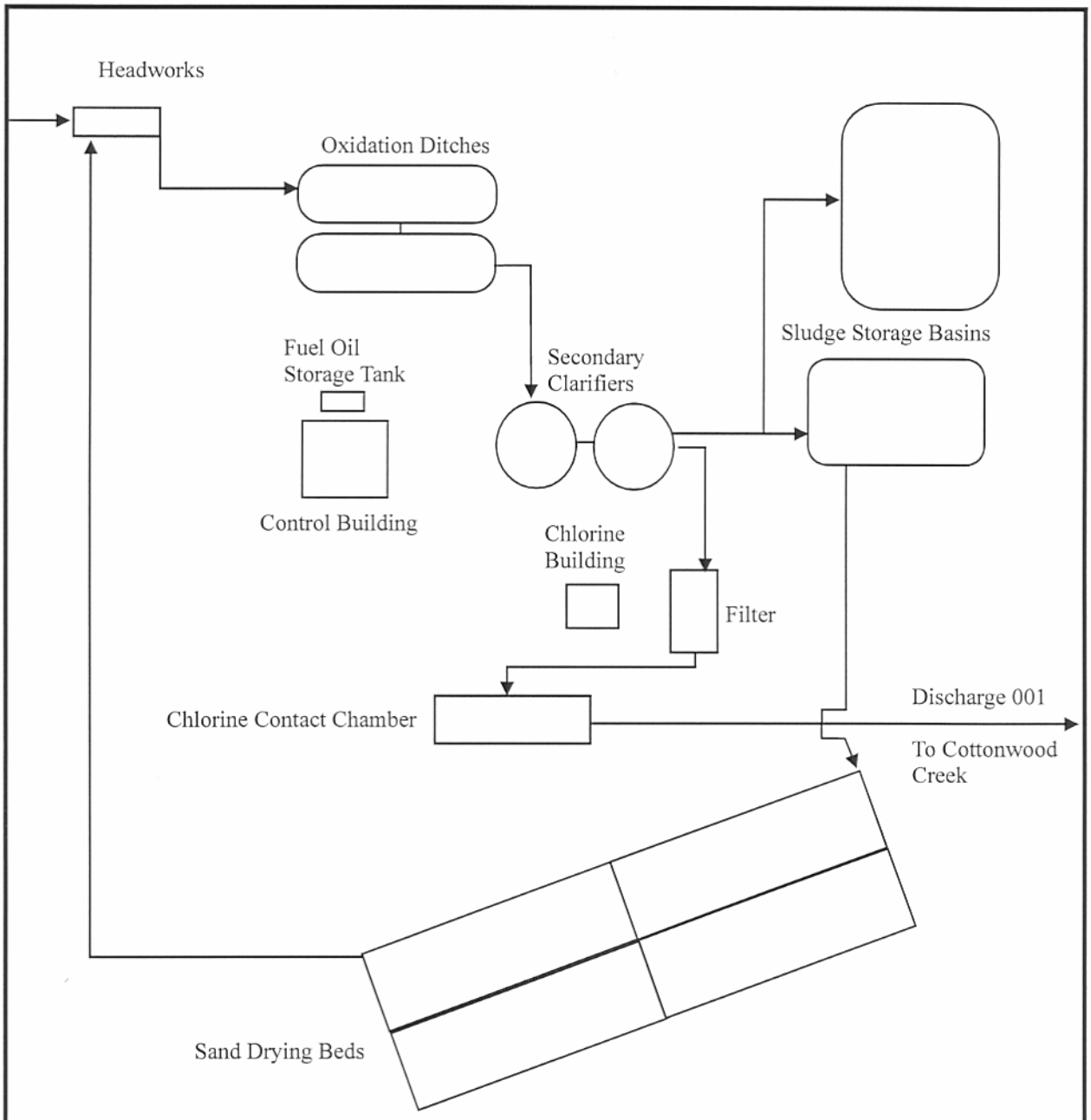
ATTACHMENT A



SHASTA COUNTY SERVICE AREA NO. 17
COTTONWOOD WASTEWATER
TREATMENT PLANT
SHASTA COUNTY

Section 12, T29N, R4W, MDB&M
Cottonwood 7.5′ USGS Quad

Scale: 1" = 2000′



SHASTA COUNTY SERVICE AREA NO. 17
COTTONWOOD WASTEWATER
TREATMENT PLANT
SHASTA COUNTY

Schematic Map of Facility

(Not to Scale)

