CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2003-0085

NPDES NO. CA0079260

WASTE DISCHARGE REQUIREMENTS FOR CITY OF YUBA CITY WASTEWATER TREATMENT FACILITY SUTTER COUNTY

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

BACKGROUND

1. The City of Yuba City (hereafter Discharger) submitted a Report of Waste Discharge, dated 31 January 2002, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the City's Wastewater Treatment Facility (WWTF). Supplemental information to complete filing of the application was received on 21 March 2002, 8 July 2002, 6 September 2002, 23 September 2002, 24 September 2002, 28 October 2002, 25 November 2002, 12 December 2002, 2 January 2003, 28 January 2003, 25 March 2003 and 1 April 2003.

2. The Discharger owns and operates a wastewater collection, treatment, and disposal system, and provides sewerage service to Yuba City with a population of approximately 40,000. In addition, the Yuba City WWTF accepts septage from unsewered portions of Sutter and Yuba Counties. The treatment plant is located on Assessor's Parcel Number (APN) 7-010-001 in T15N, R3E, MDB&M, as shown on Attachment A, a part of this Order. Treated municipal and industrial wastewater is discharged to disposal ponds within the floodplain of the Feather River in APN 23-040-077 at the point latitude 39º 5' 00" (degrees, minutes, seconds) and longitude 121º 35' 53" or from a multi-port diffuser into the Feather River in APN 23-040-050 at the point latitude 39º 5' 48" and longitude 121º 35' 45". Both discharge points are located in T14N, R3E, MDB&M.

3. The treatment system at this facility consists of comminution, aerated grit removal, primary sedimentation, pure oxygen aeration, secondary sedimentation, disinfection, dechlorination, and pH adjustment. Nutrients are currently added at the headworks to provide an adequate food-to-microorganisms ratio in the activated sludge process due to nutritionally dilute industrial discharges. Sludge is treated in an anaerobic digester, dewatered by belt press and/or drying beds, and disposed of off-site as landfill cover material.

4. The Report of Waste Discharge describes the wastewater discharge to the Feather River (Outfall 001) as follows:

Design Flow Rate	7.0	million gallons per day (mgd)
Average Daily Flow Rate	6.0	mgd
Maximum Daily Flow Rate	8.4	mgd
Average Daily Temperature, Summer	80.2	ºF
Maximum Daily Temperature, Summer	85.1	ºF
Average Daily Temperature, Winter	70.9	ºF
Maximum Daily Temperature, Winter	73.5	ºF
Minimum pH	5.6	standard units
Maximum pH	8.2	standard units
Average Daily Biochemical Oxygen Demand (BOD)[1]	11	mg/*l*
Maximum Daily BOD	36	mg/*l*
Average Daily Total Suspended Solids (TSS)	9.1	mg/*l*
Maximum Daily TSS	41	mg/*l*
Average Daily Fecal Coliform Organisms	<2	MPN/100 m*l*
Maximum Daily Fecal Coliform Organisms	<2	MPN/100 m*l*
Average Daily Ammonia (as N)	13	mg/*l*
Maximum Daily Ammonia (as N)	47	mg/*l*
Average Daily Nitrate plus Nitrite (as N)	2.0	mg/*l*
Maximum Daily Nitrate plus Nitrite (as N)	53	mg/*l*
Average Daily Total Dissolved Solids (TDS)	386	mg/*l*
Maximum Daily TDS	840	mg/*l*

[1] 5-day, 20ºC biochemical oxygen demand

5. The Report of Waste Discharge describes the wastewater discharge to the disposal ponds (Outfall 002) as follows:

Design Flow Rate	7.0	million gallons per day (mgd)
Average Daily Flow Rate	5.5	mgd
Maximum Daily Flow Rate	8.4	mgd
Average Daily Temperature, Summer	80.8	ºF
Maximum Daily Temperature, Summer	85.5	ºF
Average Daily Temperature, Winter	70.7	ºF
Maximum Daily Temperature, Winter	75.5	ºF
Minimum pH	4.67	standard units
Maximum pH	8.34	standard units
Average Daily Biochemical Oxygen Demand (BOD)[1]	10	mg/*l*
Maximum Daily BOD	54	mg/*l*

[1] 5-day, 20ºC biochemical oxygen demand

Average Daily Total Suspended Solids (TSS)	12	mg/*l*
Maximum Daily TSS	120	mg/*l*
Average Daily Fecal Coliform Organisms	<2	MPN/100 m*l*
Maximum Daily Fecal Coliform Organisms	<2	MPN/100 m*l*
Average Daily Ammonia (as N)	14	mg/*l*
Maximum Daily Ammonia (as N)	49	mg/*l*
Average Daily Nitrate plus Nitrite (as N)	2.0	mg/*l*
Maximum Daily Nitrate plus Nitrite (as N)	21	mg/*l*
Average Daily Total Dissolved Solids (TDS)	309	mg/*l*
Maximum Daily TDS	380	mg/*l*

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

7. The United States Environmental Protection Agency (U.S. EPA) adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the *State Implementation Plan* or SIP), which contains guidance on implementation of the *National Toxics Rule* and the *California Toxics Rule.*

BENEFICIAL USES OF THE RECEIVING STREAM

8. The beneficial uses of the Feather River downstream of the discharge as identified in Table II-1 of the Basin Plan are municipal and domestic supply, agricultural irrigation, body contact water recreation, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. Existing beneficial uses of the Feather River, other than those identified in Table II-1, include groundwater recharge and freshwater replenishment. The Basin Plan states, on page II-1.00, "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…*" and "*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*."

9. The Clean Water Act, Section 303(a-c), required states to adopt numeric criteria where they are necessary to protect designated uses. The Regional Board adopted numeric criteria in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Board will apply to regional waters in order to protect the beneficial uses*." The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains Receiving Water Limitations based

on the Basin Plan numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, turbidity, and electrical conductivity. Numeric Basin Plan objectives that are applicable to this discharge and which have been incorporated as Receiving Water Limitations include:

a. *Dissolved Oxygen*—The Basin Plan includes a water quality objective that "[f]*or 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 95 percentile concentration shall not fall below 75 percent saturation.*" In addition, for water bodies designated as having the beneficial uses of cold freshwater habitat or spawning, reproduction, and/or early development, the Basin Plan includes an objective that the dissolved oxygen concentration not fall below 7.0 mg/*l* at any time. The Feather River is designated as having the beneficial uses both of cold freshwater habitat and of spawning, reproduction, and/or early development. Numeric Receiving Water Limitations for dissolved oxygen are included in this Order and are based on the Basin Plan objectives.

b. *pH*—The Basin Plan includes numeric water quality objectives that the pH "…*not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*" The Feather River is designated as having both COLD and WARM beneficial uses. Numeric Receiving Water Limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

c. *Electrical Conductivity*—The Basin Plan includes a water quality objective that electrical conductivity (at 25ºC) "[s]*hall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River*." One of the water bodies to which this objective applies is the Feather River from the Fish Barrier Dam at Oroville to the Sacramento River. Based on information included in analytical reports submitted by the Discharger, electrical conductivity in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective for electrical conductivity in the Feather River. A numeric Receiving Water Limitation for electrical conductivity is included in this Order and is based on the Basin Plan objective for electrical conductivity in the Feather River.

d. *Turbidity*—The Basin Plan includes a water quality objective that "[i]*ncreases in turbidity attributable to controllable water quality factors shall not exceed the following limits:*

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

- *Where natural turbidity is between 50 and 100 NTUs, increases shall not exceed 10 NTUs.*
- *Where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent."*

A numeric Receiving Water Limitation for turbidity is included in this Order and is based on the Basin Plan objective for turbidity.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL

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

    Federal regulations at 40 C.F.R Section 122.44 require NPDES permits to contain effluent limitations, including technology-based and water quality standards-based limitations and limitations based on toxicity. The federal regulations at 40 C.F.R. Section 122.44(d)(1) 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. Those regulations set forth a methodology for establishing effluent limitations based on narrative state water quality standards. (40 CFR Section 122.44(d)(1)(vi)(A-C).)

    U.S. EPA, the State Board, and the Regional Board have adopted or published standards that are used to implement 40 CFR Section 122.44. U.S.EPA has promulgated the California Toxics Rule (CTR) and the National Toxics Rule (NTR) that establish water quality criteria. The State Board has adopted the SIP that implements the CTR and NTR. U.S. EPA has published ambient water quality criteria. The Basin Plan contains numeric and narrative water quality objectives. The Basin Plan contains an Application Policy ("Policy for Application of Water Quality Objectives") that, in part, sets forth a process for translating narrative water quality objectives into numeric effluent limitations. U.S. EPA's ambient water quality criteria and the Basin Plan "Policy for Application of Water Quality Objectives" are used to implement 40 CFR Section 122.44(d)(1)(v).

11. Section 13263.6(a), California Water Code, requires that "*the regional board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 United States Code Section 11023) (EPCRKA) indicate as discharged into the POTW, for which the state board or the regional board has established numerical water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective*". The Regional Board has not, at this time, identified any substance that requires an effluent limitation based on Section 13263.6(a) for the discharge regulated by this Order.

12. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above water quality objectives for aluminum; ammonia; arsenic; bis (2-ethylhexyl) phthalate; cadmium; chlorine; chloroform; copper; cyanide; diazinon; 4,4'-DDT; dibromochloromethane; dichlorobromomethane; cis-1,2-dichloroethene; ethion, iron; lindane; manganese; mercury; methyl tert butyl ether (MTBE); methylene blue active substances (MBAS); molybdenum; N-nitrosodi-n-propylamine; pathogens; pH, pentachlorophenol, tetrachloroethylene; thiobencarb; trichloroethylene; 2,4,6-trichlorophenol; and zinc. Effluent limitations for these constituents are included in this Order.

13. As stated in the above Findings, the U.S. EPA adopted the NTR and the CTR, which contain promulgated water quality criteria applicable to this discharge and the State Water Resources Control Board adopted the SIP, which contains guidance on implementation of the NTR and CTR. CTR and NTR criteria along with beneficial use designations contained the Basin Plan and antidegradation policies constitute water quality standards pursuant to the Clean Water Act. The SIP, Section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must: be based on current treatment plant performance or existing permit limitations, whichever is more stringent; include interim compliance dates separated by no more than one year, and; be included in the Provisions. The interim limitations in this Order are based on the current treatment plant performance. In developing the interim limitation, where there are ten or more sampling data points available, sampling and laboratory variability are accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists*, Kennedy and Neville). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data. Where actual sampling shows an exceedance of the proposed 3.3 standard deviations interim limit, the maximum detected concentration has been established as the interim limitation. When there are less than ten sampling data points available, the *Technical Support Document for Water Quality Based Toxics Control* (EPA/505/2-90-001) (TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. Therefore, when there are less than ten sampling results for a constituent, the interim limitation is based on the corresponding multiplier from Table 3.1 of the TSD multiplied by the maximum observed sampling point. Interim limitations are established when compliance with NTR- and CTR-based Effluent Limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final Effluent Limitations, but in compliance with the interim Effluent Limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the Effluent Limitation can be achieved.

14. The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "*…those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.).*" The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The lower Feather River is listed as a WQLS for mercury, toxicity, Group A pesticides, and toxaphene. The lower Feather River is listed in the 303(d) list of impaired water bodies for diazinon, Group A pesticides, mercury, and unknown toxicity. Therefore, the receiving water for the discharge has no assimilative capacity for these constituents and applicable water quality standards must be applied as end-of-pipe effluent limitations. Effluent Limitations for these constituents are included in this Order.

    a. ***Mercury***—Municipal and domestic supply is a beneficial use of the Feather River. The current U.S. EPA Ambient Water Quality Criteria for Protection of Freshwater Aquatic Life, continuous concentration, for mercury is 0.77 µg/*l* (30-day average, chronic criteria). The CTR contains a human health protective criterion of 0.050 µg/*l* for waters from which both water and aquatic organisms are consumed. In 40 CFR Part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species. Both values are controversial and subject to change. In the CTR, U.S. EPA reserved the mercury criteria for freshwater aquatic life and may adopt new criteria at a later date. The maximum observed effluent mercury concentration was 0.0266 µg/*l*. The lower Feather River has been listed as an impaired water body pursuant to Section 303(d) of the Clean Water Act because of mercury. Mercury bioaccumulates in fish tissue and, therefore, discharge of mercury to the receiving water is likely to contribute to exceedances of the narrative toxicity objective and impacts on beneficial uses. Because the lower Feather River has been listed as an impaired water body for mercury, the discharge must not cause or contribute to increased mercury levels. The SIP, Section 1.3, requires the establishment of an effluent limitation for a constituent when the receiving stream background water quality exceeds an applicable criterion or objective. This Order contains Effluent Limitations for mercury based on the CTR human health criterion of 0.050 µg/*l*. This Order also contains an interim performance-based mass Effluent Limitation of 0.49 lbs/twelve months for mercury for the effluent discharge to the Feather River. This limitation is based on maintaining the mercury loading at the current level until a total maximum daily load (TMDL) can be established and U.S. EPA develops mercury standards that are protective of both aquatic life and human health. The mass limitation was derived using the maximum observed effluent mercury concentration and the reported average daily effluent flow rate. Compliance time schedules have not been included since the discharge currently meets the concentration based limitation and the mass limitation can be met through source control measures and/or by limiting new sewer discharges containing mercury concentrations. If U.S. EPA develops new water quality criteria for mercury, this permit may be reopened and the Effluent Limitations adjusted.

b. ***Toxicity—***Toxicity is prohibited by Effluent and Receiving Water Limitations included in this Order.

c. ***Toxaphene—***Toxaphene has not been detected in the discharge. No Effluent Limitations for toxaphene have been included in this Order.

d. ***Group A Pesticides (Organochlorine Pesticides)***—Based on information included in analytical laboratory reports submitted by the Discharger, lindane (gamma BHC) was detected at 0.13 µg/*l* and 4,4'-DDT (DDT), was detected at 0.012 µg/*l* in the WWTF effluent. Both constituents are chlorinated hydrocarbon pesticides. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The CTR contains numeric criteria for lindane at 0.019 µg/*l* and for DDT at 0.00059 µg/*l*. The detection of lindane at 0.13 µg/*l* and 4,4'-DDT at 0.012 µg/*l* in the WWTF effluent presents a reasonable potential to exceed the Basin Plan limitations for chlorinated hydrocarbon pesticides and the CTR criteria. In addition to lindane (gamma BHC) and 4,4'-DDT, the chlorinated hydrocarbon pesticides include alpha BHC, beta BHC, delta BHC, DDD, DDE, aldrin, chlordane, dieldrin, endrin, endrin aldehyde, alpha and beta endosulfan, endosulfan sulfate, heptachlor, heptachlor epoxide, and toxaphene. Effluent Limitations for organochlorine pesticides are included in this Order and are based on the Basin Plan objective of no detectable chlorinated hydrocarbon pesticides. The limitation for chlorinated hydrocarbon pesticides is included based on reasonable potential to violate the water quality objective, not only because the Feather River is listed as impaired for Group A pesticides.

e. ***Diazinon***—To comply with a technical report requirement, the Discharger began monthly monitoring of the effluent and receiving water for diazinon in January 2002. Diazinon has been detected five times above the method detection limit at concentrations as high as 0.47 µg/*l* in the effluent. There are currently no CTR or NTR criteria for this constituent. The Basin Plan contains a narrative toxicity objective that prohibits the discharge of toxic constituents in toxic concentrations. The Basin Plan requires the Regional Board to consider relevant numerical criteria and guidelines developed by other agencies in determining compliance with the narrative toxicity objective (Basin Plan, IV-17.00). In March 2000, the California Department of Fish and Game (DFG) established acute and chronic criteria for these compounds to protect fresh water aquatic protection. The acute (one-hour average) and chronic (four-day average) criteria are 0.08 µg/*l* and 0.05 µg/*l*, respectively. Based on evaluation of the information provided, the discharge does have the reasonable potential to cause or contribute to an excursion above the narrative toxicity objective in the Basin Plan. Because the lower Feather River is listed as an impaired water body for diazinon, there is no assimilative capacity. Impairment due to diazinon is significantly documented in the records of the Regional Board. Effluent Limitations for diazinon are included in this Order and are based, in part, on the 303(d) listing of the lower Feather River as an impaired water body for

diazinon, in part, because the data indicates a reasonable potential to cause or contribute to an exceedance of the Basin Plan narrative toxicity objective. The DFG water quality criteria for the protection of freshwater aquatic habitat implements the narrative toxicity objective.

15. The Discharger requested that dilution, mixing, and assimilative capacity be considered when determining constituent limitations for the effluent. The SIP defines a completely-mixed discharge condition to mean that there is "…*not more than a 5 percent difference, accounting for analytical variability, in the concentration of a pollutant across a transect of the water body at a point within two stream/river widths from the discharge point*." The Discharger has submitted the results of a study of the variation of a conservative constituent (electrical conductivity) downstream of the point of discharge. Two transects were studied; in each case, the variation in electrical conductivity across the transect was less than three percent. The Regional Board is not required to grant a mixing zone or utilize the full assimilative capacity of the receiving stream. The Discharger has not submitted any data demonstrating that an acute mixing zone would not restrict the passage of aquatic life or cause acutely toxic conditions to aquatic life passing through the mixing zone. No mixing zone for acute toxicity is granted in this Order. For constituents for which assimilative capacity exists, this Order permits a mixing zone for chronic toxicity-, human health-, aesthetic-, and agriculture-based water quality standards, objectives, and criteria and includes Effluent Limitations that reflect the mixing zone and assimilative capacity, as well as the facility's current level of treatment.

    Historical flow rates were used in granting dilution for chronic, or longer term, Effluent Limitations. The historical flow rates were assessed from data acquired from two flow gages located upstream of the Yuba City wastewater treatment plant outfall—one near Gridley on the Feather River and the other near Marysville on the Yuba River. The State Water Resources Control Board has issued recorded water rights for water withdrawals from the Feather River, including a diversion of 2,000 cfs, between the cited flow measuring gages and the City's effluent discharge. The historical low flow as determined from the flow gages is 743 cfs. Full utilization of the water rights would result in zero flow at the point of discharge at low flow conditions and significantly reduced flows under normal flow regimes. This Order contains a Provision that requires the City to assess the worst-case low flow conditions, including maximum water right diversions and any minimum flow requirements/agreements with the State Water Resources Control Board, Division of Water Rights. Based on the minimum flow assessment, this Order may be reopened and limitations revised to reflect the low flow conditions.

16. ***Aluminum***— The Basin Plan contains a narrative water quality objective for toxicity that states in part that "[a]*ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" (narrative toxicity objective). Aquatic habitat is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life, and, therefore to violate the Basin Plan's narrative toxicity objective. U.S. EPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The recommended four-day average (chronic) and one-hour

average (acute) criteria for aluminum are 87 µg/*l* and 750 µg/*l*, respectively. U.S. EPA recommends that the ambient criteria are protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria. The receiving stream has been measured to have a low hardness and the receiving water and the effluent have each been measured to have a pH below the minimum Basin Plan water quality objective of 6.5. Both of these conditions are supportive of the applicability of the ambient water quality criteria for aluminum, according to U.S. EPA's development document. The maximum observed effluent aluminum concentration was 562 µg/*l*. The maximum observed upstream receiving water aluminum concentration was 530 µg/*l*; there is no assimilative capacity for aluminum based on the chronic toxicity criterion. Applying 40 CFR section 122.44(d)(1)(vi)(B), Effluent Limitations for aluminum are included in this Order and are based on U.S. EPA's Ambient Water Quality Criteria for the protection of the beneficial use of freshwater aquatic habitat.

17. ***Ammonia, nitrite, and nitrate***—Untreated domestic wastewater contains ammonia. In addition, the Discharger adds ammonium polyphosphate to its raw wastewater as a nutrient supplement. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Aquatic habitat is a beneficial use of the receiving stream. Discharges of ammonia would violate the Basin Plan narrative toxicity objective. U.S. EPA has developed Ambient Water Quality Criteria for ammonia. Applying 40 CFR section 122.44(d)(1)(vi)(B), it is appropriate to use U.S. EPA's Ambient National Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia, which was developed to be protective of aquatic organisms. Effluent limitations for ammonia are included in this Order, which will vary with pH and temperature, to assure the treatment process adequately nitrifies the waste stream to protect the beneficial uses of the receiving stream and to prevent aquatic toxicity.

Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan's chemical constituents water quality objective prohibits chemical constituents in concentrations that exceed drinking water Maximum Contaminant Levels (MCLs) published in Title 22 of the California Code of Regulations or that adversely affect beneficial uses. Municipal and domestic water supply is a beneficial use of the Feather River. The California Department of Health Services (DHS) has adopted Primary Maximum Contaminant Levels (MCLs) for the protection of human health for nitrite and nitrate that are equal to 1 mg/*l* and 10 mg/*l* (measured as nitrogen), respectively. Title 22 CCR, Table 64431-A, also includes a primary MCL of 10,000 µg/*l* for the sum of nitrate and nitrite, measured as nitrogen. The discharge from the Yuba City Wastewater Treatment Facility has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for ammonia, nitrite, and nitrate. Effluent limits for nitrite and nitrate are based on the MCLs. Effluent Limitations for ammonia, nitrite, and nitrate are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial uses of aquatic habitat and municipal and domestic supply.

18. ***Arsenic***—The Basin Plan includes a water quality objective that "*waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses*" and contains a narrative toxicity objective. Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the U.S. EPA Primary Maximum Contaminant Level (MCL) of 10 µg/*l* for arsenic. Pursuant to the Safe Drinking Water Act, DHS must revise the arsenic MCL in Title 22 CCR to be as low or lower than the U.S. EPA MCL. Applying the Basin Plan's "Policy for Application of Water Quality Objectives", to protect future municipal and domestic water use, it is reasonable to apply the U.S. EPA MCL for arsenic to the receiving stream. The maximum observed effluent arsenic concentration was 44.9 µg/*l*. The maximum observed upstream receiving water arsenic concentration was 3.3 µg/*l*. An Effluent Limitation for arsenic is included in this Order and is based on protection of the beneficial use of municipal and domestic water supply, the Basin Plan water quality objective for chemical constituents and toxicity, the U.S. EPA Primary MCL, and consideration of the available assimilative capacity.

19. ***Biochemical oxygen demand (BOD) and total suspended solids (TSS)—*** 40 Code of Federal Regulations (CFR), Section 133.102 contains regulations describing the minimum level of effluent quality—for biochemical oxygen demand (BOD) and total suspended solids (TSS)—attainable by secondary treatment. In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent. These standards continue to be applied in this Order. .

20. ***Bis (2-ethylhexyl) phthalate***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NTR criteria for bis (2-ethylhexyl) phthalate. The CTR includes a criterion for the protection of human health based on a one-in-a-million cancer risk for bis (2-ethylhexyl) phthalate of 1.8 µg/*l*. Municipal and domestic supply is a beneficial use of the receiving water. The maximum observed effluent bis (2-ethylhexyl) phthalate concentration was 149 µg/*l*. The maximum observed upstream receiving water bis (2-ethylhexyl) phthalate concentration was 10 µg/*l*. Both the effluent and receiving water concentrations have exceeded the criterion; therefore, there is no assimilative capacity for bis (2-ethylhexyl) phthalate and the NTR criterion must be met at the point of discharge. Effluent Limitations for bis (2-ethylhexyl) phthalate are included in this Order and are based on NTR criterion for the protection of human health.

21. ***Cadmium***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for cadmium. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for cadmium. Freshwater aquatic habitat is a beneficial use of the receiving stream. The criteria for cadmium are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for cadmium in freshwater are 1.101672-[0.041838 X

ln(hardness)] for the chronic criteria and 1.136672-0.041838 X ln(hardness)] for the acute criteria. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding standards are 0.89 µg/*l* and 0.80 µg/*l* for the acute and chronic criteria, respectively. The maximum observed effluent cadmium concentration was 6.4 µg/*l*. The maximum observed upstream receiving water cadmium concentration was 0.29 µg/*l*. The Effluent Limitations for cadmium included in this Order are presented in total concentrations, and are based on CTR criteria for the protection of freshwater aquatic life and consideration of the available assimilative capacity.