COPPER

Hardness Dependent Maximum Daily Effluent Limitations (MDELs) and Average Monthly Effluent Limitations (AMELs)

Calculation Spreadsheet

Water Hardness* (mg/L as $CaCO_3$)	**BP[1] (acute)** Inst. Max (ug/L, dissolved)	**CCC[2] (chronic)** 4-day Average (ug/L, dissolved)	**ECA_{acute}[3]** (ug/L, total recoverable)	**$ECA_{chronic}$[4]** (ug/L, total recoverable)	**LTA_{acute}[5]** (ug/L, total recoverable)	**$LTA_{chronic}$[6]** (ug/L, total recoverable)	**MDEL[7]** (ug/L, total recoverable)	**AMEL[8]** (ug/L, total recoverable)
<75	Calculate							
75	9.93	7.00	10.34	7.30	3.32	3.84	10.3	5.1
76	10.05	7.08	10.47	7.38	3.36	3.89	10.4	5.2
77	10.17	7.16	10.59	7.46	3.40	3.93	10.6	5.3
78	10.29	7.24	10.71	7.54	3.44	3.98	10.7	5.3
79	10.41	7.32	10.84	7.63	3.48	4.02	10.8	5.4
80	10.52	7.40	10.96	7.71	3.52	4.06	10.9	5.5
81	10.64	7.48	11.09	7.79	3.56	4.11	11.1	5.5
82	10.76	7.56	11.21	7.87	3.60	4.15	11.2	5.6
83	10.88	7.64	11.33	7.96	3.64	4.19	11.3	5.6
84	11.00	7.72	11.46	8.04	3.68	4.24	11.4	5.7
85	11.12	7.79	11.58	8.12	3.72	4.28	11.6	5.8
86	11.24	7.87	11.70	8.20	3.76	4.32	11.7	5.8
87	11.35	7.95	11.83	8.28	3.80	4.36	11.8	5.9
88	11.47	8.03	11.95	8.36	3.84	4.41	11.9	5.9
89	11.59	8.11	12.07	8.44	3.88	4.45	12.1	6.0
90	11.71	8.18	12.20	8.53	3.92	4.49	12.2	6.1
91	11.83	8.26	12.32	8.61	3.95	4.54	12.3	6.1
92	11.94	8.34	12.44	8.69	3.99	4.58	12.4	6.2
93	12.06	8.42	12.56	8.77	4.03	4.62	12.5	6.3
94	12.18	8.49	12.69	8.85	4.07	4.66	12.7	6.3
95	12.30	8.57	12.81	8.93	4.11	4.71	12.8	6.4
96	12.41	8.65	12.93	9.01	4.15	4.75	12.9	6.4
97	12.53	8.73	13.05	9.09	4.19	4.79	13.0	6.5
98	12.65	8.80	13.17	9.17	4.23	4.83	13.2	6.6
99	12.76	8.88	13.30	9.25	4.27	4.87	13.3	6.6
100	12.88	8.96	13.42	9.33	4.31	4.92	13.4	6.7
101	13.00	9.03	13.54	9.41	4.35	4.96	13.5	6.7
102	13.11	9.11	13.66	9.49	4.38	5.00	13.6	6.8
103	13.23	9.18	13.78	9.57	4.42	5.04	13.8	6.9
104	13.35	9.26	13.90	9.65	4.46	5.08	13.9	6.9
105	13.46	9.34	14.02	9.73	4.50	5.13	14.0	7.0
106	13.58	9.41	14.14	9.81	4.54	5.17	14.1	7.0
107	13.69	9.49	14.26	9.88	4.58	5.21	14.2	7.1
108	13.81	9.56	14.38	9.96	4.62	5.25	14.4	7.2
109	13.92	9.64	14.50	10.04	4.66	5.29	14.5	7.2
110	14.04	9.72	14.63	10.12	4.69	5.33	14.6	7.3
111	14.16	9.79	14.75	10.20	4.73	5.37	14.7	7.3
112	14.27	9.87	14.87	10.28	4.77	5.42	14.8	7.4
113	14.39	9.94	14.99	10.36	4.81	5.46	15.0	7.5
114	14.50	10.02	15.11	10.43	4.85	5.50	15.1	7.5
115	14.62	10.09	15.23	10.51	4.89	5.54	15.2	7.6
116	14.73	10.17	15.35	10.59	4.93	5.58	15.3	7.6
117	14.85	10.24	15.47	10.67	4.96	5.62	15.4	7.7
118	14.96	10.32	15.58	10.75	5.00	5.66	15.6	7.8
119	15.08	10.39	15.70	10.82	5.04	5.70	15.7	7.8
120	15.19	10.47	15.82	10.90	5.08	5.75	15.8	7.9
>120	Calculate							