22. ***Chlorine***—The Discharger uses chlorine for disinfection of the effluent waste stream. Aquatic habitat is a beneficial use of the Feather River. The Basin Plan includes a narrative water quality objective that "[a]*ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." Chlorine can cause toxicity to aquatic organisms when discharged to surface waters. U.S. EPA recommends, in its Ambient Water Quality Criteria for the protection of fresh water aquatic life, maximum 1-hour average and 4-day average chlorine concentrations of 0.019 mg/*l* and 0.011 mg/*l*, respectively. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations. Effluent Limitations for chlorine have been included in this Order to protect the receiving stream aquatic life beneficial uses. Effluent Limitations have been established based on the ambient water quality criteria for chlorine.

23. ***Chloroform***—Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and U.S. EPA in evaluating health risks via drinking water exposure of 70 kg body weight and 2 liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 µg/*l* (ppb) at the one-in-a-million cancer risk level. This risk level is consistent with that used by the Department of Health Services (DHS) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by U.S. EPA in applying human health protective criteria contained in the *National Toxics Rule* and the *California Toxics Rule* to priority toxic pollutants in California surface waters. The maximum observed effluent chloroform concentration was 46 µg/*l*. No chloroform has been detected in the upstream receiving water. Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality standard for chloroform. Therefore, an Effluent Limitation for chloroform is

included in this Order and is based on the Basin Plan toxicity objective, the OEHHA Toxicity Criteria for the protection of human health, and consideration of the available assimilative capacity.

24. ***Copper***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. Freshwater aquatic habitat is a beneficial use of the receiving water. The criteria for copper are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding criteria are 3.6 µg/*l* and 2.7 µg/*l* for the acute and chronic criteria, respectively. The maximum observed effluent copper concentration was 67 µg/*l*. The maximum observed upstream receiving water copper concentration was 3.3 µg/*l*. Both the effluent and receiving water concentrations have exceeded the chronic criterion; therefore, there is no assimilative capacity for copper and the CTR criteria must be met at the point of discharge. The Effluent Limitations for copper included in this Order are presented in total concentrations, and are based on CTR criteria for the protection of freshwater aquatic life.

25. ***Cyanide***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NTR criteria for cyanide. The NTR includes maximum 1-hour average and 4-day average cyanide concentrations of 22 µg/*l* and 5.2 µg/*l*, respectively, for the protection of freshwater aquatic life. Freshwater aquatic habitat is a beneficial use of the Feather River. The maximum observed effluent cyanide concentration was 6.5 µg/*l*. No cyanide has been detected in the upstream receiving water. Effluent Limitations for cyanide are included in this Order and are based on NTR criteria for the protection of freshwater aquatic life and consideration of available assimilative capacity.

26. ***Dibromochloromethane***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for dibromochloromethane. The CTR includes criteria for the protection of human health based on a one-in-a-million cancer risk for dibromochloromethane. Municipal and domestic supply is a beneficial use of the receiving stream. The criterion for waters from which both water and organisms are consumed is 0.41 µg/*l*. The maximum observed effluent dibromochloromethane concentration was 1.4 µg/*l*. No dibromochloromethane has been detected in the upstream receiving water. Effluent Limitations for dibromochloromethane are included in this Order and are based on the CTR criterion for the protection of human health and consideration of available assimilative capacity.

27. ***Dichlorobromomethane***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for dichlorobromomethane. The CTR includes criteria

for the protection of human health based on a one-in-a-million cancer risk for dichlorobromomethane. Municipal and domestic supply is a beneficial use of the receiving water. The criterion for waters from which both water and organisms are consumed is 0.56 µg/*l*. The maximum observed effluent dichlorobromomethane concentration was 7.6 µg/*l*. No dichlorobromomethane has been detected in the upstream receiving water. Effluent Limitations for dichlorobromomethane are included in this Order and are based on the CTR criterion for the protection of human health and consideration of available assimilative capacity.

28. ***cis-1,2-Dichloroethene***—The Basin Plan includes a water quality objective that "…*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…Table 64444-A (Organic Chemicals) of Section 64444*". Municipal and domestic supply is a beneficial use of the Feather River. Based on information included in analytical laboratory reports submitted by the Discharger, cis-1,2-dichloroethene in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Maximum Contaminant Level (MCL) of 6 µg/*l* for cis-1,2-dichloroethene. The maximum observed effluent cis-1,2-dichloroethene concentration was 2.2 µg/*l* and the projected maximum effluent cis-1,2-dichloroethene concentration is 7.7 µg/*l*. No cis-1,2-dichloroethene has been detected in the upstream receiving water. An Effluent Limitation for cis-1,2-dichloroethene is included in this Order and is based on the Basin Plan water quality objectives for chemical constituents, the California Department of Health Services Primary MCL, and consideration of available assimilative capacity.

29. ***Electrical Conductivity***—The Basin Plan includes a water quality objective that electrical conductivity (at 25ºC) "[s]*hall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River*." One of the water bodies to which this objective applies is the Feather River from the Fish Barrier Dam at Oroville to the Sacramento River. Based on information included in analytical reports submitted by the Discharger, electrical conductivity in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective for electrical conductivity in the Feather River. An Effluent Limitation for electrical conductivity is included in this Order and is based on the Basin Plan objective for electrical conductivity in the Feather River and consideration of available assimilative capacity.

30. ***Ethion***—To comply with a technical report requirement, the Discharger began monthly monitoring of the effluent and receiving water for organophosphorous pesticides in January 2002. Ethion, an organophosphorous pesticide, has been detected once above the method detection limit at a concentration of 0.17 µg/*l* in the effluent. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 0.49 µg/*l*, but exceeded the method detection limit of 0.14 µg/*l*. The result for the method blank for this analysis was non-detect. Ethion has not been detected in the upstream receiving water. There are no CTR or NTR criteria for this constituent. The Basin Plan contains a narrative toxicity objective. U.S. EPA developed Ambient Water Quality Criteria for the protection of freshwater aquatic life for ethion. The recommended instantaneous maximum concentration of ethion is 0.02 µg/*l*. Based on evaluation of the information provided, the

discharge does have the reasonable potential to cause or contribute to an excursion above the narrative toxicity objective in the Basin Plan. Applying 40 CFR section 122.44(d)(1)(vi)(B), an Effluent Limitation for ethion is included in this Order and is based on the Ambient Water Quality Criteria for the protection of freshwater aquatic habitat.

31. ***Iron***—The Basin Plan includes a water quality objective that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.*" Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 300 µg/*l*. The Basin Plan also includes a water quality objective that water "…*shall be free of discoloration that causes nuisance or adversely affects beneficial uses*." The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Feather River. Iron concentrations in excess of the Secondary MCL-Consumer Acceptance Limit cause aesthetically undesirable discoloration. The maximum observed effluent iron concentration was 330 µg/*l*. The maximum observed upstream receiving water iron concentration was 910 µg/*l*; there is no assimilative capacity for iron in the Feather River at the point of discharge. An Effluent Limitation for iron is included in this Order and is based on the Basin Plan water quality objectives for chemical constituents and color and the DHS Secondary MCL.

32. ***Manganese***—The Basin Plan includes a water quality objective that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.*" Municipal and domestic supply is a beneficial use of the Feather River. Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 50 µg/*l* for manganese. The Basin Plan also includes water quality objectives that water be free of discoloration and taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Feather River. Manganese concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable discoloration and taste. The maximum observed effluent manganese concentration was 430 µg/*l*. The maximum observed upstream receiving water manganese concentration was 110 µg/*l*; there is no assimilative capacity for manganese. An Effluent Limitation for manganese is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, color, and tastes and odors and the DHS Secondary MCL.

33. ***Methyl tert butyl ether (MTBE)***—The Basin Plan includes a water quality objective that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 5 µg/*l* for MTBE. The maximum observed effluent MTBE concentration was 7.51 µg/*l*. The maximum observed upstream receiving water MTBE concentration was 1.8 µg/*l*. An Effluent Limitation for MTBE is included in this Order and is based on the Basin Plan water quality objectives for chemical constituents, the DHS Secondary MCL, and consideration of available assimilative capacity.

34. ***Methylene blue active substances (MBAS)***—The Basin Plan includes a water quality objective that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the Feather River. Based on information included in analytical laboratory reports submitted by the Discharger, MBAS in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 500 µg/*l* for foaming agents (MBAS). The Basin Plan also includes water quality objectives that water not contain floating material or taste- or odor-producing substances in concentrations that causes nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Feather River. MBAS concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable froth, taste, and odor. The maximum observed effluent MBAS concentration was 960 µg/*l*. The maximum observed upstream receiving water MBAS concentration was 120 µg/*l*. An Effluent Limitation for MBAS is included in this Order and is based on of the Basin Plan water quality objectives for chemical constituents, floating material, and tastes and odors; the DHS Secondary MCL; and consideration of available assimilative capacity.

35. ***Molybdenum***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for molybdenum. The Basin Plan contains a Chemical Constituent objective that requires that water not exceed California MCLs and shall not contain chemical constituents that adversely impact beneficial uses. Agricultural irrigation is a beneficial use of the receiving stream. *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot,

Rome, 1985), recommends that the molybdenum concentration in waters used for agricultural irrigation not exceed 10 µg/*l*. The maximum observed effluent molybdenum concentration was 35 µg/*l*. No molybdenum was detected in the upstream receiving water. Applying the Basin Plan "Policy for Application of Water Quality Objectives, the numeric standard that implements the narrative objective is the Agricultural Water Quality Goal of 10 µg/*l*. An Effluent Limitation for molybdenum is included in this Order and is based on protection of the beneficial use of agricultural irrigation and consideration of available assimilative capacity.

36. ***N-nitrosodi-n-propylamine—***Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for N-nitrosodi-n-propylamine. The CTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the receiving stream. The N-nitrosodi-n-propylamine criterion for protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 0.005 µg/*l*. N-nitrosodi-n-propylamine has not been detected in the effluent and all of the reported detection limits for reported sample results were greater than the criterion. The maximum observed upstream receiving water N-nitrosodi-n-propylamine concentration was 2.8 µg/*l*; there is no assimilative capacity for N-nitrosodi-n-propylamine. The SIP requires effluent limitations for NTR and CTR constituents when the background (upstream receiving water) concentration exceeds an applicable criterion. Effluent Limitations for N-nitrosodi-n-propylamine are included in this Order and are based on the CTR criterion for the protection of human health.

37. ***Pathogens***—Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the receiving stream. Coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways. 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 or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 m*l* as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 m*l* more than once in any 30 day period. Therefore, the 23 MPN/100 m*l* limitation is found to be appropriate. The current effluent total coliform organisms limitations for the Discharger include a monthly median of 23 MPN/100 m*l* and a daily maximum of 500 MPN/100 m*l*. Based on a review of the effluent monitoring, the Discharger is already able to meet the new limitations; therefore, no time schedule for compliance is included in this Order. Based on a review of data submitted by the Discharger and the period of record for the United States Geological Survey monitoring stations on the Feather and Yuba Rivers, the last time less than 20:1 (river flow to design effluent flow) dilution was available was in 1966.

38. ***Pentachlorophenol***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for pentachlorophenol. The CTR includes criteria for the protection of human health for pentachlorophenol. Municipal and domestic supply is a beneficial use of the receiving stream. The pentachlorophenol standard for protection of human health based

on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 0.28 µg/*l*. The maximum observed effluent pentachlorophenol concentration was 15.3 µg/*l*. No pentachlorophenol has been detected in the upstream receiving water. Effluent Limitations for pentachlorophenol are included in this Order and are based on the CTR criterion for the protection of human health and consideration of available assimilative capacity.

39. ***pH—*** The Basin Plan includes numeric water quality objectives that the pH "…*not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses*." The Feather River is designated as having both COLD and WARM beneficial uses. Effluent Limitations for pH are included in this Order and are based on the Basin Plan objectives for pH.

40. ***Tetrachloroethylene***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NTR criteria for tetrachloroethylene. The NTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the receiving stream. The tetrachloroethylene criterion for protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 0.8 µg/*l*. The maximum observed effluent tetrachloroethylene concentration was 7.7 µg/*l*. No tetrachloroethylene was detected in the upstream receiving water. Effluent Limitations for tetrachloroethylene are included in this Order and are based on the NTR criterion for the protection of human health and consideration of available assimilative capacity.

41. ***Thiobencarb—***The Basin Plan includes a water quality objective for pesticides that "[w]*aters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of thiobencarb in excess of 1.0 µg/l.*" The Basin Plan also includes a water quality objective for chemical constituents that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the receiving stream. The Secondary Maximum Contaminant Level-Consumer Acceptance Limit for thiobencarb is 1 µg/*l*. Based on information included in analytical laboratory reports submitted by the Discharger, thiobencarb in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective and Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 1 µg/*l* for thiobencarb. The maximum observed effluent thiobencarb concentration was 0.88 µg/*l*. The maximum projected effluent thiobencarb concentration is 3.3 µg/*l*. No thiobencarb was detected in the upstream receiving water. The Basin Plan contains the narrative toxicity objective. The Basin Plan requires the Regional Board to consider relevant numerical criteria and guidelines developed by other agencies in determining compliance with the narrative toxicity objective. (Basin Plan, IV-17.00) California Department of Fish and Game (DFG) established an instantaneous maximum limit of 3.1 µg/*l* for the protection of fresh water aquatic life. Based on

evaluation of the information provided, the discharge does have the reasonable potential to cause or contribute to an excursion above the narrative toxicity objective in the Basin Plan. An Effluent Limitation for thiobencarb is included in this Order and is based on the Basin Plan water quality objectives for chemical constituents, toxicity, and pesticides, the DHS Secondary MCL, the California Department of Fish and Game recommended instantaneous maximum concentration, and consideration of available assimilative capacity.

42. ***Trichloroethylene***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for trichloroethylene. The CTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the Feather River. The trichloroethylene criterion for the protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 2.7 µg/*l*. The maximum observed effluent trichloroethylene concentration was 3.2 µg/*l*. No trichloroethylene was detected in the upstream receiving water. Effluent Limitations for trichloroethylene are included in this Order and are based on the CTR criterion for the protection of human health and consideration of available assimilative capacity.

43. ***2,4,6-Trichlorophenol***—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for 2,4,6-trichlorophenol. The CTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the receiving water. The 2,4,6-trichlorophenol criterion for the protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 2.1 µg/*l*. The maximum observed effluent 2,4,6-trichlorophenol concentration was 7.8 µg/*l*. No 2,4,6-trichlorophenol was detected in the upstream receiving water. Effluent Limitations for 2,4,6-trichlorophenol are included in this Order and are based on the CTR criterion for the protection of human health and consideration of available assimilative capacity.

44. ***Zinc***—Based on information included in analytical laboratory reports submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for zinc. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. Freshwater aquatic habitat is a beneficial use of the Feather River. The hardness-dependent CTR standards for zinc are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for zinc in freshwater are 0.978 for the acute criteria and 0.986 for the chronic criteria. The maximum observed effluent zinc concentration was 120 µg/*l*. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding standards are 36 µg/*l* and 36 µg/*l* for the acute and chronic criteria, respectively. The maximum observed upstream receiving water zinc concentration was 40 µg/*l*; there is no assimilative capacity for zinc and criteria must be met at the point of discharge. Effluent Limitations for zinc (in total concentrations) are included in this Order and are based on the CTR criteria for the protection of freshwater aquatic life.

45. The current average dry weather wastewater flow of the treatment plant is approximately 7.0 million gallons per day (mgd). The City has proposed to expand the capacity to 9.0 mgd to accommodate growth within the community. The State Water Resources Control Board *Policy with Respect to Maintaining High Quality of Waters in California*, Resolution No. 68-16 (Antidegradation Policy), requires that increases in wastewater flows achieve the highest quality of water consistent with the maximum benefit to the people of the state. It must be demonstrated that the wastewater treatment facility, with an increased flow rate, provides best practicable treatment, meets waste discharge requirements, and will not unreasonably affect beneficial uses. The Basin Plan requires that reports of waste discharge evaluate land disposal and reclamation alternatives. The Discharger must complete the required California Environmental Quality Act (CEQA) documentation, an antidegradation analysis, and water quality assessments and a Report of Waste Discharge (RWD) must be filed detailing how the expanded facility will comply with Waste Discharge Requirements. Based on the RWD, the CEQA compliance document, an assessment of compliance with permit limitations, and an antidegradation analysis, this Order may be reopened and the flow rate increased.

46. The SIP states that if "*…all reported detection limits of the pollutant in the effluent are greater than or equal to the C* [water quality criterion or objective] *value, the RWQCB* [Regional Board] *shall establish interim requirements…that require additional monitoring for the pollutant….*" All reported detection limits for 1,2-benzanthracene; 2,4-dinitrotoluene; 3,3'-dichlorobenzidine; 3,4-benzfluoranthene; benzidine; benzo(a)pyrene; benzo(k)fluoranthene; bis(2-chloroethyl) ether; chrysene; dibenzo (a,h)-anthracene; indeno(1,2,3-c,d)pyrene; N-nitrosodimethylamine; N-nitrosodi-n-propylamine; 4,4'-DDD; 4,4'-DDE; alpha-hexachlorocyclohexane (α-BHC); aldrin; chlordane; dieldrin; heptachlor; heptachlor epoxide; PCB-1016; PCB-1221; PCB-1232; PCB-1242; PCB-1248; PCB-1254; PCB-1260; and 2,3,7,8-TCDD (Dioxin) are greater than or equal to corresponding applicable water quality criteria or objectives. Monitoring requirements for these constituents have been included in this Order in accordance with the SIP.

47. The Basin Plan, on page III-8.00, requires that receiving water temperatures not be increased by more than 5ºF above the natural receiving water temperature. The Discharger's Report of Waste Discharge contained a characterization of the wintertime surface water discharge as having an average daily temperature of 70.9ºF and a maximum temperature of 73.5ºF. The beneficial uses of the Feather River include warm and cold freshwater habitat, spawning, and migration. This Order requires the Discharger to conduct a study of the thermal impacts of the discharge on the beneficial uses of the Feather River.

48. The Discharger currently discharges treated disinfected secondary wastewater into six evaporation/ percolation ponds for approximately six months (May through October) each year, in accordance with the requirements of the current permit. The wastewater ponds are inside the floodplain of the Feather River. The six ponds are at varying elevations. Pond number six has the lowest levee elevation, at 49.5 feet above mean sea level. This elevation equates to a river stage created by an approximately four to five year return storm frequency (Feather River discharge of approximately 60,000 cubic feet per second) that overtops the pond levee. Once the pond levees are overtopped,

according to the Discharger, the ponds fill with stormwater and the commingled water discharges to the Feather River.

Pollutants tend to concentrate as wastewater evaporates in pond systems. As stated in the above Findings, the wastewater effluent has been shown to contain constituents that present a reasonable potential to exceed water quality objectives. Limitations for these constituents are listed in Effluent Limitations D.1 and D.2. Concentration of these constituents in the evaporation ponds magnifies the potential for exceedance of water quality objectives as the wastewater is discharged from the ponds to surface waters, although there may be significant hydraulic dilution available at the time the first pond is inundated. This Order contains Effluent Limitations for discharges to the Feather River from the ponds based on the reasonable potential analysis conducted of the wastewater effluent and the potential for evaporation in the ponds to concentrate these pollutants. The Effluent Limitations for chronic, or long-term parameters, have not been included since the discharge from the ponds should be of limited duration. Wastewater ponds in the Central Valley also grow significant quantities of algae. The Discharger's current addition of nutrients to the wastewater treatment facility influent and the discharge of elevated ammonia concentrations to the ponds will stimulate algae growth, potentially cause toxicity in the discharge, potentially cause exceedance of the Basin Plan water quality objective for biostimulatory substances, and could cause degradation of groundwater quality. The discharge of wastewater from the ponds into the Feather River constitutes a point discharge of wastes to surface water, which requires an NPDES permit. Effluent Limitations for discharges to the Feather River from the ponds have been included in this Order based on the reasonable potential analysis conducted of the wastewater effluent prior to concentration in the evaporation pond system. The algae growth in the ponds also presents a potential for exceedance of Receiving Water Limitations for pH, turbidity, color, dissolved oxygen, settleable material, suspended material, and temperature. This Order requires the discharge to not cause exceedance of the Receiving Water Limitations. Facilities that discharge wastewater are required to evaluate compliance with the limitations established in the permit. The permittee is responsible for providing a safe and accessible sampling point that is representative of the discharge [40 CFR 122.41(j)(1)].

49. Sampling of the pond discharge and the receiving water during flooding of the ponds and high water flows in the river may present a danger to City staff. Therefore, this Order requires sampling of the wastewater in the ponds when flooding is imminent. The pond sampling will be utilized to determine compliance with the discharge limitations. If the Discharger can safely develop an alternative method of sampling the pond discharge and receiving stream, these alternative methods may be approved by staff as more representative for determining compliance with limitations.

PRETREATMENT REQUIREMENTS

50. The Discharger accepts wastes from industries located throughout the community. The Discharger has estimated that nearly 20% of the hydraulic loading and 50% of the organic loading to the WWTF is contributed by industrial discharges. Due to the industrial loading, the Discharger has augmented the wastewater treatment process, by the addition of nutrients, to maintain a stable process. There are indications, as detailed in Finding No. 17, that the addition of nutrients presents

a reasonable potential to cause exceedance of the Basin Plan prohibition against the discharge of toxic constituents in toxic concentrations. The Discharger has, in the past, intentionally discharged large concentrations of nutrients into the wastewater treatment facility influent from secondary containment facilities following a spill, resulting in inhibition of the wastewater system. This Order prohibits the discharge of constituents in quantities that inhibit the treatment system from treating wastes. The source of other pollutants which have been limited in this Order may also be from industrial discharges. The Federal Clean Water Act, Section 307(b), and Federal Regulations, 40 CFR Part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants which will interfere with treatment plant operations or sludge disposal and prevent pass through of pollutants that exceed water quality objectives, standards, or permit limitations. Federal Regulations (40 CFR 403.8) require the Discharger to develop and submit for approval by the Regional Board an acceptable industrial pretreatment program within one year of adoption of this Order.

GROUNDWATER

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

52. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, or animals. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include maximum contaminant levels (MCLs) in Title 22 of the California Code of Regulations (CCR). The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 m*l*. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.

53. State Water Resources Control Board (SWRCB) Resolution No. 68-16 (hereafter Resolution 68-16 or the "Antidegradation" Policy) requires the Regional Board, in regulating discharge of waste, to maintain high quality waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies (*i.e.*, quality that exceeds water quality objectives). The policy also requires discharges of waste to high quality waters to meet WDRs that require best practicable treatment or control of the waste.

54. Domestic wastewater will contain constituents such as total dissolved solids (TDS), electrical conductivity, pathogens, nitrates, organics, metals, and oxygen demanding substances (BOD). The Discharger utilizes disposal ponds where wastewater percolates to groundwater; this may result in an increase in the concentration of the constituents listed above in groundwater. The increase in the concentration of these constituents in groundwater must be consistent with the antidegradation provisions of State Water Resources Control Board Resolution 68-16. To remain consistent with Resolution 68-16, the discharge shall not degrade groundwater quality, cause groundwater to exceed water quality objectives, or unreasonably affect beneficial uses. Resolution 68-16 may allow for degradation of groundwater quality, if the Discharger provides best practicable treatment or control of the discharge and any degradation of groundwater does not exceed water quality objectives, unreasonably impact beneficial uses, or cause a condition of pollution or nuisance. Any increase in pollutant concentrations in groundwater must be shown to be necessary to allow wastewater utility service necessary to accommodate housing and economic expansion in the area and must be consistent with maximum benefit to the people of the state of California. Some degradation of groundwater by the Discharger is consistent with Resolution 68-16 provided that:

a. the degradation is confined to a specified area;

b. the degradation after effective source control, treatment, and control is limited to waste constituents typically encountered in municipal wastewater as specified in the Groundwater Limitations in this Order;

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

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

Monitoring of the groundwater must be completed to determine if the discharge has caused an increase in constituent concentrations, when compared to background. The monitoring at a minimum, requires a complete assessment of groundwater impacts, including the vertical and lateral extent of any degradation; an assessment of all wastewater-related constituents which may have migrated to groundwater; and an analysis of whether additional or different methods of treatment or control of the discharge are necessary to provide best practicable treatment or control to comply with Resolution 68-16.