* Water Hardness (mg/L as $CaCO_3$). Use upstream receiving water hardness.

[1] Basin Plan (Instantaneous Max, acute) = $e^{(0.905)(\ln \text{hardness})-1.612}$, from Basin Plan Table III-1 (ug/L, dissolved)

[2] CCC (4-day average, chronic) = 0.960 x $e^{(0.8545)(\ln \text{hardness})-1.702}$, from CTR Freshwater Aquatic Life (ug/L, dissolved)

[3] ECA_{acute} = CMC / 0.960, (ug/L, total recoverable)

[4] $ECA_{chronic}$ = CCC / 0.960, (ug/L, total recoverable)

[5] LTA_{acute} = ECA_{acute} x 0.321 (ug/L, total recoverable), assumes CV=0.6 for 10 samples or less per SIP.

[6] $LTA_{chronic}$ = $ECA_{chronic}$ x 0.527 (ug/L, total recoverable), assumes CV=0.6 for 10 samples or less per SIP.

[7] MDEL = LTA x 3.11 (ug/L, total recoverable), where LTA equals the lowest of LTA_{acute} and $LTA_{chronic}$, assumes CV=0.6 for 10 samples or less per SIP for Aquatic Life.

[8] AMEL = LTA x 1.55 (ug/L, total recoverable), where LTA equals the lowest of LTA_{acute} and $LTA_{chronic}$, assumes CV=0.6 for 10 samples or less per SIP for Aquatic Life.

ZINC
Hardness Dependent Maximum Daily Effluent Limitations (MDELs) and Average Monthly Effluent Limitations (AMELs)
Calculation Spreadsheet

Water Hardness* (mg/L as $CaCO_3$)	BP[1] (acute) Inst. Max (ug/L, dissolved)	CCC[2] (chronic) 4-day Average (ug/L, dissolved)	ECA_{acute}[3] (ug/L, total recoverable)	$ECA_{chronic}$[4] (ug/L, total recoverable)	LTA_{acute}[5] (ug/L, total recoverable)	$LTA_{chronic}$[6] (ug/L, total recoverable)	MDEL[7] (ug/L, total recoverable)	AMEL[8] (ug/L, total recoverable)
<75	Calculate							
75	26.96	92.58	27.57	93.90	8.85	49.48	27.5	13.7
76	27.26	93.63	27.88	94.96	8.95	50.04	27.8	13.9
77	27.56	94.67	28.18	96.02	9.05	50.60	28.1	14.0
78	27.86	95.71	28.48	97.07	9.14	51.16	28.4	14.2
79	28.15	96.75	28.79	98.12	9.24	51.71	28.7	14.3
80	28.45	97.79	29.09	99.18	9.34	52.27	29.0	14.5
81	28.74	98.82	29.39	100.22	9.43	52.82	29.3	14.6
82	29.04	99.85	29.69	101.27	9.53	53.37	29.6	14.8
83	29.33	100.89	29.99	102.32	9.63	53.92	29.9	14.9
84	29.62	101.91	30.29	103.36	9.72	54.47	30.2	15.1
85	29.92	102.94	30.59	104.40	9.82	55.02	30.5	15.2
86	30.21	103.97	30.89	105.44	9.91	55.57	30.8	15.4
87	30.50	104.99	31.19	106.48	10.01	56.12	31.1	15.5
88	30.79	106.01	31.48	107.52	10.11	56.66	31.4	15.7
89	31.08	107.03	31.78	108.55	10.20	57.21	31.7	15.8
90	31.37	108.05	32.08	109.58	10.30	57.75	32.0	16.0
91	31.66	109.07	32.37	110.61	10.39	58.29	32.3	16.1
92	31.95	110.08	32.67	111.64	10.49	58.84	32.6	16.3
93	32.24	111.09	32.96	112.67	10.58	59.38	32.9	16.4
94	32.52	112.10	33.25	113.70	10.67	59.92	33.2	16.5
95	32.81	113.11	33.55	114.72	10.77	60.46	33.5	16.7
96	33.10	114.12	33.84	115.74	10.86	61.00	33.8	16.8
97	33.38	115.13	34.13	116.76	10.96	61.53	34.1	17.0
98	33.67	116.13	34.42	117.78	11.05	62.07	34.4	17.1
99	33.95	117.14	34.72	118.80	11.14	62.61	34.7	17.3
100	34.24	118.14	35.01	119.82	11.24	63.14	34.9	17.4
101	34.52	119.14	35.30	120.83	11.33	63.68	35.2	17.6
102	34.80	120.14	35.59	121.84	11.42	64.21	35.5	17.7
103	35.09	121.14	35.88	122.86	11.52	64.74	35.8	17.9
104	35.37	122.13	36.16	123.87	11.61	65.28	36.1	18.0
105	35.65	123.13	36.45	124.87	11.70	65.81	36.4	18.1
106	35.93	124.12	36.74	125.88	11.79	66.34	36.7	18.3
107	36.21	125.11	37.03	126.89	11.89	66.87	37.0	18.4
108	36.49	126.10	37.32	127.89	11.98	67.40	37.3	18.6
109	36.78	127.09	37.60	128.89	12.07	67.93	37.5	18.7
110	37.05	128.08	37.89	129.89	12.16	68.45	37.8	18.9
111	37.33	129.06	38.17	130.89	12.25	68.98	38.1	19.0
112	37.61	130.05	38.46	131.89	12.35	69.51	38.4	19.1
113	37.89	131.03	38.74	132.89	12.44	70.03	38.7	19.3
114	38.17	132.01	39.03	133.88	12.53	70.56	39.0	19.4
115	38.45	132.99	39.31	134.88	12.62	71.08	39.2	19.6
116	38.72	133.97	39.60	135.87	12.71	71.60	39.5	19.7
117	39.00	134.95	39.88	136.86	12.80	72.13	39.8	19.8
118	39.28	135.92	40.16	137.85	12.89	72.65	40.1	20.0
119	39.55	136.90	40.44	138.84	12.98	73.17	40.4	20.1
120	39.83	137.87	40.73	139.83	13.07	73.69	40.7	20.3
>120	Calculate							

* Water Hardness (mg/L as $CaCO_3$). Use upstream receiving water hardness.

[1] Basin Plan (Instantaneous Max, acute) = $e^{(0.830)(\ln \text{hardness})-0.289}$, from Basin Plan Table III-1 (ug/L, dissolved)

[2] CCC (4-day average, chronic) = 0.986 x $e^{(0.8473)(\ln \text{hardness})+0.884}$, from CTR Freshwater Aquatic Life (ug/L, dissolved)

[3] ECA_{acute} = CMC / 0.978, (ug/L, total recoverable)

[4] $ECA_{chronic}$ = CCC / 0.986, (ug/L, total recoverable)

[5] LTA_{acute} = ECA_{acute} x 0.321 (ug/L, total recoverable), assumes CV=0.6 for 10 samples or less per SIP.

[6] $LTA_{chronic}$ = $ECA_{chronic}$ x 0.527 (ug/L, total recoverable), assumes CV=0.6 for 10 samples or less per SIP.

[7] MDEL = LTA x 3.11 (ug/L, total recoverable), where LTA equals the lowest of LTA_{acute} and $LTA_{chronic}$, assumes CV=0.6 for 10 samples or less per SIP for Aquatic Life.

[8] AMEL = LTA x 1.55 (ug/L, total recoverable), where LTA equals the lowest of LTA_{acute} and $LTA_{chronic}$, assumes CV=0.6 for 10 samples or less per SIP for Aquatic Life.