Economic analysis is only one of many factors considered in determining best practicable treatment. If monitoring indicates that the discharge has incrementally increased constituent concentrations in groundwater, this permit may be reopened and modified. Until groundwater monitoring is sufficient, this Order contains Groundwater Limitations that allow groundwater quality to be degraded when compared to background groundwater quality, but not to exceed water quality objectives or standards. If groundwater quality is shown to have been degraded by the discharge, the incremental change in pollutant concentration (when compared with background) may not be increased. If groundwater quality is shown to have been degraded by the wastewater

treatment processes or discharge, this permit may be reopened and specific numeric limitations established.

55. The discharge authorized herein and the treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, California Code of Regulations (CCR), Section 20380 *et seq*. (hereafter Title 27). The exemption, pursuant to Title 27 CCR Section 20090(a), is based on the following:

    a. the waste consists primarily of domestic sewage and treated effluent;
    b. the waste discharge requirements are consistent with water quality objectives; and
    c. the treatment and storage facilities described herein are associated with a municipal wastewater treatment plant.

56. This Order requires the Discharger to continue groundwater monitoring and includes a regular schedule of groundwater monitoring in the attached Monitoring and Reporting Program No. R5-2003-0085.

LAND DISCHARGE SPECIFICATIONS

57. The Discharger utilizes ponds for the disposal of treated wastewater. Land Discharge Specifications have been included in this permit to assure that the ponds do not overflow or cause a nuisance. Nuisance conditions from ponds are typically found when strong odors occur when the dissolved oxygen concentration is allowed to drop below 1.0 mg/*l*. This permit requires the dissolved oxygen concentration be maintained above 1.0 mg/*l* in the upper one-foot of water in the pond.

58. Ponds levees can fail for a variety of reasons, typically, a lack of maintenance or overtopping due to wave action. This permit requires a minimum pond freeboard be maintained to prevent overtopping.

59. The ponds are designed to percolate, which may cause seepage of disinfected wastewater from the ponds into the Feather River or into the groundwater. In order to protect groundwater, there is a need to determine the migration of pollutants to the groundwater and to determine the direction and gradient of groundwater flow. In order to protect surface water, there is a need to assess the hydraulic continuity of the ponds with the Feather River. There are three ground water monitoring wells on-site with limited data available. This Order requires the Discharger to prepare a hydraulic study of the ponds, the groundwater, and the Feather River.

STORMWATER

60. Federal Regulations for storm water discharges were promulgated by the U.S. Environmental Protection Agency on 19 November 1990. The regulations of 40 CFR Parts 122, 123, and 124 require specific categories of industrial activities, including Publicly Owned Treatment Works

(POTW), which discharge storm water associated with industrial activity to obtain an NPDES permit and to implement Best Available Technology Economically Achievable and Best Conventional Pollutant Control Technology to control pollutants in industrial storm water discharges.

61. All stormwater at the site drains to detention basins. Stormwater contained in the detention ponds is returned to the headworks for treatment or is allowed to evaporate and/or percolate.

GENERAL

62. 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.

63. 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 attached Monitoring and Reporting Program is issued pursuant to California Water Code Section 13267. The monitoring and reporting program to monitor groundwater and the wastewater ponds required by this Order and the attached Monitoring and Reporting Program are necessary to assure compliance with these waste discharge requirements. The City of Yuba City is responsible for the discharges of waste at the facility subject to this Order.

64. The SIP, Section 2.1, allows compliance schedules to be included in NPDES permits for priority pollutants, provided that: diligent efforts have been made to quantify the pollutant, there is documentation that source control measures are underway; there is a proposed schedule for achieving compliance, and the schedule is as short as practicable. The Discharger has made diligent efforts to quantify the constituents limited in this Order, source control measures are required by this Order (some, in the form of the current pretreatment program, are underway), and this Order includes a compliance time schedule for priority pollutants.

65. Monitoring and Reporting Program No. R5-2003-0085, Attachments A through E, and the Fact Sheet, are a part of this Order.

66. This discharge is presently governed by Waste Discharge Requirements in Order No. 97-162, adopted by the Regional Board on 8 August 1997.

67. U.S. EPA and the Regional Board have classified this discharge as a major discharge.

68. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Resolution 68-16 requires, in part, that discharges of waste to existing high quality waters must "be required to meet waste discharge

requirements that result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained." This Order requires compliance with technology-based standards and more stringent water quality based standards. In developing effluent limitations this Order allows the use of some of the assimilative capacity of the receiving water based on the current performance of the discharger and consistent with the SIP. Where assimilative capacity is available in the receiving water, this Order does not authorize the full use of the assimilative capacity. This Order is consistent with California Water Code section 13263(b). Any further use of the assimilative capacity would not be consistent with Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

69. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, *et seq*.), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.

70. The Regional Board has considered the information in the attached Fact Sheet in developing the Findings of this Order. The attached Fact Sheet is part of this Order.

71. 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.

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

73. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect on **1 August 2003**, provided U.S. EPA has no objections.

IT IS HEREBY ORDERED that Order No. 97-162 is rescinded and City of Yuba City, its 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 Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

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

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

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

B. Effluent Limitations—Discharge to Feather River by Diffuser (001):

1. Effluent shall not exceed the following limits (from adoption until **29 February 2008**):

Constituents	Units	Average Monthly	7-Day Median	Average Weekly	Average Daily	Instantaneous Maximum
BOD[1]	mg/*l*	30[2]	--	45[2]	60[2]	--
	lbs/day[3]	1800	--	2600	3500	--
Total Suspended	mg/*l*	30[2]	--	45[2]	60[2]	--
Solids	lbs/day[3]	1800	--	2600	3500	--
Settleable Solids	m*l*/*l*·hr	0.1	--	--	0.2	--
Total Coliform Organisms	MPN/100 m*l*	--	23	--	--	240[4]
Organochlorine	µg/*l*	--	--	--	--	ND[5]
Pesticides	lbs/day[6]	--	--	--	--	--
Thiobencarb	µg/*l*	1.0	--	--	--	3.1
	lbs/day[6]	0.058	--	--	--	--
Ethion	µg/*l*	--	--	--	--	0.02
	lbs/day[6]	--	--	--	--	--

1 5-day, 20ºC biochemical oxygen demand (BOD)

2 To be ascertained by a 24-hour composite

3 Based upon a design treatment capacity of 7.0 mgd (*x* mg/*l* X 8.345 X 7.0 mgd = *y* lbs/day)

4 Not to be exceeded more than once in a 30-day period

5 The Non-Detectable (ND) limitation applies to each individual pesticide. No individual pesticide may be present in the discharge at detectable concentrations. The Discharger shall use EPA standard analytical techniques with the lowest possible detectable level for organochlorine pesticides with a maximum acceptable detection level of 0.05 µg/*l*.

6 Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Aluminum[1]	µg/*l*	78[2]	87[2]	120[2]	--
	lbs/day[3]	4.6	5.1	7.0	--

1 Acid-soluble or total

2 To be ascertained by a 24-hour composite

3 Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Ammonia	mg/*l*	Attachment B	--	--	Attachment B
(as N)	lbs/day[4]	[5]	--	--	--
Arsenic	µg/*l*	40[2]	--	--	--
(total recoverable)	lbs/day[3]	3	--	--	--
Chlorine, Total Residual	mg/*l*	0.01	--	--	0.02
	lbs/day[4]	0.58	--	--	1.1
Chloroform	µg/*l*	46	--	--	--
	lbs/day[3]	2.7	--	--	--
Cyanide	µg/*l*	8.1	--	22	--
(total recoverable)	lbs/day[3]	0.47	--	1.3	--
Diazinon	µg/*l*	0.04[2]	--	0.08[2]	--
	lbs/day[3]	0.002	--	0.005	--
Dibromochloromethane	µg/*l*	3.2	--	8.6	--
	lbs/day[3]	0.19	--	0.50	--
Dichlorobromomethane	µg/*l*	7.6	--	21	--
	lbs/day[3]	0.44	--	1.2	--
cis-1,2-Dichloroethene	µg/*l*	16	--	--	--
	lbs/day[3]	0.93	--	--	--
Iron	µg/*l*	300[2]	--	--	--
(total recoverable)	lbs/day[3]	20	--	--	--
Manganese	µg/*l*	50[2]	--	--	--
(total recoverable)	lbs/day[3]	3	--	--	--
Mercury	µg/*l*	0.050[2]	--	--	--
(total recoverable)	lbs/day[3]	--	--	--	--
Methyl tert butyl ether	µg/*l*	10	--	--	--
(MTBE)	lbs/day[3]	0.8	--	--	--
Methylene blue active	µg/*l*	1,000[2]	--	--	--
substances (MBAS)	lbs/day[3]	40	--	--	--
Molybdenum	µg/*l*	10[2]	--	--	--
(total recoverable)	lbs/day[3]	0.6	--	--	--

[4] Based upon a design treatment capacity of 7.0 mgd (*x* mg/*l* X 8.345 X 7.0 mgd = *y* lbs/day)

[5] The mass limit (lb/day) for ammonia shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 7.0 mgd and the unit conversion factor of 8.345 (see footnote 4 for equation).

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Nitrite	mg/*l*	50	--	--	--
(as N)	lbs/day[4]	3,000	--	--	--
Nitrite + Nitrate	mg/*l*	50	--	--	--
(as N)	lbs/day[4]	3,000	--	--	--
N-nitrosodi-n-propylamine	µg/*l*	0.005[2]	--	0.01[2]	--
	lbs/day[3]	0.0003	--	0.0006	--
Pentachlorophenol	µg/*l*	20[2]	--	40[2]	--
	lbs/day[3]	1.2	--	2.3	--
Tetrachloroethylene	µg/*l*	9	--	20	--
	lbs/day[3]	0.5	--	1	--
Trichloroethylene	µg/*l*	7.3	--	9.7	--
	lbs/day[3]	0.43	--	0.56	--
2,4,6-Trichlorophenol	µg/*l*	10[2]	--	21[2]	--
	lbs/day[3]	0.58	--	1.2	--

2. Effluent shall not exceed the following interim priority pollutant limits (from adoption until **29 February 2008**):

Constituents	Average Daily µg/*l*	Average Daily lbs/day[1]
Bis (2-ethylhexyl) phthalate	150[2]	8.8
Cadmium (total recoverable)	10[2]	0.58
Copper (total recoverable)	67[2]	3.9
Zinc	140[2]	8.2

[1] Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]

[2] To be ascertained by a 24-hour composite

3. Effluent shall not exceed the following limitations (from **1 March 2008** forward):

Constituents	Units	Average Monthly	Average Weekly	7-Day Median	Average Daily	Instantaneous Maximum
BOD[1]	mg/*l*	30[2]	45[2]	--	60[2]	--
	lbs/day[3]	1800	2600	--	3500	--

[1] 5-day, 20ºC biochemical oxygen demand (BOD)

[2] To be ascertained by a 24-hour composite

Constituents	Units	Average Monthly	Average Weekly	7-Day Median	Average Daily	Instantaneous Maximum
Total Suspended	mg/*l*	30[2]	45[2]	--	60[2]	--
Solids	lbs/day[3]	1800	2600	--	3500	--
Settleable Solids	m*l*/*l*·hr	0.1	--	--	0.2	--
Total Coliform Organisms	MPN/100 m*l*	--	--	23	--	240[4]
Organochlorine	µg/*l*	--	--	--	--	ND[5]
Pesticides	lbs/day[6]	--	--	--	--	--
Thiobencarb	µg/*l*	1.0	--	--	--	3.1
	lbs/day[6]	0.058	--	--	--	--
Ethion	µg/*l*	--	--	--	--	0.02
	lbs/day[6]	--	--	--	--	--

3 Based upon a design treatment capacity of 7.0 mgd (*x* mg/*l* X 8.345 X 7.0 mgd = *y* lbs/day)

4 The total coliform organisms concentration shall not exceed 240 MPN/100 m*l* more than once in any 30-day period.

5 The Non-Detectable (ND) limitation applies to each individual pesticide. No individual pesticide may be present in the discharge at detectable concentrations. The Discharger shall use EPA standard analytical techniques with the lowest possible detectable level for organochlorine pesticides with a maximum acceptable detection level of 0.05 µg/*l*.

6 Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Aluminum[1]	µg/*l*	78[2]	87[2]	120[2]	--
	lbs/day[3]	4.6	5.1	7.0	--
Ammonia	mg/*l*	Attachment B	--	--	Attachment B
(as N)	lbs/day[4]	[5]	--	--	--
Arsenic	µg/*l*	40[2]	--	--	--
(total recoverable)	lbs/day[3]	3	--	--	--
Bis (2-ethylhexyl)	µg/*l*	1.8	--	5.6	--
phthalate	lbs/day[3]	0.11	--	0.33	--
Cadmium	µg/*l*	Attach. C[2]	--	Attach. C[2]	--
(total recoverable)	lbs/day[3]	[6]	--	[6]	--

1 Acid-soluble or total

2 To be ascertained by a 24-hour composite

3 Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]

4 Based upon a design treatment capacity of 7.0 mgd (*x* mg/*l* X 8.345 X 7.0 mgd = *y* lbs/day)

5 The mass limit (lb/day) for ammonia shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 7.0 mgd and the unit conversion factor of 8.345 (see footnote 4 for equation).

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Chlorine, Total Residual	mg/*l*	0.01	--	--	0.02
	lbs/day[4]	0.58	--	--	1.1
Chloroform	µg/*l*	46	--	--	--
	lbs/day[3]	2.7	--	--	--
Copper	µg/*l*	Attach. D[2]	--	Attach. D[2]	--
(total recoverable)	lbs/day[3]	[6]	--	[6]	--
Cyanide	µg/*l*	8.1[2]	--	22[2]	--
(total recoverable)	lbs/day[3]	0.47	--	1.3	--
Diazinon	µg/*l*	0.04[2]	--	0.08[2]	--
	lbs/day[3]	0.002	--	0.005	--
Dibromochloromethane	µg/*l*	3.2	--	8.6	--
	lbs/day[3]	0.19	--	0.50	--
Dichlorobromomethane	µg/*l*	7.6	--	21	--
	lbs/day[3]	0.44	--	1.2	--
cis-1,2-Dichloroethene	µg/*l*	6	--	--	--
	lbs/day[3]	0.4	--	--	--
Iron	µg/*l*	300[2]	--	--	--
(total recoverable)	lbs/day[3]	20	--	--	--
Manganese	µg/*l*	50[2]	--	--	--
(total recoverable)	lbs/day[3]	3	--	--	--
Mercury	µg/*l*	0.050[2]	--	--	--
(total recoverable)	lbs/day[3]	--	--	--	--
Methyl tert butyl ether	µg/*l*	10	--	--	--
(MTBE)	lbs/day[3]	0.8	--	--	--
Methylene blue active	µg/*l*	1,000[2]	--	--	--
substances (MBAS)	lbs/day[3]	80	--	--	--
Molybdenum	µg/*l*	10[2]	--	--	--
(total recoverable)	lbs/day[3]	0.6	--	--	--
Nitrite	mg/*l*	50	--	--	--
(as N)	lbs/day[4]	3,000	--	--	--

[6] The mass limit (lbs/day) shall be equal to the concentration limit (from corresponding Attachment, for corresponding period) multiplied by the design flow of 7.0 mgd and the unit conversion factor of 8.345 and divided by 1000 µg/*l* per mg/*l* (see footnote 1 for equation).

Constituents	Units	Average Monthly	Average 4-Day	Average Daily	Average 1-Hour
Nitrite + Nitrate	mg/*l*	50	--	--	--
(as N)	lbs/day[4]	3,000	--	--	--
N-nitrosodi-n-propylamine	µg/*l*	0.005	--	0.01	--
	lbs/day[3]	0.0003	--	0.0006	--
Pentachlorophenol	µg/*l*	20[2]	--	40[2]	--
	lbs/day[3]	1.2	--	2.3	--
Tetrachloroethylene	µg/*l*	9	--	20	--
	lbs/day[3]	0.5	--	1	--
Trichloroethylene	µg/*l*	3.6	--	9.7	--
	lbs/day[3]	0.21	--	0.56	--
2,4,6-Trichlorophenol	µg/*l*	10[2]	--	21[2]	--
	lbs/day[3]	0.58	--	1.2	--
Zinc	µg/*l*	Attach. E[2]	--	Attach. E[2]	--
(total recoverable)	lbs/day[3]	[6]	--	[6]	--

4. The arithmetic mean of 20°C BOD (5-day) and of total suspended solids in effluent samples collected over a calendar month shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

5. The effluent mass mercury loading to the Feather River shall not exceed 0.49 pounds as a twelve-month average.

   a. In calculating for compliance, the Discharger shall count all non-detect results at one half of the method detection limit and shall apply the monthly average flow from the discharge. If compliance with the effluent limit is not attained due to the non-detect contribution, the Discharger shall improve and implement available analytical capabilities and compliance will be evaluated with consideration of the detection limits.

   b. Twelve month mass loadings shall be calculated for each calendar month. For monthly measures, calculate monthly loadings using average monthly flow and the average of all mercury analyses conducted that month. The Discharger shall submit a cumulative total of mass loadings for the previous twelve months with each self-monitoring report. Compliance will be determined based on monitoring results from the previous twelve calendar months.

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

7. The 30-day 90th percentile effluent electrical conductivity shall not exceed 830 µmhos/cm.

8. The average dry weather discharge flow shall not exceed 7.0 million gallons per day.

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

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

C. Land Discharge Specifications—Discharge to Disposal Ponds (002):

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

2. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas.

3. As a means of discerning compliance with Land Discharge Specification No. 2, the dissolved oxygen content in the upper zone (1 foot) of wastewater in the pond shall not be less than 1.0 mg/*l*.
   Ponds shall not have a pH less than 6.5 or greater than 8.5.

4. Ponds shall be managed to prevent breeding of mosquitoes. In particular,

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

   b. Weeds shall be minimized.

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

5. During non-flood conditions, pond freeboard shall never be less than two feet (measured vertically to the lowest, non-spillway point of overflow).

D. Effluent Limitations—Discharge to Feather River from Disposal Ponds (003):

1. Effluent shall not exceed the following limits (from adoption until **29 February 2008**):

Constituents	Units	Average Daily	Average 1-Hour	Instantaneous Maximum
Aluminum[1]	µg/*l*	120	--	--
	lbs/day[2]	7.0	--	--
Ammonia	mg/*l*	--	Attachment B	--
(as N)	lbs/day[3]	--	--	--
Chlorine, Total Residual	mg/*l*	--	0.02	--
	lbs/day[3]	--	1.1	--
Cyanide	µg/*l*	22	--	--
(total recoverable)	lbs/day[2]	1.3	--	--
Diazinon	µg/*l*	0.08	--	--
	lbs/day[2]	0.005	--	--
Dibromochloromethane	µg/*l*	8.6	--	--
	lbs/day[2]	0.50	--	--
Dichlorobromomethane	µg/*l*	21	--	--
	lbs/day[2]	1.2	--	--
Ethion	µg/*l*	--	--	0.02
	lbs/day[2]	--	--	--
N-nitrosodi-n-propylamine	µg/*l*	0.01	--	--
	lbs/day[2]	0.0006	--	--
Organochlorine	µg/*l*	--	--	ND[4]
Pesticides	lbs/day[2]	--	--	--
Pentachlorophenol	µg/*l*	40	--	--
	lbs/day[2]	2.3	--	--
Tetrachloroethylene	µg/*l*	20	--	--
	lbs/day[2]	1	--	--

[1] Acid-soluble or total

[2] Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]

[3] Based upon a design treatment capacity of 7.0 mgd (*x* mg/*l* X 8.345 X 7.0 mgd = *y* lbs/day)

[4] The Non-Detectable (ND) limitation applies to each individual pesticide. No individual pesticide may be present in the discharge at detectable concentrations. The Discharger shall use EPA standard analytical techniques with the lowest possible detectable level for organochlorine pesticides with a maximum acceptable detection level of 0.05 µg/*l*.

Constituents	Units	Average Daily	Average 1-Hour	Instantaneous Maximum
Thiobencarb	µg/*l*	--	--	3.1
	lbs/day[2]	--	--	--
Trichloroethylene	µg/*l*	9.7	--	--
	lbs/day[2]	0.56	--	--
2,4,6-Trichlorophenol	µg/*l*	21	--	--
	lbs/day[2]	1.2	--	--

2. Effluent shall not exceed the following interim limits (from adoption until **29 February 2008**):

Constituents	Average Daily µg/*l*	Average Daily lbs/day[1]
Bis (2-ethylhexyl) phthalate	150[2]	8.8
Cadmium (total recoverable)	10[2]	0.58
Copper (total recoverable)	67[2]	3.9
Zinc	140[2]	8.2

[1] Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]
[2] To be ascertained by a 24-hour composite

3. The effluent shall not exceed the following limitations (from **1 March 2008** forward):

Constituents	Units	Average Daily	Average 1-Hour	Instantaneous Maximum
Aluminum[1]	µg/*l*	120	--	--
	lbs/day[2]	7.0	--	--
Ammonia	mg/*l*	--	Attach. B	--
(as N)	lbs/day[3]	--	--	--
Bis (2-ethylhexyl)	µg/*l*	5.6	--	--
phthalate	lbs/day[3]	0.33	--	--
Cadmium	µg/*l*	Attach. C	--	--
(total recoverable)	lbs/day[3]	[4]	--	--

[1] Acid-soluble or total
[2] Based upon a design treatment capacity of 7.0 mgd [*x* µg/*l* x (1 mg/1000 µg) x 8.345 x 7.0 mgd = *y* lbs/day]
[3] Based upon a design treatment capacity of 7.0 mgd (*x* mg/*l* X 8.345 X 7.0 mgd = *y* lbs/day)

Constituents	Units	Average Daily	Average 1-Hour	Instantaneous Maximum
Chlorine, Total Residual	mg/*l*	--	0.02	--
	lbs/day[4]	--	1.1	--
Copper	µg/*l*	Attach. D	--	--
(total recoverable)	lbs/day[3]	[4]	--	--
Cyanide	µg/*l*	22	--	--
(total recoverable)	lbs/day[3]	1.3	--	--
Diazinon	µg/*l*	0.08	--	--
	lbs/day[3]	0.005	--	--
Dibromochloromethane	µg/*l*	8. 6	--	--
	lbs/day[3]	0.50	--	--
Dichlorobromomethane	µg/*l*	21	--	--
	lbs/day[3]	1.2	--	--
Ethion	µg/*l*	--	--	0.02
	lbs/day[3]	--	--	--
N-nitrosodi-n-propylamine	µg/*l*	0.01	--	--
	lbs/day[3]	0.0006	--	--
Organochlorine	µg/*l*	--	--	ND[5]

[4] The mass limit (lbs/day) shall be equal to the concentration limit (from corresponding Attachment, for corresponding period) multiplied by the design flow of 7.0 mgd and the unit conversion factor of 8.345 and divided by 1000 µg/*l* per mg/*l* (see footnote 1 for equation).

[5] The Non-Detectable (ND) limitation applies to each individual pesticide. No individual pesticide may be present in the discharge at detectable concentrations. The Discharger shall use EPA standard analytical techniques with the lowest possible detectable level for organochlorine pesticides with a maximum acceptable detection level of 0.05 µg/*l*.

Constituents	Units	Average Daily	Average 1-Hour	Instantaneous Maximum
Pesticides	lbs/day[3]	--	--	--
Pentachlorophenol	µg/*l*	40	--	--
	lbs/day[3]	2.3	--	--
Tetrachloroethylene	µg/*l*	20	--	--
	lbs/day[3]	1	--	--
Thiobencarb	µg/*l*	--	--	3.1
	lbs/day[3]	--	--	--
Trichloroethylene	µg/*l*	9.7	--	--
	lbs/day[3]	0.56	--	--
2,4,6-Trichlorophenol	µg/*l*	21	--	--
	lbs/day[3]	1.2	--	--
Zinc	µg/*l*	Attach. E	--	--
(total recoverable)	lbs/day[3]	[4]	--	--

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

E. Sludge Disposal:

1. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in California Code of Regulations, Title 27, 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 U.S. EPA Regional Administrator at least **90 days** in advance of the change.

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

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

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

F. 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.

1. The discharge shall not cause the following in the Feather River or downstream waters:

   a. The fecal coliform concentration, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200 MPN/100 m*l* or cause more than 10 percent of total samples taken during any 30-day period to exceed 400 MPN/100 m*l*.

   b. Biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

   c. Esthetically undesirable discoloration.

   d. Concentrations of dissolved oxygen to fall below 7.0 mg/*l*. The monthly median of the mean daily dissolved oxygen concentration shall not be caused to fall below 85 percent of saturation in the main water mass, and the 95^{th} percentile concentration shall not be caused to fall below 75 percent of saturation.

   e. Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.

   f. Oils, greases, waxes, or other materials to accumulate in concentrations that cause nuisance, result in a visible film or coating on the water surface or on objects in the water, or otherwise adversely affect beneficial uses.

   g. The ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units. A one-month averaging period may be applied when calculating the pH change of 0.5 units.

   h. Radionuclides to be present in concentrations that exceed MCLs in Title 22 CCR Section 64443 or 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.

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

   j. Taste- or odor-producing substances to impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin or

to cause nuisance or adversely affect beneficial uses.

k. The ambient temperature to increase more than 5°F.

l. 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.

m. The turbidity to increase as follows:

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

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

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

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

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

o. The 30-day 90^{th} percentile electrical conductivity to exceed 150 µmhos/cm.

2. Upon adoption of any applicable water quality standard for receiving waters by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder, this permit may be reopened and receiving water limitations added.

G. Groundwater Limitations:

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

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

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

3. Any increase in total coliform organisms shall not exceed a most probable number of 2.2/100 m*l* over any seven-day period.

H. Provisions:

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

2. If the Discharger discontinues its current practice of draining all stormwater to detention basins for evaporation/percolation or for return to the headworks of the waste water treatment facility for treatment, the Discharger shall, within one month of cessation, file with the State Water Resources Control Board a Notice of Intent to comply with State Water Resources Control Board Water Quality Order No. 97-03-DWQ, NPDES General Order No. CAS000001, or later amendment or renewal.

3. Within **eighteen months** of the commencement of groundwater monitoring, the Discharger shall complete a hydrogeologic investigation within the area affected and potentially affected by the WWTF. The technical report documenting the hydrogeologic investigation shall describe the underlying geology, existing wells (active and otherwise), local well construction practices and standards, well restrictions, hydrogeology and assess all impacts of the wastewater discharge on water quality. The groundwater quality must be monitored **at least twice** for U.S. EPA priority pollutants, nutrients, coliform organisms, pH, TDS, and EC. The technical report must present, for each monitoring event, determinations for the direction and gradient of groundwater flow. The groundwater monitoring network shall include one or more background monitoring wells and a sufficient number of designated monitoring wells to evaluate performance of BPTC measures and compliance with this Order's groundwater limitations. These include monitoring wells immediately downgradient of every treatment, storage, and disposal unit that does or may release waste constituents to groundwater with the exception of wastewater reclamation areas. All wells shall comply with appropriate standards as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981), and any more stringent standards adopted by the Discharger or county pursuant to CWC Section 13801. The existing well network will be evaluated, and the proposed network should include existing monitoring wells where they will serve to measure compliance or provide other relevant information (e.g., depth to groundwater). The Discharger shall install approved monitoring wells and commence groundwater monitoring in accordance with this Order's Monitoring and Reporting Program. After the first sampling event, the Discharger shall report on its sampling protocol as specified in this Order's Monitoring and Reporting Program (MRP). After **one year of monitoring**, the Discharger shall characterize natural background quality of monitored constituents in a technical report. If the monitoring shows that any constituent concentrations are increased above background water quality, the Discharger shall submit a technical report describing the evaluation's results and critiquing each evaluated component with respect to BPTC and minimizing the discharge's impact on groundwater quality. Where treatment system deficiencies are documented, the technical report shall provide recommendations for necessary modifications (*e.g.*, new or revised salinity source control measures, WWTF component upgrade and retrofit) to achieve BPTC and identify the source of funding and proposed schedule for modifications for achieving full compliance prior to

expiration of this Order. This Order may be reopened and additional groundwater limitations added.

4. 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 and groundwater that are essentially free of pollutants.

5. There are indications that the discharge may contain dioxins that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. The Discharger shall comply with the following time schedule in conducting a study of the potential effect(s) of these constituents in surface waters:

Task	Compliance Date
Submit Study Report for Dioxins	**1 March 2004**

If, after review of the study results, it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective, this Order may be reopened and effluent limitations added for dioxins.

6. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger shall initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Board evaluation, conduct the TRE. This Order may 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 Water Resources Control Board, this Order may be reopened and a limitation based on that objective included.

7. The Discharger shall comply with the following time schedule to assure compliance with the Effluent Limitations contained in B.3 and D.3 of this Order:

Task	Compliance Date	Report Due Date
Submit Annual Status Report		**31 May, annually**
Submit Workplan/Time Schedule		**1 February 2004**
Full Compliance	**1 March 2008**	

The Discharger shall submit to the Regional Board on or before each compliance and report due date, the specified document or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, the reasons for such noncompliance shall be stated; the report shall also include an estimate

of the date when the Discharger will be in compliance. The Discharger shall notify the Regional Board by letter when it returns to compliance with the time schedule.

8. The interim limitations in this Order are based on the current treatment plant performance and have been established at the maximum observed concentration. Interim limitations have been established since compliance with NTR- and CTR-based Effluent Limitations cannot be achieved by the existing discharge. The interim Effluent Limitations, B.2 and D.2, establish enforceable mass and concentration ceilings until compliance with the final Effluent Limitations, B.3 and D.3, can be achieved, which is required by **1 March 2008**.

9. There are indications that low flow conditions are possible at the effluent discharge point below historical levels. The Discharger is required to complete a technical report assessing full utilization of water right withdrawals and any minimum flow rate restrictions by the State Water Resources Control Board, Division of Water Rights that control upstream flow rates. The technical report shall utilize the historical low flow detailed in this Order, compared to the maximum allowable water right diversion and any minimum flow restriction in determining the potential low flow conditions. The technical report is due within **6 months following adoption of this Order**.

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

If after review of the study results it is determined that the projected minimum flow rate is below that used to determine reasonable potential or to calculate dilution-based Effluent Limitations, this Order may reopened and revised to recalculate reasonable potential and discharge limitations.

10. The Discharger shall conduct a study of the thermal impacts of the discharge on the beneficial uses of the Feather River. The Discharger shall submit a workplan for the study **within six months of the adoption date of this Order**. It is recommended that the workplan be reviewed by the California Department of Fish and Game and the National Marine Fisheries Service prior to submittal. The study shall assess compliance with this Order. The results of the study shall be submitted by **1 June 2005**.

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

    If, after review of the study results, it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective, this Order may be reopened and effluent limitations added for temperature.

11. If the Discharger submits adequate information to support granting an acute mixing zone for individual constituents, this permit may be reopened and limitations modified.

12. The Discharger shall complete a study and technical report regarding the treatment/disposal ponds located within the Feather River levees. The study shall be sufficient to determine if the discharge from the ponds causes exceedance of any narrative or numerical water quality objective contained in the Basin Plan including bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, pH, pesticides, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity and any Effluent or Receiving Water Limitation contained in this Order. The technical report shall contain the results of the study and detail a plan to conduct compliance sampling of the discharge from the ponds. If exceedance of any Basin Plan objective, Effluent or Receiving Water Limitation is determined by the study, the technical report shall include a means for achieving compliance with the discharge limitations or water quality objectives including, if

necessary, a pond closure plan.

Task	Compliance Date	Report Due Date
Submit Workplan		**6 months after permit adoption**
Submit Study Results		**1 year after permit adoption**
Submit Technical Report		**16 months after permit adoption**
Achieve Full Compliance	**1 March 2008**	

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

13. The Discharger shall use the best practicable treatment or control technique currently available to limit mineralization to no more than a reasonable increment.

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

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

16. The Discharger shall comply with Monitoring and Reporting Program No.R5-2003-0085, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

    When requested by U.S. EPA, 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.

17. Minimum detection levels for monitoring required by this Order shall, unless impracticable, be adequate to demonstrate compliance with permit limitations.

18. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect on **1 August 2003**, provided U.S. EPA has no objections.

19. This Order expires on **1 June 2008** and the Discharger must file a Report of Waste Discharge in accordance with California Code of Regulations, Title 23, not later than **180 days in advance** of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.

20. This Order contains Effluent Limitations based on water quality criteria contained in the CTR for bis (2-ethylhexyl) phthalate, cadmium, copper, and zinc. By **5 August 2003**, the Discharger shall complete and submit a compliance schedule justification for bis (2-ethylhexyl) phthalate, cadmium, copper, and zinc. The compliance schedule justification shall include all items specified in Paragraph 3, items (a) through (d), of Section 2.1 of the SIP. The new water quality based effluent limitations for bis (2-ethylhexyl) phthalate, cadmium, copper, and zinc become effective on **1 October 2003** if a compliance schedule justification meeting the requirements of Section 2.1 of the SIP is not completed and submitted by the Discharger. Otherwise, the new final water quality based effluent limitations for bis (2-ethylhexyl) phthalate, cadmium, copper, and zinc required by this Order shall become effective on **1 March 2008**. As this compliance schedule is greater than one year, the Discharger shall submit semi-annual progress reports on **30 June (beginning in 2004) and 31 December** of each year until the Discharger achieves compliance with the final water quality based effluent limitations for bis (2-ethylhexyl) phthalate, cadmium, copper, and zinc.

21. 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 that create a fire or explosion hazard in the treatment works;

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

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

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

    e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40ºC (104ºF), unless the Regional Board approves alternate temperature limits;

f. Petroleum oil, nonbiodegradable 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.

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

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

b. Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order. The Discharger shall also not discharge constituents in concentrations that inhibit or disrupt the treatment processes.

23. The Discharger shall enforce the Pretreatment Standards promulgated under Sections 307(b), 307(c), and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR 403 including, but not limited to:

a. Adopting the legal authority required by 40 CFR 403.8(f)(1);

b. Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;

c. Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and

d. Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).

24. **Within one year of adoption of this Order**, the Discharger shall submit for Regional Board approval an industrial pretreatment program as described in 40 CFR 403.5.

25. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this permit. If the Discharger fails to perform the pretreatment functions, the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB), or the U.S. Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the Clean Water Act.

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

27. 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.

    To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the State of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Regional Board and a statement. The statement shall comply with the signatory paragraph of Standard Provision D.6 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 6 June 2003.

_____
THOMAS R. PINKOS, Executive Officer

MRH/mrh

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2003-0085

NPDES NO. CA0079260

FOR

CITY OF YUBA CITY
WASTEWATER TREATMENT FACILITY
SUTTER COUNTY

This Monitoring and Reporting Program is issued pursuant to California Water Code Sections 13267 and 13383. The Discharger shall not implement any changes to this Program unless and until the Regional Board or Executive Officer issues a revised Monitoring and Reporting Program. Specific sample station locations shall be established under direction of the Regional Board's staff, and a description of the stations shall be attached to this Order.

INFLUENT MONITORING

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

Constituents	Units	Type of Sample	Sampling Frequency
20°C BOD_5	mg/*l*, lbs/day	24-hr. Composite[1]	3 Times Weekly
Total Suspended Solids	mg/*l*, lbs/day	24-hr. Composite[1]	3 Times Weekly
pH	Number	Meter	Continuous
Ammonia, Total (as N)	mg/*l*	Grab	3 Times Weekly
Phosphorous, Total (as P)	mg/*l*	Grab	Monthly
Priority Pollutants	µg/*l*	As Appropriate[2]	Twice Annually
Flow	mgd	Meter	Continuous

[1] The BOD and TSS samples shall be flow-proportional composite samples collected on the same day as the effluent samples.

[2] Volatile samples shall be grab samples, the remainder shall be flow-proportional 24-hour composite samples.

EFFLUENT MONITORING OF DISCHARGE TO THE FEATHER RIVER

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall, following the last unit process. Effluent samples should be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded.

The Discharger shall submit a report **within 60 days of permit adoption** outlining analytical methods and detection levels for approval, with a goal to achieve detection levels below applicable water quality criteria. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in Section 2.3 and 2.4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California*, adopted 2 March 2000 by the State Water Resources Control Board. All peaks identified by analytical methods shall be reported.

When flooding of a disposal pond levee by the Feather River is forthcoming, a grab sample shall be collected from each pond whose levee is expected to be overtopped. Prior to any pond discharge under this Order,

Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
Total Residual Chlorine	mg/*l*, lbs/day	Meter	Continuous[1,2,3]
Sodium Bisulfite	mg/*l*, lbs/day	Meter	Continuous[3]
Temperature[4]	°F	Grab	Daily
Total Coliform Organisms[5]	MPN/l00 m*l*	Grab	3 Times Weekly

[1] The continuous chlorine residual monitoring system, or functional equivalent, shall be operational no later than 31 October 2007. Until that time, grab samples shall be collected and analyzed daily.

[2] When flooding of a disposal pond levee by the Feather River is forthcoming, a grab sample shall be collected from each pond whose levee is expected to be overtopped. Prior to any pond discharge under this Order, the Discharger must develop an acceptable method and location for safely sampling the discharge from the ponds to surface waters sufficient to determine compliance with Effluent Limitations D.1, D.2, D.3, and D.4.

[3] Use of continuous monitoring instrumentation for chlorine and sodium bisulfite residual in the effluent is an appropriate method of process control. However, the accuracy of the chlorine analyzers is not low enough to meet minimum detection levels. Residual sodium bisulfite in the effluent indicates that chlorine is not present in the effluent, which can validate a zero residual on the chlorine analyzer. Reporting of these two constituents, when sodium bisulfite is present and chlorine is non-detect, sufficiently insures compliance with the chlorine residual limit, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

[4] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the WWTF.

Constituents	Units	Type of Sample	Sampling Frequency
pH[4]	Number	Meter	Continuous[2]
Ammonia (as N)[6, 7, 8,9]	mg/*l*, lbs/day	Grab	Twice Weekly[2]
20°C BOD_5	mg/*l*, lbs/day	24-hr Composite[10]	3 Times Weekly
Total Suspended Solids	mg/*l*, lbs/day	24-hr Composite[10]	3 Times Weekly
Settleable Solids	m*l*/*l*-hr	24-hr Composite[10]	5 Times Weekly
Electrical Conductivity @ 25°C	µmhos/cm	Grab	5 Times Weekly[2]
Nitrite[11]	mg/*l*, lbs/day	Grab	Twice Monthly
Nitrate[11]	mg/*l*, lbs/day	Grab	Twice Monthly
Hardness (as $CaCO_3$)	mg/*l*	Grab	Monthly
Total Dissolved Solids	mg/*l*, lbs/day	Grab	Monthly
Aluminum[8,12]	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Arsenic (total)	µg/l, lbs/day	24-hr Composite[10]	Monthly
Bis (2-ethylhexyl) phthalate	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Cadmium (total)[8]	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Chloroform	µg/l, lbs/day	Grab	Monthly
Copper (total)[8]	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Cyanide (total)	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Diazinon	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Dibromochloromethane	µg/l, lbs/day	Grab	Monthly[2]
Dichlorobromomethane	µg/l, lbs/day	Grab	Monthly[2]
cis-1,2-Dichloroethene	µg/l, lbs/day	Grab	Monthly[2]

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5 Total coliform organisms samples may be collected at any point following disinfection, provided that samples are dechlorinated at the time of collection. The Discharger shall report the sampling location(s) in the monthly self-monitoring reports.

6 Report as total ammonia.

7 Concurrent with biotoxicity monitoring.

8 In reporting lbs/day, the Discharger shall report both the lbs/day discharged and the calculated lbs/day limitation.

9 Temperature and pH shall be recorded at the time of ammonia sample collection.

10 These samples shall be flow-proportional composite samples.

11 Monitoring for nitrite and nitrate shall be conducted concurrently.

12 Acid-soluble or total

Constituents	Units	Type of Sample	Sampling Frequency
Ethion	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Iron (total)	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Lead (total)[8]	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Manganese (total)	µg/l, lbs/day	24-hr Composite[10]	Monthly
Mercury (total)	µg/l, lbs/day	24-hr Composite[10]	Monthly
MTBE	µg/l, lbs/day	Grab	Monthly
MBAS	µg/l, lbs/day	24-hr Composite[10]	Monthly
Molybdenum (total)	µg/l, lbs/day	24-hr Composite[10]	Monthly
N-nitrosodi-n-propylamine	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Organochlorine Pesticides	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Pentachlorophenol	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Tetrachloroethylene	µg/l, lbs/day	Grab	Monthly[2]
Thiobencarb	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Trichloroethylene	µg/l, lbs/day	Grab	Monthly[2]
2,4,6-Trichlorophenol	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Zinc (total)[8]	µg/l, lbs/day	24-hr Composite[10]	Monthly[2]
Acute Toxicity[13,14]	% Survival	Grab	Monthly[15]
Priority Pollutants[16,17]	µg/*l*	As Appropriate[18]	Twice Annually[19]

13 The acute bioassay samples shall be analyzed using EPA/600/4-90/027F, Fourth Edition, or later amendment with Regional Board staff approval. Temperature and pH shall be recorded at the time of bioassay sample collection. Test species shall be fathead minnows (*Pimephales promelas*), with no pH adjustment unless approved by the Executive Officer following adoption of this Order.

14 Concurrent with ammonia monitoring.

15 During periods of discharge to the Feather River. Monitoring shall be conducted during each period of discharge.

16 All peaks are to be reported, along with any explanation provided by the laboratory.

17 Priority Pollutants is defined as U.S. EPA priority toxic pollutants and consists of the constituents listed in the most recent National Toxics Rule and California Toxics Rule.

18 Volatile samples shall be grab samples; the remainder shall be 24-hour composite samples.

19 Hardness, pH, and temperature data shall be collected at the same time and on the same date as the Priority Pollutant samples.

EFFLUENT MONITORING OF DISCHARGE TO PONDS

Effluent samples shall be collected downstream from the last connection through which wastes can be admitted into the outfall, following the last unit process. Effluent samples should be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. Effluent monitoring shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency
Flow	mgd	Meter	Continuous
pH[1]	Number	Grab	Twice Weekly
Total Kjeldahl Nitrogen (as N)	mg/*l*	Grab	Twice Monthly
Total Dissolved Solids	mg/*l*	Grab	Quarterly
Total Coliform Organisms	MPN/l00 m*l*	Grab	Monthly
Total Chlorine Residual	mg/*l*	Meter	Continuous

[1] A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the WWTF.

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

RECEIVING WATER MONITORING

All receiving water samples shall be grab samples. Receiving water monitoring shall include at least the following:

Station	Description
R-1	Approximately 500 feet upstream of the diffuser outfall, on the eastern bank of the Feather River, upstream of the disposal ponds
R-2	Approximately 1,000 feet downstream of the diffuser outfall, on the western bank of the Feather River
R-3	Downstream of the disposal ponds, at a point to be recommended by the Discharger and approved by Regional Board staff

Constituents	Units	Station	Sampling Frequency
Dissolved Oxygen[1]	mg/*l*[2]	R-l, R-2, R-3	Weekly
	% saturation[3]		
pH[1,4]	Number	R-l, R-2, R-3	Weekly
Turbidity	NTU	R-l, R-2, R-3	Weekly
Temperature[1,4]	°F (°C)	R-l, R-2, R-3	Weekly
Electrical Conductivity @25°C[1]	µmhos/cm	R-l, R-2, R-3	Weekly
Hardness (as $CaCO_3$) [4]	mg/*l*	R-l, R-2, R-3	Monthly
Fecal Coliform Organisms	MPN/100 m*l*	R-l, R-2, R-3	Quarterly
Radionuclides	pCi/*l*[5]	R-l, R-2, R-3	Annually

1 A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the WWTF.

2 Temperature shall be determined at the time of sample collection for use in determining saturation concentration. Any additional factors or parameters used in determining saturation concentration shall also be reported.

3 Report both percent saturation and saturation concentration.

4 Hardness, pH, and temperature data shall be collected at the same time and on the same date as the effluent Priority Pollutant samples.

5 pCi/*l* = picocuries per liter

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-l, R-2, and R-3. Attention shall be given to the presence or absence of:

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

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

POND MONITORING

Pond monitoring shall be conducted when WWTF effluent is present in the ponds, unless the ponds are inundated. All pond samples shall be grab samples. Pond monitoring shall, at a minimum, consist of the following:

Constituents	Units	Sampling Frequency
Freeboard	Feet[1,2]	Weekly
pH[3]	Number	Weekly
Electrical Conductivity @25°C[3]	µmhos/cm	Weekly
Dissolved Oxygen[3]	mg/*l*	Weekly
Odors	--	Weekly

1 To be measured vertically to the lowest point of overflow

2 Include estimation of volume of wastewater in each pond.

3 A hand-held field meter may be used, provided the meter utilizes a U.S. EPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the WWTF.

THREE SPECIES 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 EPA 600/4-91/002. Chronic toxicity samples shall be collected from the effluent of the wastewater treatment facility when discharging to the Feather River, after the last unit process, prior to its entering the receiving stream. Twenty-four hour composite samples shall be representative of the volume and quality of the discharge. Time of collection of samples shall be recorded. Control waters shall be obtained immediately upstream of the discharge from an area unaffected by the discharge in the receiving waters. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay and reported with the test results. Monthly laboratory reference toxicant tests may be substituted. Both the reference toxicant and effluent test must meet all test acceptability criteria as specified in the chronic manual. If the test acceptability criteria are not achieved, then the Discharger must re-sample and re-test within 14 days. The dilution series shall bracket the concentration of effluent in the receiving water. Chronic toxicity monitoring shall include the following:

Species: *Pimephales promelas* (larval stage), *Ceriodaphnia dubia*, and *Selenastrum capricornutum*

Frequency: Monitoring shall be conducted once per quarter during periods of discharge to the Feather River; quarterly monitoring shall begin during the first two weeks of each continuous discharge period.

Dilution:

	Dilutions (%)					Controls	
	100	50	25	12.5	6.25	Feather R. Water	Lab Water
% WWTP Effluent	100	50	25	12.5	6.25	0	0
% Dilution Water*	0	50	75	87.5	93.75	100	0
% Lab Water	0	0	0	0	0	0	100

* Dilution water shall be receiving water from the Feather River taken upstream from the discharge point.

SLUDGE MONITORING

A composite sample of sludge shall be collected annually in accordance with U.S. EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and tested for the metals listed in Title 22.

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

Upon removal of sludge, the Discharger shall submit characterization of sludge quality, including sludge percent solids and quantitative results of chemical analysis for the priority pollutants listed in 40 CFR 122 Appendix D, Tables II and III (excluding total phenols). Suggested methods for analysis of sludge are provided in U.S. EPA publications titled "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods" and "Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater". Recommended analytical holding times for sludge samples should reflect those specified in 40 CFR 136.6.3(e). Other guidance is available in U.S. EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989.

WATER SUPPLY MONITORING

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

Constituents	Units	Sampling Frequency
Electrical Conductivity @ 25°C	µmhos/cm	Annually
Total Dissolved Solids	mg/*l*	Annually

If the water supply is from more than one source, the monitoring report shall report the electrical conductivity and total dissolved solids results as a weighted average and include copies of supporting calculations.

GROUNDWATER MONITORING

Groundwater grab samples shall be collected from all groundwater monitoring wells. Prior to sampling, the wells should be pumped until the temperature, specific conductivity, and pH have stabilized to ensure representative samples. Groundwater monitoring shall include at least the following:

Constituents	Units	Sampling Frequency
Depth to Groundwater[1]	feet	Monthly
Groundwater Elevation[1]	feet	Monthly
pH	--	Monthly
Electrical Conductivity at 25ºC	µmhos/cm	Monthly
Total Kjeldahl Nitrogen (as N)	mg/*l*	Quarterly
Total Coliform Organisms	MPN/100 m*l*	Quarterly
Priority Pollutants[2,3]	µg/*l*	[4]

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

2 All peaks are to be reported, along with any explanation provided by the laboratory.

3 Priority Pollutants are U.S. EPA priority toxic pollutants and consist of the constituents listed in the most recent National Toxics Rule and California Toxics Rule.