ATTACHMENT E, ORDER NO. R5-2005-0037
SHASTA COUNTY SERVICE AREA NO. 17
COTTONWOOD WASTEWATER TREATMENT PLANT
SHASTA COUNTY

List of Priority Pollutants

1	Antimony
2	Arsenic
3	Beryllium
4	Cadmium
5a	Chromium (III)
5b	Chromium (VI)
6	Copper
7	Lead
8	Mercury
9	Nickel
10	Selenium
11	Silver
12	Thallium
13	Zinc
14	Cyanide
15	[asbestos testing not required]
16	[dioxin testing not required]
17	Acrolein
18	Acrylonitrile
19	Benzene
20	Bromoform
21	Carbon tetrachloride
22	Chlorobenzene
23	Chlorodibromomethane
24	Chloroethane
25	2-Chloroethylvinyl Ether
26	Chloroform
27	Dichlorobromomethane
28	1,1-Dichloroethane
29	1,2-Dichloroethane
30	1,1-Dichloroethylene
31	1,2-Dichloropropane
32	1,3-Dichloropropylene
33	Ethylbenzene
34	Methyl Bromide
35	Methyl Chloride
36	Methylene Chloride
37	1,1,2,2-Tetrachloroethane
38	Tetrachloroethylene (PCE)
39	Toluene
40	1,2-Trans-Dichloroethylene
41	1,1,1-Trichloroethane
42	1,1,2-Trichloroethane
43	Trichloroethylene (TCE)
44	Vinyl chloride
45	2-Chlorophenol
46	2,4-Dichlorophenol
47	2,4-Dimethylphenol
48	2-Methyl-4,6-Dinitrophenol
49	2,4-Dinitrophenol
50	2-Nitrophenol
51	4-Nitrophenol
52	3-Methyl-4-Chlorophenol
53	Pentachlorophenol
54	Phenol
55	2,4,6-Trichlorophenol
56	Acenaphthene
57	Acenaphthylene
58	Anthracene
59	Benzidine
60	Benzo(a)Anthracene
61	Benzo(a)pyrene
62	Benzo(b)fluoranthene
63	Benzo(g,h,i)perylene
64	Benzo(k)fluoranthene
65	Bis(2-chloroethoxy) methane
66	Bis(2-chloroethyl) ether
67	Bis(2-chloroisopropyl) ether
68	Bis(2-Ethylhexyl) phthalate
69	4-Bromophenyl phenyl ether
70	Butylbenzyl Phthalate
71	2-Chloronaphthalene
72	4-Chlorophenyl Phenyl Ether
73	Chrysene
74	Dibenzo(a,h)Anthracene
75	1,2-Dichlorobenzene
76	1,3-Dichlorobenzene
77	1,4-Dichlorobenzene
78	3,3'-Dichlorobenzidine
79	Diethyl phthalate
80	Dimethyl phthalate
81	Di-n-Butyl Phthalate
82	2,4-Dinitrotoluene
83	2,6-Dinitrotoluene
84	Di-n-Octyl Phthalate
85	1,2-Diphenylhydrazine
86	Fluoranthene
87	Fluorene
88	Hexachlorobenzene
89	Hexachlorobutadiene
90	Hexachlorocy-clopentadiene
91	Hexachloroethane
92	Indeno(1,2,3-c,d)pyrene
93	Isophorone
94	Naphthalene
95	Nitrobenzene
96	N-Nitrosodimethylamine
97	N-Nitrosodi-n-Propylamine
98	N-Nitrosodipheny-lamine
99	Phenanthrene
100	Pyrene
101	1,2,4-Trichlorobenzene
102	Aldrin
103	alpha-BHC
104	beta-BHC
105	gamma-BHC (Lindane)
106	delta-BHC
107	Chlordane
108	4,4'-DDT
109	4,4'-DDE
110	4,4'-DDD
111	Dieldrin
112	alpha-Endosulfan
113	beta-Endosulfan
114	Endosulfan Sulfate
115	Endrin
116	Endrin Aldehyde
117	Heptachlor
118	Heptachlor epoxide
119 -125	Polychlorinated biphenyls (PCBs)
126	Toxaphene