4 Priority Pollutants must be monitored at least once during the life of the permit in addition to the monitoring required under Provision 2 of this Order.

Groundwater monitoring results for the constituents above shall be submitted monthly; the monthly report shall include a site map showing the location and surveyed elevation (to nearest one-hundredth of foot above mean sea level) of the wells and the current direction of groundwater flow.

A groundwater report shall be submitted annually; the report shall contain a brief written description of any groundwater investigation and sampling work completed for the year, a site map showing the location of all monitoring wells, and tables showing all groundwater monitoring data collected during the previous calendar year, including groundwater depth and elevation data, pH, EC, and all other monitored constituents.

REPORTING

Discharger self-monitoring results shall be submitted to the Regional Board monthly. Monitoring results shall be submitted by the **first day of the second month** following sample collection. Quarterly, semi-annual, and annual monitoring results shall be submitted by the **first day of the second month following each calendar quarter**.

In reporting the monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the reported analytical result are readily discernible. The data shall be summarized in such a manner to clearly illustrate whether the discharge complies with waste discharge requirements. Monthly maximums, minimums, and averages shall be reported for each monitored constituent and parameter. Removal efficiencies (%) for biochemical oxygen demand and total suspended solids and all

periodic averages, means, medians and percentiles for which there are limitations shall also be calculated and reported.

The Discharger shall report minimum levels and method detection limits as defined in and required by the SIP.

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

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.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions.

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

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

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

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

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

The Discharger may also be requested to submit an annual report to the 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.

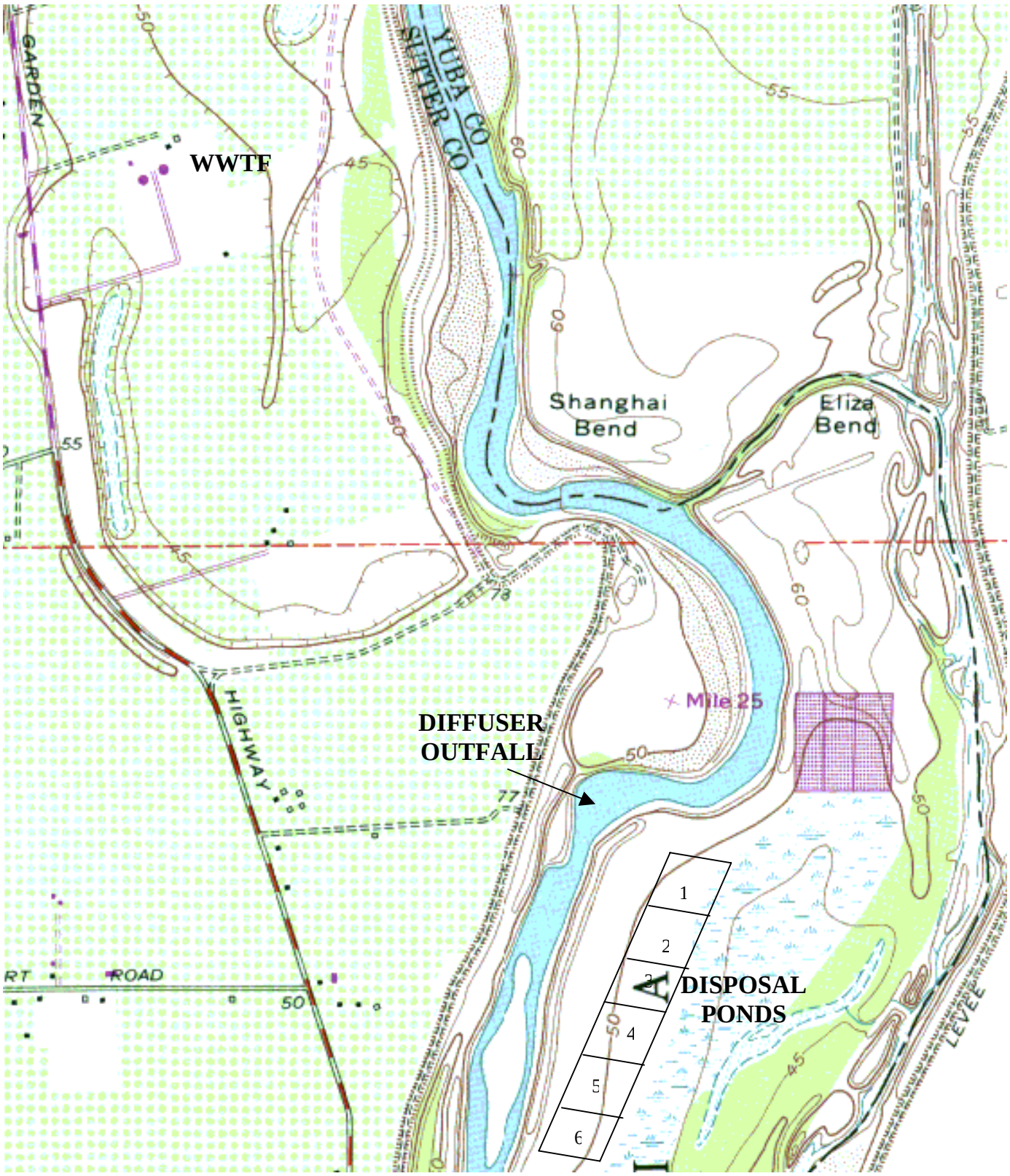
The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

6 June 2003
(Date)

MRH:mrh

ATTACHMENT A



Drawing Reference: OLIVEHURST U.S.G.S TOPOGRAPHIC MAP 7.5 MINUTE QUADRANGLE Photorevised 1973 Not to scale	SITE LOCATION MAP CITY OF YUBA CITY WASTEWATER TREATMENT FACILITY SUTTER COUNTY	N W E S

pH-Dependent Effluent Limits for Ammonia

pH[1]	CMC 1-hour average (mg N/*l*)	AMEL Monthly Average (mg N/*l*)	pH[1]	CMC 1-hour average (mg N/*l*)	AMEL Monthly Average (mg N/*l*)
6.5	**32.6**	**21.5**	**7.8**	**8.11**	**5.35**
6.6	**31.3**	**20.6**	**7.9**	**6.77**	**4.47**
6.7	**29.8**	**19.6**	**8.0**	**5.62**	**3.71**
6.8	**28.0**	**18.5**	**8.1**	**4.64**	**3.06**
6.9	**26.2**	**17.3**	**8.2**	**3.83**	**2.52**
7.0	**24.1**	**15.9**	**8.3**	**3.15**	**2.08**
7.1	**21.9**	**14.5**	**8.4**	**2.59**	**1.71**
7.2	**19.7**	**13.0**	**8.5**	**2.14**	**1.41**
7.3	**17.5**	**11.6**	**8.6**	**1.77**	**1.17**
7.4	**15.3**	**10.1**	**8.7**	**1.47**	**0.972**
7.5	**13.3**	**8.77**	**8.8**	**1.23**	**0.813**
7.6	**11.4**	**7.51**	**8.9**	**1.04**	**0.686**
7.7	**9.64**	**6.37**	**9.0**	**0.885**	**0.584**

$$CMC_{salmonids\ present} = \left(\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}} \right)$$

$$CCC_{early\ life\ present} = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \cdot MIN\left(2.85, 1.45 \cdot 10^{0.028(25-T)}\right)$$

$$ECA_{acute} = CMC_{salmonids\ present}$$

$$ECA_{chronic} = 2.5CCC + 35.6(2.5CCC - 0.46)$$

$$AMEL_{early\ life\ present} = 1.65[MIN(0.608ECA_{chronic}, 0.400ECA_{acute})]$$

Where: CMC = criteria maximum concentration
CCC = criteria continuous concentration
AMEL = average monthly effluent limitation
ECA = effluent concentration allowance

[1] Maximum pH from R-1 and effluent

Hardness-Dependent Effluent Limitations for Cadmium[1] (expressed as total recoverable metal)

Hardness (mg/*l*)[2]	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)	Hardness (mg/*l*)[2]	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)	Hardness (mg/*l*)[2]	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)
<25	*Calc.*	*Calc.*	100	1.9	4.5	260	5.5	13
25	0.39	0.95	110	2.1	5.0	270	5.7	14
30	0.48	1.2	120	2.3	5.5	280	6.0	14
35	0.57	1.4	130	2.5	6.1	290	6.2	15
40	0.67	1.6	140	2.7	6.6	300	6.5	16
45	0.76	1.8	150	3.0	7.1	310	6.7	16
50	0.86	2.1	160	3.2	7.7	320	7.0	17
55	0.95	2.3	170	3.4	8.2	330	7.2	17
60	1.1	2.5	180	3.6	8.8	340	7.4	18
65	1.2	2.8	190	3.9	9.3	350	7.7	19
70	1.3	3.0	200	4.1	9.9	360	7.9	19
75	1.4	3.3	210	4.3	10	370	8.2	20
80	1.5	3.5	220	4.6	11	380	8.4	20
85	1.6	3.8	230	4.8	12	390	8.7	21
90	1.7	4.0	240	5.0	12	400	8.9	22
95	1.8	4.3	250	5.3	13	>400	8.9	22

$$CCC = e^{[0.7852\ln(hardness)-2.715]} \qquad AMEL = 1.85[\min(0.224ECA_{acute}, 0.404ECA_{chronic})]$$

$$CMC = e^{[1.128\ln(hardness)-3.6867]} \qquad MDEL = 4.46[\min(0.224ECA_{acute}, 0.404ECA_{chronic})]$$

$$ECA_{acute} = CMC \qquad ECA_{chronic} = CCC + 35.6(CCC - 0.13)$$

Where: CCC = criteria continuous concentration
CMC = criteria maximum concentration
AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation
ECA = effluent concentration allowance

[1] The Discharger shall sample for hardness at the same time as the metal listed in the above table and, in calculating the applicable limitation, the Discharger shall use the lowest of the R-1, R-2, or R-3 hardness results.

[2] As $CaCO_3$

Hardness-Dependent Effluent Limitations for Copper[1] (expressed as total recoverable metal)

Hardness (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)	Hardness (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)
<25	*Calc.*	*Calc.*	180	9.6	24
25	1.5	3.8	190	10	26
30	1.8	4.5	200	11	27
35	2.1	5.2	210	11	28
40	2.3	5.9	220	12	29
45	2.6	6.6	230	12	31
50	2.9	7.3	240	13	32
55	3.1	8.0	250	13	33
60	3.4	8.7	260	14	34
65	3.7	9.3	270	14	36
70	3.9	10	280	15	37
75	4.2	11	290	15	38
80	4.5	11	300	16	39
85	4.7	12	310	16	41
90	5.0	13	320	17	42
95	5.3	13	330	17	43
100	5.5	14	340	17	44
110	6.0	15	350	18	46
120	6.6	17	360	18	47
130	7.1	18	370	19	48
140	7.6	19	380	19	49
150	8.1	21	390	20	50
160	8.6	22	400	20	52
170	9.1	23	>400	20	52

$$CCC = e^{[0.8545\ln(hardness)-1.702]} \qquad AMEL = 1.96[\min(0.201CMC, 0.369CCC)]$$

$$CMC = e^{[0.9422\ln(hardness)-1.700]} \qquad MDEL = 4.96[\min(0.201CMC, 0.369CCC)]$$

Where: CCC = criteria continuous concentration (four-day average)
CMC = criteria maximum concentration (one-hour average)
AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation

[1] The Discharger shall sample for hardness at the same time as the metal listed in the above table and, in calculating the applicable limitation, the Discharger shall use the lowest of the R-1, R-2, or R-3 hardness results.

Hardness-Dependent Effluent Limitations for Zinc[1] (expressed as total recoverable metal)

Hardness (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)	Hardness (mg/*l* as $CaCO_3$)	AMEL Average Monthly (µg/*l*)	MDEL Average Daily (µg/*l*)
<25	*Calc.*	*Calc.*	180	130	200
25	24	37	190	130	210
30	28	43	200	140	220
35	32	49	210	150	220
40	36	55	220	150	230
45	39	61	230	160	240
50	43	67	240	160	250
55	47	72	250	170	260
60	50	78	260	170	270
65	54	83	270	180	280
70	57	89	280	190	290
75	61	94	290	190	300
80	64	99	300	200	300
85	67	100	310	200	310
90	71	110	320	210	320
95	74	110	330	210	330
100	77	120	340	220	340
110	84	130	350	220	350
120	90	140	360	230	350
130	97	150	370	230	360
140	100	160	380	240	370
150	110	170	390	250	380
160	120	180	400	250	390
170	120	190	>400	250	390

$$CCC = e^{[0.8473\ln(hardness)+0.884]} \qquad AMEL = 1.29[\min(0.501CMC, 0.694CCC)]$$

$$CMC = e^{[0.8473\ln(hardness)+0.884]} \qquad MDEL = 2.00[\min(0.501CMC, 0.694CCC)]$$

Where: CCC = criteria continuous concentration (four-day average)
CMC = criteria maximum concentration (one-hour average)
AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation

[1] The Discharger shall sample for hardness at the same time as the metal listed in the above table and, in calculating the applicable limitation, the Discharger shall use the lowest of the R-1, R-2, or R-3 hardness results.

FACT SHEET

ORDER NO. R5-2003-0085
CITY OF YUBA CITY
WASTEWATER TREATMENT FACILITY
SUTTER COUNTY
NPDES NO. CA0079260

SCOPE OF PERMIT

This renewed Order regulates the discharge of up to 7.0 million gallons per day (mgd), design average dry weather flow (ADWF), of effluent from the Yuba City Wastewater Treatment Facility (WWTF). This Order includes effluent, groundwater, water supply, sludge, and surface water limitations, monitoring and reporting requirements, additional study requirements, and reopener provisions for effluent and groundwater constituents.

BACKGROUND INFORMATION

The City of Yuba City (Discharger) provides sewerage service for the City of Yuba City and serves a population of approximately 40,000. In addition, the Yuba City WWTF accepts septage from unsewered portions of Sutter and Yuba Counties. The WWTF design average dry weather flow capacity is 7.0 mgd. The treatment system at this facility consists of comminution, aerated grit removal, nutrient addition, primary sedimentation, pure oxygen aeration, secondary sedimentation, disinfection, dechlorination, and pH adjustment. Sludge is treated in an anaerobic digester, dewatered by belt press and/or drying beds, and disposed of off-site as landfill cover material. Treated municipal and industrial wastewater is discharged to the Feather River or to disposal ponds within the levee on the eastern side of the Feather River.

RECEIVING WATER BENEFICIAL USES AND ASSIMILATIVE CAPACITY

The receiving stream is the Feather River, which is tributary to the Sacramento River. The Discharger requested that dilution, mixing, and assimilative capacity be considered when determining constituent limitations for the effluent. The SIP defines a completely-mixed discharge condition to mean that there is "*…not more than a 5 percent difference, accounting for analytical variability, in the concentration of a pollutant across a transect of the water body at a point within two stream/river widths from the discharge point*." The Discharger has submitted the results of a study of the variation of a conservative constituent (electrical conductivity) downstream of the point of discharge. Two transects were studied; in each case, the variation in electrical conductivity across the transect was less than three percent. The Regional Board is not required to grant a mixing zone or utilize the full assimilative capacity of the receiving stream. The Discharger has not submitted any data demonstrating that an acute mixing zone would not restrict the passage of aquatic life or cause acutely toxic conditions to aquatic life passing through the mixing zone. No mixing zone for acute toxicity is granted in this Order. For constituents for which assimilative capacity exists, this Order permits a mixing zone for chronic toxicity-, human health-, aesthetic-, and agriculture-based water quality standards, objectives, and criteria and includes Effluent Limitations that reflect the mixing zone and assimilative capacity, as well as the facility's current level of treatment.

Historical flow rates were used in granting dilution for chronic, or longer term, Effluent Limitations. The historical flow rates were assessed from data acquired from two flow gages located upstream of the Yuba City wastewater treatment plant outfall—one near Gridley on the Feather River and the other near Marysville on the Yuba River. The State Water Resources Control Board has issued recorded water rights

for water withdrawals from the Feather River, including a diversion of 2,000 cfs, between the cited flow measuring gages and the City's effluent discharge. The historical low flow as determined from the flow gages was 743 cfs. Utilization of the water rights would result in zero flow at the point of discharge at low flow conditions and significantly reduced flows under normal flow regimes. This Order contains a Provision that requires the City to assess the worst-case low flow conditions, including maximum water right diversions and any minimum flow requirements/agreements with the Department of Water Rights. Based on the minimum flow assessment, this Order may be reopened and revised to reflect the low flow conditions.

The Basin Plan states, on page II-1.00, "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…*" and "*disposal of wastewaters is* [not] *a prohibited use of waters of the state; it is merely a use which cannot be satisfied to the detriment of beneficial uses*." The existing and beneficial uses that currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1 of the Basin Plan. The beneficial uses of the Feather River, as identified in Table II-1 of the Basin Plan, are municipal and domestic supply, agricultural irrigation, body contact water recreation, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. Existing beneficial uses of the Feather River, other than those identified in Table II-1 of the Basin Plan, include groundwater recharge and freshwater replenishment.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL

The City of Yuba City conducted monitoring for priority and non-priority pollutants in September 1993; March and May 1994; December 1995; February and March 1996; March, May, September, and December 1998; March, June, September, and December 1999; March, May, August, and November 2000; January, March, May, September, and December 2001; and each month in 2002. The analytical results of these sampling events were submitted to the Regional Board. In addition, Regional Board staff collected samples during the 24 June 2002 inspection. The results of these sampling events were used in developing Order No.R5-2003-0085. All detectable results from these analyses are summarized in Table 1 (below). Data used in determining effluent limitations also included discharger self-monitoring report results for March 1999 through February 2003. Effluent limitations are included in the Order to protect the beneficial uses of the receiving stream and to ensure that the discharge complies with the Basin Plan objective that toxic substances not be discharged in toxic amounts. Unless otherwise noted, all mass limitations in Order No. R5-2003-0085 were calculated by multiplying the concentration limitation by the design flow and the appropriate unit conversion factors.

The *SIP* states that if "*…all reported detection limits of the pollutant in the effluent are greater than or equal to the C* [water quality criterion or objective] *value, the RWQCB* [Regional Board] *shall establish interim requirements…that require additional monitoring for the pollutant….*" All reported detection limits for 1,2-benzanthracene; 2,4-dinitrotoluene; 3,3'-dichlorobenzidine; 3,4-benzfluoranthene; benzidine; benzo(a)pyrene; benzo(k)fluoranthene; bis(2-chloroethyle) ether; chrysene; dibenzo (a,h)-anthracene; indeno(1,2,3-c,d)pyrene; N-nitrosodimethylamine; N-nitrosodi-n-propylamine; 4,4'-DDD; 4,4'-DDE; alpha-hexachlorocyclohexane (α-BHC); aldrin; chlordane; dieldrin; heptachlor; heptachlor epoxide; PCB-1016; PCB-1221; PCB-1232; PCB-1242; PCB-1248; PCB-1254; PCB-1260; and 2,3,7,8-TCDD (Dioxin)

are greater than or equal to corresponding applicable water quality criteria or objectives. Monitoring for these constituents has been included in this Order.

Reasonable potential (RP) was determined by calculating the projected MEC (maximum effluent concentration) for each constituent and comparing it to applicable water quality criteria or objectives; if a criterion or objective was exceeded, the discharge was determined to have reasonable potential to exceed a water quality criterion or objective for that constituent. The projected MEC (maximum effluent concentration) is determined by multiplying the observed MEC (the maximum detected concentration) by a factor that accounts for statistical variation. The multiplying factor is determined (for 99% confidence level and 99% probability basis) using the number of results available and the coefficient of variation (standard deviation divided by the mean) of the sample results. In accordance with the SIP, non-detect results were counted as one-half the detection level when calculating the mean. For all constituents for which the source of the applicable water quality criterion is the CTR or NTR, the multiplying factor is 1. Reasonable potential evaluation was based on the methods used in the SIP and the U.S. EPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] (TSD).

Effluent Limitations for water quality-based limitations were calculated in accordance with Section 1.4 of the SIP and the TSD. The following paragraphs describe the general methodology used for calculating Effluent Limitations.

Calculations for Dilution Ratios

The SIP, Section 1.4.2.1 (p.14), defines the dilution ratio, *D*, as the critical receiving water flow divided by the effluent flow. It would be imprudent to develop permit limitations that fully utilize the existing available assimilative capacity. For this permit, Regional Board staff determined to utilize no more than half of the available assimilative capacity. In addition, Regional Board staff considered that the Linda County Water District is planning to change its discharge location from ponds located to the north of the Yuba City WWTP outfall and ponds to the Feather River. The two outfalls would be in close proximity. The SIP prohibits the overlapping of mixing zones. Therefore, Regional Board staff determined that the dilution ratio would be modified to reflect the design average dry weather flow (ADWF) contributions of both the Linda County Water District WWTP and the Yuba City WWTF. The current Yuba City WWTF ADWF is 7.0 mgd and the current Linda County Water District ADWF is 1.8 mgd. Of the half of the available assimilative capacity to be utilized, Yuba City's fraction of the combined design flow is 80%. 80% of the available 50% is equal to 40% of the calculated *D* values.

- 1Q10 = 1,000 cfs based on 1983 Department of Fish and Game agreement regarding minimum flow in the Feather River (1,000 cfs and 1,700 cfs) and compromise between Discharger (1,061 cfs) and Regional Board (981 cfs to 1,001 cfs, depending on method) staff calculations.
- 7Q10 = 1,000 cfs based on 1983 Department of Fish and Game agreement regarding minimum flow in the Feather River (1,000 cfs and 1,700 cfs) and compromise between Discharger (1,091 cfs) and Regional Board (986 cfs to 1,002 cfs, depending on method) staff calculations.
- Harmonic mean flow = 3,600 cfs based on compromise between Discharger (3,612 cfs) and Regional Board (3,586 cfs) staff calculations.
- Maximum daily flow = 11.9 cfs (1 January 2000 through 28 February 2003).
- Maximum 4-day average flow = 11.3 cfs (1 January 2000 through 28 February 2003).
- Long-term average flow = 8.5 cfs (1 January 2000 through 28 February 2003)

For acute aquatic toxicity criteria/objectives, $D = \frac{1Q10}{Max\,daily\,Q} = \frac{1{,}000\,cfs}{11.9\,cfs} = 84.3$. The Discharger has not submitted any data demonstrating that an acute mixing zone would not restrict the passage of aquatic life or cause acutely toxic conditions to aquatic life passing through the mixing zone. Therefore, a dilution ratio will not be used in calculating short-term (i.e., maximum daily average or MDEL) limitations for aquatic toxicity criteria.

For chronic aquatic toxicity criteria/objectives, $D = \frac{7Q10}{Max\,4-day\,ave\,Q} = \frac{1{,}000\,cfs}{11.3\,cfs} = 88.9$. 40% is 35.6.

For human health criteria/objectives, $D = \frac{Harmonic\,Mean\,Q}{Long-term\,ave\,Q} = \frac{3{,}600\,cfs}{8.5\,cfs} = 423$. 40% is 169.

Calculations for Effluent Limitations

In calculating maximum effluent limitations, variations of the equation $ECA = C + D(C - B)$ were used as follows:

$ECA_{acute} = CMC$ $\qquad$ $ECA_{chronic} = CCC + D_{chronic}\left(CCC - B_{chronic}\right)$

$ECA_{HH} = HH + D_{HH}\left(HH - B_{HH}\right)$

where: ECA_{acute} = effluent concentration allowance for acute (one-hour average) toxicity criterion
$ECA_{chronic}$ = effluent concentration allowance for chronic (four-day average) toxicity criterion
ECA_{HH} = effluent concentration allowance for human health, agriculture, or other long-term criterion/objective
CMC = criteria maximum concentration (one-hour average)
CCC = criteria continuous concentration (four-day average, unless otherwise noted)
HH = human health, agriculture, or other long-term criterion/objective
$D_{chronic}$ = dilution ratio for chronic toxicity
D_{HH} = dilution ratio for human health, agriculture, or other long-term criterion/objective
$B_{chronic}$ = background concentration for chronic toxicity (observed maximum R-1 concentration or lowest detection level if all results are non-detect)
B_{HH} = background concentration for human health. (for carcinogens: arithmetic mean of R-1 concentrations, for non-carcinogens: observed maximum R-1 concentration; or lowest detection level if all results are non-detect)

Acute and chronic toxicity ECAs were then converted to equivalent long-term averages (LTA) using statistical multipliers and the lowest is used. Additional statistical multipliers were then used to calculate the maximum daily effluent limitation (MDEL) and the average monthly effluent limitation (AMEL). The statistical multipliers were calculated using data shown in Table 1 (p. 7).

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

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

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

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

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

The results of these calculations were then compared to the WWTF's actual performance. Specifically, results were compared to a) the maximum observed effluent concentration (MEC) and b) the mean plus 3.3 standard deviations (value at or under which 99.9% of results are expected to lie). If the AMEL calculated as shown above was greater than the largest of the MEC and the mean plus 3.3 standard deviations, then the AMEL was set at the largest of the MEC and the mean plus 3.3 standard deviations and the MDEL was calculated using the following equation.

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

Table 1—Yuba City Wastewater Treatment Facility Order No. R5-2003-0085: Statistics for Constituents with Detectable Results (µg/l)

Constituent[1]	Sample Point	Max.	Mean	σ	CV[2]	# Results
1,1,1-Trichloroethane	Effluent	4.10	0.67	0.98	0.60	34
	R-1	0.00	0.04	0.06	0.60	13
cis-1,2-dichloroethene	Effluent	2.20	0.53	0.61	1.15	25
	R-1	0.00	0.05	0.00	0.60	13
1,2,3-Trichlorobenzene	Effluent	0.22	0.09	0.00	0.60	6
	R-1	0.14	0.07	0.03	0.60	10
1,2,4-Trichlorobenzene	Effluent	0.16	1.51	1.35	0.60	30
	R-1	0.16	0.13	0.26	0.60	13
1,2,4-Trimethylbenzene	Effluent	0.00	0.06	NA	NA	1
	R-1	0.27	0.13	0.10	0.60	4
1,4-Dichlorobenzene	Effluent	2.20	1.27	0.81	0.64	34
	R-1	0.00	0.07	0.05	0.60	13
Acetone	Effluent	6.20	3.52	1.69	0.48	14
	R-1	3.60	1.20	0.90	0.60	9
Benzene	Effluent	0.00	0.59	0.81	060	30
	R-1	0.09	0.05	0.06	1.18	13
Bromoform	Effluent	0.23	0.56	0.75	0.60	34
	R-1	0.00	0.07	0.05	0.60	13
Chloroform	Effluent	46.0	10.96	10.56	0.96	34
	R-1	0.00	0.05	0.06	0.60	13
Chloromethane	Effluent	1.10	0.61	0.75	1.23	34
	R-1	0.18	0.10	0.06	0.60	13
Dibromochloromethane	Effluent	1.40	0.64	0.77	1.19	34
	R-1	0.00	0.05	0.06	0.60	13
Dichlorobromomethane	Effluent	7.60	1.53	1.84	1.20	34
	R-1	0.00	0.04	0.06	0.60	13
Dichloromethane	Effluent	0.32	1.18	1.47	1.25	34
	R-1	0.16	0.06	0.07	1.07	13
Ethylbenzene	Effluent	0.33	0.73	1.08	0.60	30
	R-1	0.11	0.07	0.06	0.60	13
Naphthalene	Effluent	0.25	1.52	1.37	0.60	29
	R-1	0.14	0.06	0.03	0.60	12
Tetrachloroethene	Effluent	7.70	2.39	2.00	0.84	34
	R-1	0.00	0.06	0.06	0.60	13
Toluene	Effluent	3.00	0.93	0.94	1.02	30
	R-1	0.32	0.11	0.11	0.97	13
Trichloroethene	Effluent	3.20	0.73	0.87	1.19	34
	R-1	0.00	0.05	0.06	0.60	13
Methyl-tert-butyl ether	Effluent	7.51	1.05	1.55	1.47	24
	R-1	1.80	0.64	0.52	0.82	12

1 CTR constituents are shown in *italics*.

2 Coefficient of variation.

***Table 1—Yuba City Wastewater Treatment Facility Order No. R5-2003-0085: Statistics for Constituents with Detectable Results* (µg/*l*)**

Constituent[1]	Sample Point	Max.	Mean	σ	CV[2]	# Results
Xylenes	Effluent	1.92	0.57	0.62	0.60	27
	R-1	0.40	0.18	0.09	0.60	13
2 -Chlorophenol	Effluent	0.00	2.46	1.21	0.60	22
	R-1	22	7.60	12.47	0.60	3
2,4,6-Trichlorophenol	Effluent	7.80	2.96	2.22	0.60	22
	R-1	0.00	0.95	0.79	0.60	5
4-Chloro-3-methylphenol	Effluent	0.00	2.94	3.28	0.60	22
	R-1	20	4.50	8.70	0.60	5
4-Nitrophenol	Effluent	0.00	3.50	3.36	0.60	22
	R-1	31	8.46	15.03	0.60	4
Bis(2-ethylhexyl) phthalate	Effluent	149	15.60	32.85	2.11	22
	R-1	10	3.08	3.96	0.60	5
N-nitrosdi-n-propylamine	Effluent	0.00	2.46	1.05	0.60	21
	R-1	2.80	1.41	1.12	0.60	4
Pentachlorophenol	Effluent	15.3	4.08	4.79	0.60	22
	R-1	0.00	0.65	0.94	0.60	5
Aluminum	Effluent	562	235	79.39	0.34	27
	R-1	530	199	137.2	0.69	11
Arsenic	Effluent	44.9	4.50	7.92	1.76	29
	R-1	3.30	1.33	1.09	0.82	13
Barium	Effluent	40	22.58	6.42	0.28	12
	R-1	20	14.69	5.28	0.36	11
Beryllium	Effluent	1.69	0.85	1.78	0.60	29
	R-1	0.35	1.14	2.66	0.60	13
Cadmium	Effluent	6.40	2.57	2.32	0.90	29
	R-1	0.29	0.11	0.08	0.60	13
Chromium (total)	Effluent	16.0	3.66	3.07	0.84	29
	R-1	7.20	1.27	1.90	1.49	13
Copper	Effluent	67.0	11.61	11.77	1.01	29
	R-1	3.30	2.15	2.53	1.18	13
Cyanide	Effluent	6.50	2.44	2.99	1.23	14
	R-1	0.00	2.92	2.57	0.60	12
Fluoride	Effluent	930	653.4	241.3	0.37	12
	R-1	930	167.0	289.2	0.60	11
Iron	Effluent	330	197.0	80.92	0.41	27
	R-1	910	366.2	227.0	0.62	11
Lead	Effluent	1.90	18.69	17.39	0.60	29
	R-1	0.00	0.17	0.25	0.60	13
Mercury	Effluent	0.03	0.07	0.05	0.76	33
	R-1	0.01	0.02	0.07	3.25	13
Manganese	Effluent	430	101.6	106.8	1.05	12
	R-1	110	37.91	30.22	0.80	11
Molybdenum	Effluent	35	11.25	6.45	0.60	16
	R-1	No Data				

Table 1—Yuba City Wastewater Treatment Facility Order No. R5-2003-0085: Statistics for Constituents with Detectable Results (µg/l)

Constituent[1]	Sample Point	Max.	Mean	σ	CV[2]	# Results
Nickel	Effluent	8	9.13	5.97	0.65	31
	R-1	10	2.00	2.51	1.25	13
Selenium	Effluent	3.30	2.17	1.75	0.60	29
	R-1	3.30	1.12	0.85	0.60	13
Silver	Effluent	0.35	2.06	1.76	0.60	29
	R-1	0.00	0.09	0.12	0.60	13
Thallium	Effluent	1.00	26.37	24.92	0.95	29
	R-1	2.20	0.57	0.82	1.44	13
Tributyltin	Effluent	0.009	0.01	0.02	1.74	14
	R-1	0.040	0.11	0.31	0.60	10
Zinc	Effluent	120	64.91	21.26	0.33	31
	R-1	40	15.62	11.93	0.76	13
4,4'-DDT	Effluent	0.012	0.03	0.03	0.60	18
	R-1	0.000	0.02	0.03	0.60	12
Lindane (γ-BHC)	Effluent	0.13	0.03	0.04	1.42	18
	R-1	0.00	0.01	0.00	0.60	13
Bentazon	Effluent	1.00	0.61	0.33	0.60	3
	R-1	0.00	0.42	0.01	0.60	3
Carbofuran	Effluent	2.38	1.55	1.03	0.60	4
	R-1	0.00	1.11	0.93	0.60	4
Dalapon	Effluent	17	7.90	8.36	0.60	4
	R-1	0.00	0.66	0.16	0.60	4
Molinate (Ordram)	Effluent	0.11	0.22	0.38	0.60	6
	R-1	0.00	0.21	0.39	0.60	6
Picloram	Effluent	1.10	0.46	0.56	0.60	3
	R-1	0.89	0.39	0.44	0.60	3
Simazine (Princep)	Effluent	0.17	0.14	0.18	0.60	6
	R-1	0.00	0.12	0.17	0.60	7
Thiobencarb	Effluent	0.88	0.35	0.30	0.60	6
	R-1	0.00	0.19	0.15	0.60	6
Diazinon	Effluent	0.47	0.22	0.15	0.71	13
	R-1	0.00	0.13	0.13	0.60	12
Dimethoate	Effluent	0.29	0.24	0.15	0.60	9
	R-1	0.00	0.17	0.20	0.60	8
Metolachlor	Effluent	0.46	0.23	0.20	0.60	5
	R-1	0.00	0.11	0.07	0.60	6
Butachlor	Effluent	0.33	0.16	0.11	0.60	5
	R-1	0.00	0.08	0.06	0.60	6

***Table 1—Yuba City Wastewater Treatment Facility Order No. R5-2003-0085: Statistics for Constituents with Detectable Results* (µg/l)**

Constituent[1]	Sample Point	Max.	Mean	σ	CV[2]	# Results
Ethion	Effluent	0.17	0.13	0.09	0.60	7
	R-1	0.00	0.14	0.08	0.60	6
Ethoprop	Effluent	0.12	0.12	NA	0.60	1
	R-1	0.00	0.08	0.03	0.60	3
Merphos	Effluent	0.45	0.25	0.10	0.60	6
	R-1	0.00	0.23	0.06	0.60	6
Monocrotophos	Effluent	1.20	0.81	0.44	0.60	6
	R-1	0.00	0.57	0.49	0.60	6
Ronnel	Effluent	0.00				0
	R-1	0.31	0.19	0.18	0.60	2
Ammonia (mg/l)[3]	Effluent	41	18.56	8.46	0.46	24
	R-1	0.46	0.12	0.12	1.00	12
Chloride (mg/l)	Effluent	99	86.46	27.83	0.32	12
	R-1	3.20	1.83	0.66	0.36	12
Foaming Agents (MBAS, mg/l)	Effluent	0.96	0.44	0.28	0.65	11
	R-1	0.12	0.03	0.03	0.60	11
Phosphorous, Total (as P, mg/l)	Effluent	8.80	2.88	2.24	0.78	12
	R-1	0.00	0.03	0.02	0.60	12
Specific Conductance (µmhos/cm)	Effluent	1,000	675	96	0.14	1,228
	R-1	150	96	16	0.17	130
Sulfate (mg/l)	Effluent	110	32.67	25.64	0.79	12
	R-1	4.9	3.46	0.88	0.25	12
Sulfide (as S, mg/l)	Effluent	0.50	0.09	0.13	0.60	12
	R-1	0.00	0.05	0.00	0.60	12
Total Dissolved Solids (mg/l)	Effluent	5,000	402	611	0.60	12
	R-1	150	67	28	0.60	12

[3] Ammonia data was also used in the development of nitrite and nitrite plus nitrate limitations.

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "*…those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.).*" The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." The lower Feather River is listed as a WQLS for mercury, toxicity, Group A pesticides, and toxaphene. The lower Feather River is listed in the 303(d) list of impaired water bodies for diazinon, Group A pesticides, mercury, and unknown toxicity. Therefore, the receiving water for the discharge has no assimilative capacity for these constituents and applicable water quality standards must be applied as end-of-pipe effluent limitations. Effluent Limitations for these constituents are included in this Order.

Aluminum—The Basin Plan contains a narrative toxicity objective that prohibits the discharge of toxic materials in toxic concentrations. The Basin Plan also contains a translator method for converting narrative criteria into numeric limitations. Aquatic habitat is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a level necessary to protect aquatic life. U.S. EPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The recommended four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 µg/*l* and 750 µg/*l*, respectively. U.S. EPA recommends that the ambient criteria are protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria. The receiving stream has been measured to have a low hardness and the receiving water and the effluent have each been measured to have a pH below the Basin Plan water quality objective of 6.5. Both of these conditions are supportive of the applicability of the ambient water quality criteria for aluminum, according to U.S. EPA's development document. According to information submitted by the Discharger in the Report of Waste Discharge and in additional submittals of analytical laboratory results, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the U.S. EPA National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. Aluminum was detected in an effluent sample collected 25 January 2001 at a concentration of 562 µg/*l*. The measured maximum effluent concentration is greater than the water quality criteria; therefore, effluent limitations for aluminum are required. The maximum observed upstream receiving water aluminum concentration was 530 µg/*l*; there is no assimilative capacity for aluminum based on the chronic toxicity criterion.

The U.S. EPA Technical Support Document for Water Quality-based Toxics Control recommends converting chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$AMEL = 1.30\left[\min(0.492CMC, 0.687CCC)\right] \quad MDEL = 2.03\left[\min\left(0.492CMC, 0.687CCC\right)\right]$$

where: AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation

CCC = criteria continuous concentration (four-day average)
CMC = criteria maximum concentration (one-hour average)

Order No. R5-2003-0085 includes maximum one-day, four-day, and one-month effluent limitations for aluminum.

Ammonia, Nitrite, and Nitrate— Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate, and denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification and denitrification processes to remove ammonia, nitrate, and nitrite from the waste stream. Inadequate or incomplete nitrification or denitrification may result in the discharge of ammonia, nitrate, or nitrite to the receiving stream in unacceptable concentrations.

In water, un-ionized ammonia (NH_3) exists in equilibrium with the ammonium ion (NH_4^+). The toxicity of aqueous ammonia solutions to aquatic organisms is primarily attributable to the un-ionized ammonia form, with the ammonium ion being relatively less toxic. The relative concentrations of these two forms are pH- and temperature-dependent. Total ammonia refers to the sum of these two forms in aqueous solutions.

The Basin Plan includes a water quality objective that "*[a]ll water shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*". U.S. EPA's Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life, for total ammonia, recommends acute (1-hour average) standards based on pH and chronic (30-day average) standards based on pH and temperature. It also recommends a maximum four-day average concentration. U.S. EPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the receiving stream has a beneficial use of cold freshwater habitat, the recommended criteria for waters where salmonids are present were used.

U.S. EPA has presented the acute ammonia criteria in three ways: as equations, in a table, and in graphs that relate pH to ammonia concentrations. Attachment B shows the equation and table used for the 30-day average concentration criteria recommended for waters where fish early life stages are present and the equation and table used for the 1-hour average concentration criteria recommended for waters where salmonid fish are present. The maximum observed effluent ammonia (as N) concentration was 41 mg/*l*, from a sample collected 9 December 2002. The maximum observed upstream receiving water ammonia (as N) concentration was 0.46 mg/l, from a sample collected 30 January 2002. Using a chronic toxicity dilution ratio of 35.6, Effluent Limitations for ammonia were calculated as follows:

$$CMC_{salmonids\ \ present} = \left(\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}} \right)$$

$$CCC_{early\ life\ present} = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}} \right) \cdot MIN\left(2.85, 1.45 \cdot 10^{0.028(25-T)}\right)$$

$$ECA_{acute} = CMC_{salmonids\ present} \qquad ECA_{chronic} = 2.5CCC + 35.6(2.5CCC - 0.46)$$

$$AMEL_{early\ life\ present} = 1.65[MIN(0.608ECA_{chronic}, 0.400ECA_{acute})]$$

Where: CMC = criteria maximum concentration (one-hour average)
CCC = criteria continuous concentration (30-day average) (For ammonia, 2.5CCC is equal to the four-day average criterion.)
AMEL = average monthly effluent limitation
ECA = effluent concentration allowance

With dilution considerations, the one-hour average is the critical criterion at any pH and temperature combination. Therefore, Effluent Limitations for ammonia are presented as being only pH-dependent. Effluent pH may dominate immediately upon effluent discharge into the receiving stream, while the ambient river pH is likely to dominate outside of the zone of initial mixing. Ammonia toxicity criteria and pH are inversely related. Due to the interdependent and non-conservative natures of pH and ammonia, Order No.R5-2003-0085 requires the highest of the effluent and R-1 pH values to be used in determining the appropriate Effluent Limitations in order to protect the beneficial uses of aquatic habitat..

For waters designated as having the beneficial use of municipal and domestic supply (MUN), the Basin Plan includes a water quality objective that water "*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.…: Tables 64431-A (Inorganic Chemicals)…*". U.S. EPA has developed a primary MCL and an MCL goal of 1,000 µg/*l* for nitrite (as nitrogen). The primary MCL listed in Title 22 of the California Code of Regulations (CCR), Table 64431-A, is also 1,000 µg/*l* for nitrite as nitrogen. For nitrate, U.S. EPA has developed Drinking Water Standards (10,000 µg/*l* as Primary Maximum Contaminant Level) and Ambient Water Quality Criteria for protection of human health (10,000 µg/*l* for non-cancer health effects). Title 22 CCR, Table 64431-A, also includes a primary MCL of 10,000 µg/*l* for the sum of nitrate and nitrite, measured as nitrogen. Recent toxicity studies have indicated a possibility that nitrate is toxic to aquatic organisms.

The conversion of ammonia to nitrites and the conversion of nitrites to nitrates present a reasonable potential for the discharge to exceed the primary maximum contaminant levels for nitrite and the sum of nitrite and nitrate. Therefore, Order No.R5-2003-0085 includes limitations for nitrite and the sum of nitrite and nitrate.

Because some nitrification of the waste stream may be necessary to comply with Effluent Limitations for ammonia, the conversion of ammonia to nitrite and nitrate was considered in determining Effluent Limitations for nitrite and the sum of nitrite plus nitrate. The maximum observed effluent ammonia (as N) concentration was 41 mg/*l*, from a sample collected 9 December 2002. The maximum observed upstream receiving water ammonia (as N) concentration was 0.46 mg/l, from a sample collected 30 January 2002. These data were used in calculating Effluent Limitations for nitrite and nitrite plus

nitrate. Using the human health dilution ratio of 169, the average monthly Effluent Limitations were calculated as follows:

$$ECA_{nitrite} = 1 + 169(1 - 0.46) = 92.4\, mg/l \qquad ECA_{nitrite+nitrate} = 10 + 169(10 - 0.46) = 1{,}625\, mg/l$$

The effluent concentration allowances were set equal to the average monthly limitation. Since the calculated AMELs exceeded the highest of the maximum observed effluent concentration (41 mg/*l*) and the mean plus 3.3 standard deviations (46 mg/*l*), the AMELs were set equal to 50 mg/*l* (rounded up from 46 mg/*l*).

Order No.R5-2003-0085 includes average monthly and maximum daily effluent limitations for nitrite and nitrite plus nitrate and one-hour average and average monthly effluent limitations for ammonia.

Arsenic—The Basin Plan includes water quality objectives that "*waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*" and that "*waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses*". Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, arsenic in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the U.S. EPA Primary Maximum Contaminant Level (MCL) of 10 µg/*l* for arsenic. An Effluent Limitation for arsenic is included in this Order and is based on protection of the beneficial use of municipal and domestic water supply, the Basin Plan water quality objective for chemical constituents and toxicity, and the U.S. EPA Primary MCL.

Arsenic was detected in an effluent sample collected 25 January 2001 at a concentration of 44.9 µg/*l*. The primary maximum contaminant level is 10 µg/*l*. The measured maximum effluent concentration is greater than the water quality standard; therefore, an Effluent Limitation for arsenic is required.

The maximum observed upstream receiving water arsenic concentration was 3.3 µg/*l*, from a sample collected 11 March 2002. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 5.0 µg/*l*, but exceeded the method detection limit (MDL) of 1.3 µg/*l*. The result for the method blank for this analysis was 2.76 µg/*l* (J flag). The result for the effluent sample for this analysis was non-detect. The result for the receiving water analysis is questionable.

The next highest observed upstream receiving water arsenic concentration was 2.9 µg/*l*, from a sample collected 9 December 2002. The concentration exceeded both the MDL of 0.061 µg/*l* and the reporting limit of 2.0 µg/*l*. The result for the method blank for this analysis was 1.12 µg/*l* (J flag). The result for the effluent sample for this analysis was 3.9 µg/*l*. The result for the receiving water analysis is questionable.

The next highest observed upstream receiving water arsenic concentration was 2.0 µg/*l*, from a sample collected 4 November 2002. The concentration exceeded the MDL of 0.061 µg/*l* and equaled the reporting limit of 2.0 µg/*l*. The result for the method blank was non-detect. These data were used in

calculating Effluent Limitations for arsenic. Using the human health dilution ratio of 169, the average monthly Effluent Limitation was calculated as follows:

$$ECA = 10 + 169(10 - 2.0) = 1{,}364\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (44.9 µg/*l*) and the mean plus 3.3 standard deviations (31 µg/*l*), the AMEL was set equal to 40 µg/*l* (rounded from 44.9 µg/*l*).

Order No.R5-2003-0085 includes an average monthly effluent limitation for arsenic.

Bis (2-ethylhexyl) phthalate— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for bis (2-ethylhexyl) phthalate. The CTR includes a standard for the protection of human health based on a one-in-a-million cancer risk for bis (2-ethylhexyl) phthalate of 1.8 µg/*l*. Municipal and domestic supply is a beneficial use of the receiving water.

Bis (2-ethylhexyl) phthalate was detected in an effluent sample collected 16 September 1998 at a concentration of 149 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent bis (2-ethylhexyl) phthalate concentration is 149 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 1.8 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for bis (2-ethylhexyl) phthalate are required. The arithmetic mean of the upstream receiving water bis (2-ethylhexyl) phthalate concentrations is 3.1 µg/*l*; no assimilative capacity for bis (2-ethylhexyl) phthalate is available. The AMEL was set equal to the standard of 1.8 µg/*l* and the MDEL was calculated as follows:

$$MDEL = \left(\frac{8.85}{2.85}\right) AMEL = 5.6\ \mu g / l$$

Where: AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation

Order No. R5-2003-0085 includes average monthly and maximum daily effluent limitations for bis (2-ethylhexyl) phthalate.

BOD and TSS—40 Code of Federal Regulations (CFR), Section 133.102 contains regulations describing the minimum level of effluent quality—for biochemical oxygen demand (BOD) and total suspended solids (TSS)—attainable by secondary treatment. These standards continue to be applied in Order No. R5-2003-0085.

In addition, 40 CFR 133.102, in describing the minimum level of effluent quality attainable by secondary treatment, states that the 30-day average percent removal shall not be less than 85 percent.

Order No. R5-2003-0085 contains a limitation requiring an average of 85 percent removal of BOD and TSS over each calendar month.

Cadmium— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for cadmium. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for cadmium. Freshwater aquatic habitat is a beneficial use of the receiving stream. The standards for cadmium are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for cadmium in freshwater are 1.101672-[0.041838 X ln(hardness)] for the chronic criteria and 1.136672-0.041838 X ln(hardness)] for the acute criteria. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding standards are 0.89 µg/*l* and 0.80 µg/*l* for the acute and chronic criteria, respectively.

Cadmium was detected in an effluent sample collected 7 February 2002 at a concentration of 6.4 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent cadmium concentration is 6.4 µg/*l*. Using the worst-case (lowest) measured hardness from the effluent and receiving water, (23.8 mg/*l*), the applicable continuous concentration (maximum four-day average concentration) is 0.80 µg/*l* and the applicable maximum concentration (maximum one-hour average concentration) is 0.89 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for cadmium are required.

The maximum observed upstream receiving water cadmium concentration was 0.29 µg/*l*, from a sample collected 7 February 2002. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 0.50 µg/*l*, but exceeded the method detection limit (MDL) of 0.13 µg/*l*. The result for the method blank for this analysis was 0.367 µg/*l* (J flag). The result for the receiving water analysis is questionable.

The next highest observed upstream receiving water cadmium concentration was 0.23 µg/*l*, from a sample collected 6 August 2002. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 0.50 µg/*l*, but exceeded the method detection limit (MDL) of 0.13 µg/*l*. The result for the method blank for this analysis was 0.198 µg/*l* (J flag). The result for the receiving water analysis is questionable.

There were no other detections of cadmium in the upstream receiving water. The minimum detection level was 0.13 µg/*l*. These data were used in calculating Effluent Limitations for cadmium. Using the chronic toxicity dilution ratio of 35.6, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$CCC = e^{[0.7852\ln(hardness)-2.715]} \qquad AMEL = 1.85[\min(0.224ECA_{acute}, 0.404ECA_{chronic})]$$

$$CMC = e^{[1.128\ln(hardness)-3.6867]} \qquad MDEL = 4.46[\min(0.224ECA_{acute}, 0.404ECA_{chronic})]$$

$$ECA_{acute} = CMC \qquad ECA_{chronic} = CCC + 35.6(CCC - 0.13)$$

Order No. R5-2003-0085 includes hardness-dependent average monthly and maximum daily effluent limitations for cadmium presented in total concentrations.

Chlorine, Total Residual—The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. The Discharger uses chlorine for disinfection of the effluent waste stream. Aquatic habitat is a beneficial use of the Feather River. Chlorine can cause toxicity to aquatic organisms when discharged to surface waters. U.S. EPA recommends, in its Ambient Water Quality Criteria for the protection of fresh water aquatic life, maximum 1-hour average and 4-day average chlorine concentrations of 0.019 µg/*l* and 0.011 µg/*l*, respectively. The use of chlorine as a disinfectant presents a reasonable potential that it could be discharged in toxic concentrations. Effluent Limitations for chlorine have been included in this Order to protect the receiving stream aquatic life beneficial uses. Effluent Limitations have been established based on the ambient water quality criteria for chlorine.

The U.S. EPA Technical Support Document for Water Quality-Based Toxics Control [EPA/505/2-90-001] contains statistical methods for converting chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

CCC = 0.011 mg/*l* CMC = 0.019 mg/*l*

$$AMEL = 1.0[\min(1.0CMC, 1.0CCC)]$$

where: AMEL = average monthly effluent limitation
CCC = criteria continuous concentration (four-day average)
CMC = criteria maximum concentration (one-hour average)

The resulting average monthly effluent total residual chlorine concentration limitation is 0.010 mg/*l*. Because chlorine is a toxic constituent that can be and will be monitored continuously, an average one-hour limitation is considered more appropriate than an average daily limitation. Average one-hour, four-day, and one-month effluent limitations for chlorine, based on these criteria, are included in Order No.R5-2003-0085.

Chloroform— Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards,

departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and U.S. EPA in evaluating health risks via drinking water exposure of 70 kg body weight and 2 liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 µg/*l* (ppb) at the one-in-a-million cancer risk level. This risk level is consistent with that used by the Department of Health Services (DHS) to set *de minimis* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by U.S. EPA in applying human health protective criteria contained in the *National Toxics Rule* and the *California Toxics Rule* to priority toxic pollutants in California surface waters. Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality standard for chloroform. Therefore, Effluent Limitations for chloroform are included in this Order and are based on the Basin Plan toxicity objective and OEHHA Toxicity Criteria for the protection of human health.

Chloroform was detected in an effluent sample collected 2 September 1993 at a concentration of 46 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent chloroform concentration is 432 µg/*l*. The equivalent concentration for the OEHHA cancer potency factor is 1.1 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, an Effluent Limitation for chloroform is required. The arithmetic mean of the upstream receiving water chloroform concentrations is 0.05 µg/*l*. These data were used in calculating Effluent Limitations for chloroform. Using the human health dilution ratio of 169, the average monthly Effluent Limitation was calculated as follows:

$$ECA = 1.1 + 169(1.1 - 0.05) = 187\ \mu g\ /\ l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (46 µg/*l*) and the mean plus 3.3 standard deviations (45.8 µg/*l*), the AMEL was set equal to 46 µg/*l*.

Order No.R5-2003-0085 includes an average monthly effluent limitation for chloroform.

Copper— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. Freshwater aquatic habitat is a beneficial use of the receiving water. The standards for copper are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic standards. The maximum observed effluent copper concentration was 67 µg/*l*. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding standards are 3.6 µg/*l* and 2.7 µg/*l* for the acute and chronic criteria, respectively.

Copper was detected in an effluent sample collected 30 January 2002 at a concentration of 67 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent copper concentration is 67 µg/*l*. Using the worst-case (lowest) measured hardness from the effluent and receiving water, (23.8 mg/*l*), the applicable continuous concentration (maximum four-day average concentration) is 2.7 µg/*l* and the applicable maximum concentration (maximum one-hour average concentration) is 3.6 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality chronic criterion; therefore, Effluent Limitations for copper are required. The Effluent Limitations for copper included in this Order are presented in total concentrations, and are based on CTR standards for the protection of freshwater aquatic life.

The maximum observed upstream receiving water copper concentration is 3.3 µg/*l*, from a sample collected 9 December 2002. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 5.0 µg/*l*, but exceeded the method detection limit (MDL) of 1.3 µg/*l*. The result for the method blank for this analysis was non-detect. No assimilative capacity for copper is available.

The SIP requires converting CTR chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$CCC = e^{[0.8545\ln(hardness)-1.702]} \qquad AMEL = 1.96[\min(0.201CMC, 0.369CCC)]$$

$$CMC = e^{[0.9422\ln(hardness)-1.700]} \qquad MDEL = 4.96[\min(0.201CMC, 0.369CCC)]$$

Order No. R5-2003-0085 includes maximum one-day and one-month hardness-dependent effluent copper limitations.

Cyanide— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for cyanide. The CTR includes maximum 1-hour average and 4-day average cyanide concentrations of 22 µg/*l* and 5.2 µg/*l*, respectively, for the protection of freshwater aquatic life. Freshwater aquatic habitat is a beneficial use of the Feather River. The maximum observed effluent cyanide concentration was 6.5 µg/*l*.

Cyanide was detected in an effluent sample collected 17 June 2002 at a concentration of 6.5 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent cyanide concentration is 6.5 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality standards; therefore, Effluent Limitations for cyanide are required. Effluent Limitations for cyanide are included in this Order and are based on CTR criteria for the protection of freshwater aquatic life.

No cyanide was detected in the upstream receiving water. The minimum detection level was 0.01 µg/*l*. Using a chronic toxicity dilution ratio of 35.6, Effluent Limitations for cyanide were calculated as follows:

$$ECA_{acute} = CMC = 22\mu g/l \qquad ECA_{chronic} = 22 + 35.6(22 - 0.01) = 190\mu g/l$$

$$AMEL = 2.16[\min(0.170 \times 22\mu g/l, 0.315 \times 190\mu g/l)] = 8.1\mu g/l$$
$$MDEL = 5.87[\min(0.170 \times 22\mu g/l, 0.315 \times 190\mu g/l)] = 22\mu g/l$$

Since the calculated MDEL exceeded and the calculated AMEL fell below the highest of the maximum observed effluent concentration (6.5 µg/*l*) and the mean plus 3.3 standard deviations (12 µg/*l*), the calculated limitations were used.

Order No. R5-2003-0085 includes maximum one-day and one-month effluent cyanide limitations.

Diazinon—To comply with a technical report requirement, the Discharger began monthly monitoring of the effluent and receiving water for diazinon in January 2002. Diazinon has been detected in the effluent five times above the method detection limit at concentrations as high as 0.47 µg/*l* in the effluent. There are no CTR or NTR criteria for this constituent. The Basin Plan contains the narrative toxicity objective. The Basin Plan requires the Regional Board to consider relevant numerical criteria and guidelines developed by other agencies in determining compliance with the narrative toxicity objective. (Basin Plan, IV-17.00) In March 2000, the California Department of Fish and Game (DFG) established acute and chronic limits for these compounds applicable to fresh water aquatic protection. The acute and chronic criteria are 0.08 µg/*l* and 0.05 µg/*l*, respectively. Based on evaluation of the information provided, the discharge does have the reasonable potential to cause or contribute to an excursion above the narrative toxicity objective in the Basin Plan. Because the lower Feather River is listed as an impaired water body for diazinon, there is no assimilative capacity. Effluent Limitations for diazinon are included in this Order and are based on the 303(d) listing of the lower Feather River as an impaired water body for diazinon and the DFG water quality criteria for the protection of freshwater aquatic habitat.

The U.S. EPA Technical Support Document for Water Quality-based Toxics Control recommends converting chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$AMEL = 1.66[\min(0.277CMC, 0.476CCC)] \quad MDEL = 3.61[\min(0.277CMC, 0.476CCC)]$$

Order No.R5-2003-0085 includes maximum one-day and one-month effluent limitations for diazinon.

Dibromochloromethane— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for dibromochloromethane. The CTR includes criteria for the protection of

human health based on a one-in-a-million cancer risk for dibromochloromethane. Municipal and domestic supply is a beneficial use of the receiving stream. The criterion for waters from which both water and organisms are consumed is 0.41 µg/*l*. The maximum observed effluent dibromochloromethane concentration was 1.4 µg/*l*.

Dibromochloromethane was detected in an effluent sample collected 21 March 1996 at a concentration of 1.4 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent dibromochloromethane concentration is 1.4 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 0.41 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for dibromochloromethane are required. Effluent Limitations for dibromochloromethane are included in this Order and are based on the CTR criterion for the protection of human health. No dibromochloromethane was detected in the upstream receiving water. The minimum detection level was 0.06 µg/*l*. These data were used in calculating Effluent Limitations for dibromochloromethane. Using the human health dilution ratio of 169, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$ECA = 0.41 + 169(0.41 - 0.06) = 59.7\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (1.4 µg/*l*) and the mean plus 3.3 standard deviations (3.2 µg/*l*), the AMEL was set equal to 3.2 µg/*l* and the MDEL was calculated as follows:

$$MDEL = \left(\frac{5.73}{2.13}\right) AMEL = 8.6\ \mu g / l$$

Order No.R5-2003-0085 includes maximum one-day and one-month effluent limitations for dibromochloromethane.

Dichlorobromomethane— Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for dichlorobromomethane. The CTR includes criteria for the protection of human health based on a one-in-a-million cancer risk for dichlorobromomethane. Municipal and domestic supply is a beneficial use of the receiving water. The criterion for waters from which both water and organisms are consumed is 0.56 µg/*l*. The maximum observed effluent dichlorobromomethane concentration was 7.6 µg/*l*.

Dichlorobromomethane was detected in an effluent sample collected 28 December 1995 at a concentration of 7.6 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent dichlorobromomethane concentration is 7.6 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 0.56 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for dichlorobromomethane are required. Effluent Limitations for dichlorobromomethane are

included in this Order and are based on the CTR criterion for the protection of human health. No dichlorobromomethane was detected in the upstream receiving water. The minimum detection level was 0.05 µg/*l*. These data were used in calculating Effluent Limitations for dichlorobromomethane. Using the human health dilution ratio of 169, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$ECA = 0.56 + 169(0.56 - 0.05) = 87\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (7.6 µg/*l*) and the mean plus 3.3 standard deviations (7.6 µg/*l*), the AMEL was set equal to 7.6 µg/*l* and the MDEL was calculated as follows:

$$MDEL = \left(\frac{5.75}{2.13}\right) AMEL = 21 \mu g / l$$

Order No.R5-2003-0085 includes maximum one-day and one-month effluent limitations for dichlorobromomethane.

cis-1,2-Dichloroethene—The Basin Plan includes a water quality objective that "…*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…Table 64444-A (Organic Chemicals) of Section 64444*". Municipal and domestic supply is a beneficial use of the Feather River. Based on information included in analytical laboratory reports submitted by the Discharger, cis-1,2-dichloroethene in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Maximum Contaminant Level (MCL) of 6 µg/*l* for cis-1,2-dichloroethene. An Effluent Limitation for cis-1,2-dichloroethene is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents and the California Department of Health Services Primary MCL.

Cis-1,2-dichloroethene was detected in an effluent sample collected 26 September 2001 at a concentration of 2.2 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent cis-1,2-dichloroethene concentration is 7.7 µg/*l*. The primary maximum contaminant level is 6 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality standard; therefore, an Effluent Limitation for cis-1,2-dichloroethene is required.

No cis-1,2-dichloroethene was detected in the upstream receiving water. The minimum detection level was 0.09 µg/*l*. These data were used in calculating Effluent Limitations for cis-1,2-dichloroethene. Using the human health dilution ratio of 169, the average monthly Effluent Limitation was calculated as follows:

$$ECA = 6 + 169(6 - 0.09) = 1{,}006\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (2.2 µg/*l*) and the mean plus 3.3 standard deviations (2.5 µg/*l*), the AMEL was set equal to 3 µg/*l* (rounded up from 2.5 µg/*l*). Since the calculated AMEL was less than the human health objective, the AMEL was set equal to 6 µg/*l*.

Order No.R5-2003-0085 includes an average monthly effluent limitations for cis-1,2-dichloroethene.

Ethion—To comply with a technical report requirement, the Discharger began monthly monitoring of the effluent and receiving water for organophosphorous pesticides in January 2002. Ethion, an organophosphorous pesticide, has been detected once above the method detection limit at a concentration of 0.17 µg/*l* in the effluent. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 0.49 µg/*l*, but exceeded the method detection limit of 0.14 µg/*l*. The result for the method blank for this analysis was non-detect. There are no CTR or NTR criteria for either of these pollutants. The Basin Plan contains the narrative toxicity objective. The Basin Plan requires the Regional Board to consider relevant numerical criteria and guidelines developed by other agencies in determining compliance with the narrative toxicity objective. (Basin Plan, IV-17.00) U.S. EPA developed Ambient Water Quality Criteria for the protection of freshwater aquatic life for ethion. The recommended instantaneous maximum concentration of ethion is 0.02 µg/*l*. Based on evaluation of the information provided, the discharge does have the reasonable potential to cause or contribute to an excursion above the narrative toxicity objective in the Basin Plan. An instantaneous maximum Effluent Limitation for ethion is included in this Order.

Flow—The WWTF was designed to provide secondary level of treatment for up to its design flow of 7.0 mgd. The effluent flow limit is therefore set at 7.0 mgd.

Hardness—Section 1.2 of the SIP states that "[w]*hen implementing the provisions of this Policy, the RWQCB shall ensure that criteria/objectives are properly adjusted for hardness or pH, if applicable, using the hardness or pH values for the receiving water*…". Hardness data were used in determining reasonable potential. The lowest observed receiving water hardness of 23.8 mg/l (as $CaCO_3$) was measured at R-2 in a sample collected 21 March 1996.

Iron—The Basin Plan includes a water quality objective that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, iron in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 300 µg/*l* for iron. The Basin Plan also includes a water quality objective that water "…*shall be free of discoloration that causes nuisance or adversely affects beneficial uses*." The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Feather River. Iron concentrations in excess of the Secondary MCL-Consumer

Acceptance Limit cause aesthetically undesirable discoloration. An Effluent Limitation for iron is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents and color and the DHS Secondary MCL.

Iron was detected in an effluent sample collected 2 July 2002 at a concentration of 330 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent iron concentration is 528 µg/*l*. The secondary maximum contaminant level is 300 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality standard; therefore, an Effluent Limitation for iron is required. The maximum observed upstream receiving water iron concentration was 910 µg/*l*, from a sample collected 11 March 2002. No assimilative capacity for iron exists and the AMEL was set equal to 300 µg/*l*.

Order No.R5-2003-0085 includes an average monthly effluent limitation for iron.

Lead—The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for lead. Freshwater aquatic habitat is a beneficial use of the receiving water. The criteria for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for lead in freshwater are 1.46203-[0.145712 X ln(hardness)] for both the acute and the chronic standards. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding standards are 13 µg/*l* and 0.51 µg/*l* for the acute and chronic standards, respectively.

Lead was detected in an effluent sample collected 30 January 2002 at a concentration of 1.9 µg/*l*. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 3.0 µg/*l*, but exceeded the method detection limit of 0.21 µg/*l*. Because the maximum detected result for lead is an estimated value and because the method detection limit is not greater than the applicable criteria, it is uncertain whether reasonable potential exists. This Order does not include an Effluent Limitation for lead, but does require continued monitoring for this constituent. This Order may be reopened and a Limitation included if monitoring indicates that reasonable potential exists.

Manganese—The Basin Plan includes a water quality objective that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the Feather River. Based on information included in analytical laboratory reports submitted by the Discharger, manganese in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 50 µg/*l* for manganese. The Basin Plan also includes water quality objectives that water be free of discoloration and taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Feather River. Manganese concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable discoloration and taste. An Effluent Limitation for manganese is included in

this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, color, and tastes and odors and the DHS Secondary MCL.

Manganese was detected in an effluent sample collected 8 April 2002 at a concentration of 430 µg/*l*. The secondary maximum contaminant level is 50 µg/*l*. The measured maximum effluent concentration is greater than the water quality standard; therefore, an Effluent Limitation for manganese is required. The maximum observed upstream receiving water manganese concentration was 110 µg/*l*, from a sample collected 4 November 2002. No assimilative capacity for manganese exists. The AMEL was set equal to 50 µg/*l*.

Order No.R5-2003-0085 includes average monthly and maximum daily Effluent Limitations for manganese.

Mercury— Municipal and domestic supply is a beneficial use of the Feather River. The CTR contains a human health criterion of 0.050 µg/*l* for waters from which both water and aquatic organisms are consumed. In 40 CFR Part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that "…*more stringent mercury limits may be determined and implemented through use of the State's narrative criterion.*" In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date. Lacking other applicable criteria, this Order contains Effluent Limitations for mercury based on the CTR human health criterion of 0.050 µg/*l*.

The Feather River has been added to the 303(d) list of water quality limited segments for impaired water bodies for mercury. The beneficial use of fish consumption has been impaired due to bioaccumulation of mercury in fish tissue. Effluent mass loading mercury limitations have been included in Order No.R5-2003-0085 and are based on current treatment plant performance and flow.

Methyl tert butyl ether (MTBE)—The Basin Plan includes a water quality objective that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.*" Municipal and domestic supply is a beneficial use of the receiving stream. Based on information included in analytical laboratory reports submitted by the Discharger, MTBE in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 5 µg/*l* for MTBE. An Effluent Limitation for MTBE is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents and the DHS Secondary MCL.

MTBE was detected in an effluent sample collected 23 June 1999 at a concentration of 7.51 µg/*l*. The secondary maximum contaminant level is 5 µg/*l*. The measured maximum effluent concentration is greater than the water quality standard; therefore, an Effluent Limitation for MTBE is required. The maximum observed upstream receiving water MTBE concentration was 1.8 µg/*l*, from a sample collected 25 September 2002. These data were used in calculating Effluent Limitations for MTBE.

Using the human health dilution ratio of 169, the average monthly Effluent Limitation was calculated as follows:

$$ECA = 5 + 169(5 - 1.8) = 547\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (7.51 µg/*l*) and the mean plus 3.3 standard deviations (6 µg/*l*), the AMEL was set equal to 8 µg/*l* (rounded up from 7.51 µg/*l*)

Order No.R5-2003-0085 includes an average monthly Effluent Limitation for MTBE.

Methylene blue active substances (MBAS)—The Basin Plan includes a water quality objective that "*…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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449*." Municipal and domestic supply is a beneficial use of the Feather River. Based on information included in analytical laboratory reports submitted by the Discharger, MBAS in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above the Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 500 µg/*l* for foaming agents (MBAS). The Basin Plan also includes water quality objectives that water not contain floating material or taste- or odor-producing substances in concentrations that causes nuisance or adversely affect beneficial uses. The Basin Plan identifies non-contact water recreation, which includes aesthetic enjoyment, as a beneficial use of the Feather River. MBAS concentrations in excess of the Secondary MCL-Consumer Acceptance Limit produce aesthetically undesirable froth, taste, and odor. An Effluent Limitation for MBAS is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, floating material, and tastes and odors and the DHS Secondary MCL.

MBAS was detected in an effluent sample collected 6 May 2002 at a concentration of 960 µg/*l*. The secondary maximum contaminant level is 500 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality standard; therefore, an Effluent Limitation for MBAS is required. The maximum observed upstream receiving water MBAS concentration was 120 µg/*l*, from a sample collected 11 March 2002. These data were used in calculating Effluent Limitations for MBAS. Using the human health dilution ratio of 169, the average monthly Effluent Limitation was calculated as follows:

$$ECA = 500 + 169(500 - 120) = 65{,}000\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (960 µg/*l*) and the mean plus 3.3 standard deviations (1,369 µg/*l*), the AMEL was set equal to 1,000 µg/*l* (rounded up from 960 µg/*l*).

Order No.R5-2003-0085 includes an average monthly Effluent Limitation for MBAS that is equal to the secondary maximum contaminant level.

Molybdenum—Agricultural supply is a beneficial use of the receiving stream. *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985), recommends that the molybdenum concentration in waters used for agricultural irrigation not exceed 10 µg/*l*.

Molybdenum was detected in an effluent sample collected 2 August 2000 at a concentration of 35 µg/*l*. The recommended maximum concentration for protection of agricultural uses is 10 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, an Effluent Limitation for molybdenum is required. Molybdenum was not detected in the upstream receiving water. The minimum detection level was 20 µg/*l*. Based on this information, there is no assimilative capacity for molybdenum.

The AMEL was set equal to 10 µg/*l*.

Order No.R5-2003-0085 includes an average monthly Effluent Limitation for molybdenum.

Organochlorine Pesticides (Group A Pesticides) —Based on information submitted as part of the application, in studies, and in monitoring reports, lindane (gamma BHC) and 4,4'-DDT (DDT), chlorinated hydrocarbon pesticides, in the discharge have a reasonable potential to cause or contribute to an in-stream excursion above CTR standards for organochlorine pesticides. However, the Basin Plan requires that: no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; total chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. The detection of lindane and 4,4'-DDT in the WWTF effluent presents a reasonable potential to exceed the Basin Plan limitations for chlorinated hydrocarbon pesticides. In addition to lindane (gamma BHC) and 4,4'-DDT, the chlorinated hydrocarbon pesticides include alpha BHC, beta BHC, delta BHC, DDD, DDE, aldrin, chlordane, dieldrin, endrin and endrin aldehyde, alpha and beta endosulfan and endosulfan sulfate, heptachlor and heptachlor epoxide, and toxaphene. Effluent Limitations for organochlorine pesticides are included in this Order and are based on Basin Plan objectives.

N-nitrosodi-n-propylamine—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for N-nitrosodi-n-propylamine. The CTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the receiving stream. The N-nitrosodi-n-propylamine standard for protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 0.005 µg/*l*. N-nitrosodi-n-propylamine has not been detected in the effluent and all of the reported detection limits for reported sample results were greater than the standard. The maximum observed upstream receiving water N-nitrosodi-n-propylamine concentration was 2.8 µg/*l*. The SIP requires effluent limitations for

NTR and CTR constituents when the background (upstream receiving water) concentration exceeds an applicable criterion. Effluent Limitations for N-nitrosodi-n-propylamine are included in this Order and are based on the CTR criterion for the protection of human health.

The arithmetic mean of the upstream receiving water N-nitrosodi-n-propylamine concentrations is 1.41 µg/*l*; no assimilative capacity for N-nitrosodi-n-propylamine is available. The AMEL was set equal to the standard of 0.005 µg/*l* and the MDEL was calculated as follows:

$$MDEL = \left(\frac{3.11}{1.55}\right) AMEL = 0.01 \mu g / l$$

Order No.R5-2003-0085 includes average monthly and maximum daily effluent limitations for N-nitrosodi-n-propylamine.

Pathogens— Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the receiving stream. Coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways. 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 or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 m*l* as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 ml more than once in any 30 day period. Therefore, the 23 MPN/100 m*l* limitation is found to be appropriate. The current effluent total coliform organisms limitations for the Discharger include a monthly median of 23 MPN/100 m*l* and a daily maximum of 500 MPN/100 m*l*. Based on a review of the effluent monitoring, the Discharger is already able to meet the new limitations; therefore, no time schedule for compliance is included in this Order. Based on a review of data submitted by the Discharger and the period of record for United States Geological Survey monitoring stations on the Feather and Yuba Rivers, the last time less than 20:1 (river flow to design effluent flow) dilution was available was 1966.

Pentachlorophenol—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for pentachlorophenol. The CTR includes criteria for the protection of human health for pentachlorophenol. Municipal and domestic supply is a beneficial use of the receiving stream. The pentachlorophenol criterion for protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 0.28 µg/*l*. The maximum observed effluent pentachlorophenol concentration was 15.3 µg/*l*.

Pentachlorophenol was detected in an effluent sample collected 2 August 2000 at a concentration of 15.3 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent pentachlorophenol concentration is 15.3 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 0.28 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for

pentachlorophenol are required. Effluent Limitations for pentachlorophenol are included in this Order and are based on the CTR standard for the protection of human health. No pentachlorophenol was detected in the upstream receiving water. The minimum detection level was 0.02 µg/*l*. These data were used in calculating Effluent Limitations for pentachlorophenol. Using the human health dilution ratio of 169, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$ECA = 0.28 + 169(0.28 - 0.02) = 44\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (15.3 µg/*l*) and the mean plus 3.3 standard deviations (19.9 µg/*l*), the AMEL was set equal to 20 µg/*l* (rounded up from 19.9 µg/*l*) and the MDEL was calculated as follows:

$$MDEL = \left(\frac{3.11}{1.55}\right) AMEL = 40\ \mu g / l$$

Order No.R5-2003-0085 includes maximum one-day and one-month effluent limitations for pentachlorophenol.

pH—The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the "*…pH shall not be depressed below 6.5 nor raised above 8.5*."

Salts—The Basin Plan includes a water quality objective that electrical conductivity (at 25ºC) "[s]*hall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River*." One of the water bodies to which this objective applies is the Feather River from the Fish Barrier Dam at Oroville to the Sacramento River. Based on information included in analytical reports submitted by the Discharger, electrical conductivity in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective for electrical conductivity in the Feather River. Electrical conductivity in the Yuba City effluent typically ranges from 500 to 900 µmhos/cm. An Effluent Limitation for electrical conductivity is included in this Order and is based on the Basin Plan objective for electrical conductivity in the Feather River.

The maximum 30-day 90th percentile effluent and receiving water (R-1) electrical conductivity concentrations for the period beginning 1 May 1998 and ending 28 February 2003 were 946 µmhos/cm and 146 µmhos/cm, respectively. The human health dilution ratio is appropriate to use because it applies to criteria that are applicable over longer time periods than the toxicity dilution ratios. These data were used in calculating Effluent Limitations for MBAS. Using the human health dilution ratio of 169, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$ECA = 150 + 169(150 - 146) = 827\ \mu g / l$$

The effluent concentration allowance was set equal to the 30-day 90th percentile effluent electrical conductivity Effluent Limitation.

Reasonable potential to exceed applicable criteria for chloride and total dissolved solids also exists. Agricultural supply is a beneficial use of the receiving stream. *Water Quality for Agriculture,* Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985), recommends that the chloride, electrical conductivity, and total dissolved solids (TDS) concentrations in waters used for agricultural irrigation not exceed 106 mg/*l*, 700 µmhos/cm, and 450 mg/*l*, respectively. Chloride was detected in an effluent sample collected 6 August 2002 at a concentration of 99 mg/*l*. The projected maximum effluent chloride concentration is 177 mg/*l*. The maximum observed effluent concentration for TDS was 5,000 mg/*l* for the sample collected on 8 April 2002.

The chloride, electrical conductivity, and TDS objectives and recommended levels are all measures of the salt content of the water. Compliance with the Effluent Limitation for electrical conductivity based on the Basin Plan objective of 150 µmhos/cm will be protective of the chloride and TDS recommended levels; therefore, no limitations are included for chloride and TDS.

Settleable Solids—For inland surface waters, the Basin Plan states that "[w]*ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.*" Order No.R5-2003-0085 contains average monthly and average daily effluent limitations for settleable solids.

Silver— Based on information included in analytical laboratory results submitted by the Discharger, the discharge may have reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for silver. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for silver. Freshwater aquatic habitat is a beneficial use of the Feather River. The CTR criteria for silver are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factor for silver in freshwater is 0.85 for the instantaneous maximum criteria, respectively. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding criterion is 0.34 µg/*l*. The maximum observed effluent silver concentration was 0.35 µg/*l*. The maximum observed concentration was detected above the MDL of 0.12 µg/*l*, but below the quantification level. Because concentrations in this range are estimated values, monitoring for this silver is required by the Monitoring and Reporting Program, but no Effluent Limitation for silver is included.

Tetrachloroethylene—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for tetrachloroethylene. The CTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the receiving stream. The tetrachloroethylene criterion for protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 0.8 µg/*l*. The maximum observed effluent tetrachloroethylene concentration was 7.7 µg/*l*.

Tetrachloroethylene was detected in an effluent sample collected 26 September 2001 at a concentration of 7.7 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum

effluent tetrachloroethylene concentration is 7.7 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 0.8 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality standard; therefore, Effluent Limitations for tetrachloroethylene are required. Effluent Limitations for tetrachloroethylene are included in this Order and are based on the CTR criterion for the protection of human health. No tetrachloroethylene was detected in the upstream receiving water. The minimum detection level was 0.08 µg/*l*. These data were used in calculating Effluent Limitations for tetrachloroethylene. Using the human health dilution ratio of 169, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$ECA = 0.8 + 169(0.8 - 0.08) = 123\,\mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (7.7 µg/*l*) and the mean plus 3.3 standard deviations (9.0 µg/*l*), the AMEL was set equal to 9 µg/*l* and the MDEL was calculated as follows:

$$MDEL = \left(\frac{4.17}{1.79}\right) AMEL = 20\,\mu g / l$$

Order No.R5-2003-0085 includes maximum one-day and one-month effluent limitations for tetrachloroethylene.

***Thiobencarb*—**The Basin Plan includes a water quality objective for pesticides that "[w]*aters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of thiobencarb in excess of 1.0 µg/l.*" The Basin Plan also includes a water quality objective for chemical constituents that "…*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…Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449.*" Municipal and domestic supply is a beneficial use of the receiving stream. The Secondary Maximum Contaminant Level-Consumer Acceptance Limit for thiobencarb is 1 µg/*l*. Based on information included in analytical laboratory reports submitted by the Discharger, thiobencarb in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective and Secondary Maximum Contaminant Level (MCL)-Consumer Acceptance Limit of 1 µg/*l* for thiobencarb.

The Basin Plan contains the narrative toxicity objective. The Basin Plan requires the Regional Board to consider relevant numerical criteria and guidelines developed by other agencies in determining compliance with the narrative toxicity objective. (Basin Plan, IV-17.00) California Department of Fish and Game (DFG) established an instantaneous maximum objective of 3.1 µg/*l* for the protection of fresh water aquatic life. Based on evaluation of the information provided, the discharge does have the reasonable potential to cause or contribute to an excursion above the narrative toxicity objective in the Basin Plan. An Effluent Limitation for thiobencarb is included in this Order and is based on protection of the Basin Plan water quality objectives for chemical constituents, toxicity, and thiobencarb, the DHS

Secondary MCL, and the California Department of Fish and Game recommended instantaneous maximum concentration.

Thiobencarb was detected in an effluent sample collected 17 June 2002 at a concentration of 0.88 µg/*l*. This result was reported by the analytical laboratory as an estimated concentration (J flag). The concentration fell below the reporting limit (lowest quantifiable concentration) of 0.97 µg/*l*, but exceeded the method detection limit of 0.25 µg/*l*. The result for the method blank for this analysis was non-detect. Using the reasonable potential analysis procedure described above, the projected maximum effluent thiobencarb concentration is 3.4 µg/*l*. The Basin Plan numeric objective and the Secondary MCL are both 1 µg/*l*. The projected maximum effluent concentration is greater than the water quality standard; therefore, an Effluent Limitation for thiobencarb is required. Thiobencarb was not detected in the upstream receiving water. The minimum detection level was 0.25 µg/*l*. These data were used in calculating Effluent Limitations for thiobencarb. Using the human health dilution ratio of 169, the average monthly Effluent Limitation was calculated as follows:

$$ECA = 1 + 169(1 - 0.25) = 170\ \mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (0.88 µg/*l*) and the mean plus 3.3 standard deviations (1.3 µg/*l*), the AMEL was set equal to 1.3 µg/*l*.

Order No.R5-2003-0085 includes daily and monthly average Effluent Limitations for thiobencarb.

Toxicity—The Basin Plan states that "[a]*ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.*" The Basin Plan requires that "[a]*s a minimum, compliance with this objective…shall be evaluated with a 96-hour bioassay.*" Order No. R5-2003-0085 requires both acute and chronic toxicity monitoring to evaluate compliance with this water quality objective.

The Basin Plan further states that "…*effluent limits based upon acute biotoxicity tests of effluents will be prescribed*…". Effluent limitations for acute toxicity have been included in the Order.

Trichloroethylene—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for trichloroethylene. The CTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the Feather River. The trichloroethylene criterion for the protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 2.7 µg/*l*. The maximum observed effluent trichloroethylene concentration was 3.2 µg/*l*.

Trichloroethylene was detected in an effluent sample collected 26 September 2001 at a concentration of 3.2 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum

effluent trichloroethylene concentration is 3.2 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 2.7 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality standard; therefore, Effluent Limitations for trichloroethylene are required. Effluent Limitations for trichloroethylene are included in this Order and are based on the CTR standard for the protection of human health as included in the CTR. No trichloroethylene was detected in the upstream receiving water. The minimum detection level was 0.06 µg/*l*. These data were used in calculating Effluent Limitations for trichloroethylene. Using the human health dilution ratio of 169, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$ECA = 2.7 + 169(2.7 - 0.06) = 450\,\mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (3.2 µg/*l*) and the mean plus 3.3 standard deviations (3.6 µg/*l*), the AMEL was set equal to 3.6 µg/*l* and the MDEL was calculated as follows:

$$MDEL = \left(\frac{5.71}{2.12}\right) AMEL = 9.7\,\mu g / l$$

Order No.R5-2003-0085 includes maximum one-day and one-month effluent limitations for trichloroethylene.

2,4,6-Trichlorophenol—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for 2,4,6-trichlorophenol. The CTR includes criteria for the protection of human health. Municipal and domestic supply is a beneficial use of the receiving water. The 2,4,6-trichlorophenol criterion for the protection of human health based on a one-in-a-million cancer risk for waters from which both water and aquatic organisms are consumed is 2.1 µg/*l*. The maximum observed effluent 2,4,6-trichlorophenol concentration was 7.8 µg/*l*.

2,4,6-Trichlorophenol was detected in an effluent sample collected 2 September 1993 at a concentration of 7.8 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent 2,4,6-trichlorophenol concentration is 7.8 µg/*l*. The CTR criterion for waters from which both water and aquatic organisms are consumed is 2.1 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for 2,4,6-trichlorophenol are required. Effluent Limitations for 2,4,6-trichlorophenol are included in this Order and are based on the CTR standard for the protection of human health. No 2,4,6-trichlorophenol was detected in the upstream receiving water. The minimum detection level was 0.7 µg/*l*. These data were used in calculating Effluent Limitations for 2,4,6-trichlorophenol. Using the human health dilution ratio of 169, the average monthly and maximum daily Effluent Limitations were calculated as follows:

$$ECA = 2.1 + 169(2.1 - 0.7) = 239\,\mu g / l$$

The effluent concentration allowance was set equal to the AMEL. Since the calculated AMEL exceeded the highest of the maximum observed effluent concentration (7.8 µg/*l*) and the mean plus 3.3 standard deviations (10 µg/*l*), the AMEL was set equal to 10 µg/*l* and the MDEL was calculated as follows:

$$MDEL = \left(\frac{3.11}{1.55}\right) AMEL = 21 \mu g / l$$

Order No.R5-2003-0085 includes maximum one-day and one-month effluent limitations for 2,4,6-trichlorophenol

Zinc—Based on information included in analytical laboratory reports submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for zinc. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for zinc. Freshwater aquatic habitat is a beneficial use of the Feather River. The hardness-dependent CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for zinc in freshwater are 0.978 for the acute criteria and 0.986 for the chronic criteria. The maximum observed effluent zinc concentration was 120 µg/*l*. Using the worst-case (lowest of receiving water and effluent) measured hardness of 23.8 mg/*l*, the corresponding standards are 36 µg/*l* and 36 µg/*l* for the acute and chronic criteria, respectively.

Zinc was detected in an effluent sample collected 30 January 2002 at a concentration of 120 µg/*l*. Using the reasonable potential analysis procedure described above, the projected maximum effluent zinc concentration is 120 µg/*l*. Using the worst-case (lowest) measured hardness from the effluent and receiving water, (23.8 mg/*l*), the applicable continuous concentration (maximum four-day average concentration) and the applicable maximum concentration (maximum one-hour average concentration) are both 36 µg/*l*. The measured and projected maximum effluent concentrations are greater than the water quality criteria; therefore, Effluent Limitations for zinc are required. Effluent Limitations for zinc (in total concentrations) are included in this Order and are based on the CTR standards for the protection of freshwater aquatic life.

The maximum observed upstream receiving water copper concentration is 40 µg/*l*, from a sample collected 30 January 2002. No assimilative capacity for zinc is available.

The SIP requires converting CTR chronic (four-day) and acute (one-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. Equations summarizing the conversion are shown below:

$$CCC = e^{[0.8473 \ln(hardness) + 0.884]} \qquad AMEL = 1.29[\min(0.501 CMC, 0.694 CCC)]$$

$$CMC = e^{[0.8473 \ln(hardness) + 0.884]} \qquad MDEL = 2.00[\min(0.501 CMC, 0.694 CCC)]$$

where: AMEL = average monthly effluent limitation
MDEL = maximum daily effluent limitation
CCC = criteria continuous concentration (four-day average)
CMC = criteria maximum concentration (one-hour average)

Order No.R5-2003-0085 includes maximum one-day and one-month hardness-dependent effluent zinc limitations.

Compliance Schedules—The use and location of compliances schedules in the permit depends on the Discharger's ability to comply and the source of the applied water quality criteria. For CTR-based Effluent Limitations, compliance schedules were included within the permit. For non-CTR-based Effluent Limitations, any necessary time schedules were generally included in the accompanying cease and desist order.

General Effluent Limitation Information—

Selected 40 CFR §122.2 definitions:

'*Average monthly discharge limitation* means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or other similar activities.

Daily discharge means the "discharge of a pollutant" measured during a calendar day or any 24-hour period that reasonable represents a calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum daily discharge limitation means the highest allowable "daily discharge".'

The SIP contains similar definitions. These definitions were used in the development of Order No. R5-2003-0085. Alternate limitation period terms were used in the permit for the sake of clarity. Alternates are shown in the following table:

Term Used in Permit	SIP/40 CFR 122.2 Term
Average monthly	Average monthly discharge limitation. 30-day averages may have been converted to monthly averages to conform with 40 CFR §122.45 (see below)
Average daily	Maximum daily discharge limitation. Since the daily discharge for limitations expressed in concentrations is defined as the average measurement of the pollutant over the day, the term 'Average Daily' was used in the Order.

40 CFR §122.45 states that:

(1) "In the case of POTWs, permit effluent limitations…shall be calculated based on design flow."

(2) "For continuous discharges all permit effluent limitations…shall unless impracticable be stated as…[a]verage weekly and average monthly discharge limitations for POTWs."

(3) "All pollutants limited in permits shall have limitations…expressed in terms of mass except…[f]or pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass…Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations."

U.S. EPA recommends a maximum daily limitation rather than an average weekly limitation for water quality based permitting.

No recommended or approved methods have been provided for converting human health and four-day and one-hour toxicity criteria, standards, and objectives to weekly average effluent limitations; therefore, the conversion to weekly average limitations is impracticable.

RECEIVING WATER LIMITATIONS AND MONITORING

Fecal coliform -–The Feather River has been designated as having the beneficial use of contact recreation (REC-1). For water bodies designated as having REC-1 as a beneficial use, the Basin Plan includes a water quality objective limiting the "…*fecal coliform concentration based on a minimum of not less than five samples for any 30-day period*…" to a maximum geometric mean of 200 MPN/100 ml. The objective also states that "…[no] *more than ten percent of the total number of samples taken during any 30-day period* [shall] *exceed 400/100 ml*." This objective is included in the Order as a receiving water limitation.

Dissolved Oxygen -–The Feather River has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/*l* of dissolved

oxygen. Since the beneficial use of COLD does apply to the Feather River, a receiving water limitation of 7.0 mg/*l* for dissolved oxygen was included in the Order.

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

pH—For all surface water bodies in the Sacramento River and San Joaquin River basins, the Basin Plan includes water quality objectives stating that "[t]*he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.*" The Order includes receiving water limitations for both pH range and pH change.

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

Temperature—The Feather River has the beneficial uses of both COLD and WARM. The Basin Plan includes the objective that "[a]*t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5ºF above natural receiving water temperature*." The Order includes a receiving water limitation based on this objective.

Turbidity—The Basin Plan includes the following objective: "*Increases in turbidity attributable to controllable water quality factors shall not exceed the following limits*:

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

Ammonia and Chlorine—U.S. EPA has developed Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life for ammonia and for chlorine. The Order contains effluent limitations for ammonia and for chlorine equal to the Ambient Water Quality Criteria. Compliance with the effluent limitations for ammonia and for chlorine means that the discharge cannot cause an exceedance of the criteria in the receiving stream; in other words, the limitations are fully protective of water quality. Therefore, no receiving water ammonia or chlorine limitations are included in the Order.

Narrative Limitations—Receiving Water Limitations a (biostimulatory substances), b (color), d (floating material), e (oil and grease), g (radioactivity), h (settleable material), i (tastes and odors), and k (toxicity) are based on narrative Basin Plan objectives. The objectives are located in Chapter III: Water Quality Objectives, under the Water Quality Objectives for Inland Surface Waters heading.

GROUNDWATER BENEFICIAL USES

In allowing a discharge, the Regional Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC Section 13263(b)) but must consider other waste discharges and factors that affect that capacity. The Basin Plan establishes the beneficial uses for area groundwater as municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply. Procedures for application of water quality objectives to protect these uses, and the process for and factors to consider in allocating waste assimilation capacity, are set forth in the Basin Plan.

The antidegradation directives of CWC Section 13000 require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan (including by reference State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," commonly referred to for convenience by Resolution 68-16 or as the "Antidegradation" Policy).

Resolution 68-16 establishes essentially a two-step process to comply with the policy. The first step is if a discharge will degrade high quality water, the discharge may be allowed if any change in water quality (a) will be consistent with maximum benefit to the people of the State, (b) will not unreasonably affect present and anticipated beneficial uses of such water, and (c) will not result in water quality less than that prescribed in State policies (*e.g.*, water quality objectives in the Basin Plan). The second step is that any activities that result in discharges to such high quality waters are required to use the best practicable treatment or control (BPTC) of the discharge necessary to avoid a pollution or nuisance and to maintain the highest water quality consistent with the maximum benefit to the people of the State.

In authorizing waste discharges, the Regional Board evaluates each case to determine whether degradation should be allowed and then either proscribes or limits the degradation on a constituent-by-constituent basis to that which complies with Resolution 68-16. If allowing water quality degradation, the Regional Board must first find that the degradation is at least balanced by the benefit to the public of the activity creating the discharge and that the discharge undergoes BPTC. To facilitate this process and protect their interests, dischargers must provide material and relevant technical information that fully characterizes:

- site-specific hydrogeologic conditions
- background quality of the receiving water

- background quality of other waters that may be affected by the discharge
- all waste constituents to be discharged
- waste treatment and control measures
- how treatment and control measures qualify as BPTC
- the extent that each waste constituent after BPTC will degrade the quality of the groundwater
- how the expected degradation compares to water quality objectives
- how the expected degradation is consistent with maximum public benefit

Water quality objectives (objectives) define the least stringent criteria that could apply as water quality limitations for groundwater at this location, except where natural background quality already exceeds the objective. When the Regional Board adopts objectives in the Basin Plan, it is required to comply with CWC Section 13241, including consideration of economics. Section 13241 does not indicate how the Regional Board is to consider economics in its decisions or emphasize any one of the Section 13241 factors over another. Regardless, Section 13241 applies to the imposition of requirements only when the Regional Board is considering whether to impose groundwater limitations more stringent than an objective (see SWRCB Order WQ 95-4, slip op. page 5). Even where a Basin Plan narrative objective exists, and the Regional Board adopts a numeric effluent limitation in waste discharge requirements to implement the narrative objective, the Regional Board is not required to consider the factors in CWC Section 13241.

The objectives in the Basin Plan occur in numeric and narrative form. In issuing waste discharge requirements, the Regional Board must implement the Basin Plan, including all its objectives, but need not allow degradation to the objectives (California Water Code Section 13263). Narrative objectives generally specify that groundwater shall not contain constituents (e.g., chemicals, pesticides, toxic substances, taste- and odor-producing substances) in concentrations that adversely affect beneficial uses. For some narrative objectives, the Basin Plan establishes minimum numerical objectives. Basin Plan numerical objectives are the concentration thresholds necessary for the reasonable protection of beneficial uses of the water. For example, the narrative objective for chemical constituents specifies that, as a minimum, groundwaters designated for municipal supply shall not exceed maximum contaminant levels (MCLs). Similar objectives exist for radioactivity and pesticides. Numeric objectives based on these MCLs are in Title 22, Sections 64431 (Inorganic Chemicals); 64431 (Fluoride); 64443 (Radioactivity); 64444 (Organic Chemicals); and 64449 (Secondary MCLs – Consumer Acceptance Limits). Numeric objectives in the Basin Plan intended to assure protection of municipal supply also include total coliform of less than 2.2/100 m*l*.

GROUNDWATER LIMITATIONS AND MONITORING

Electrical Conductivity—The beneficial uses of groundwater include municipal and domestic water supply (MUN). The California Department of Health Services has listed a Secondary Maximum Contaminant Level for specific conductance. There is potential for the wastewater percolating to groundwater to cause or contribute to elevated specific conductance in the groundwater. Order No. R5-2003-0085 requires monitoring of electrical conductivity in the groundwater.

Total Coliform Organisms—The Basin Plan includes the following water quality objective: "*In ground waters used for domestic or municipal supply (MUN) the most probable number of coliform organisms over any seven-day period shall be less than 2.2/100 ml.*" The Order requires monitoring of coliform organisms in the groundwater.

Nitrogen—Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate, and denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification and denitrification processes to remove ammonia from the waste stream. The beneficial uses of groundwater include municipal and domestic water supply (MUN).

For nitrogen, California Department of Health Services has developed a Primary Maximum Contaminant Level (MCL) of 10 mg/*l*. The conversion of ammonia to nitrates presents a reasonable potential for the wastewater percolating to groundwater to cause the groundwater to exceed the Primary Maximum Contaminant Level for nitrogen. Denitrification reduces the potential for the Discharger to cause an exceedance of the Primary MCL for nitrogen. Order No. R5-2003-0085 requires monitoring of the groundwater for nitrogen.

pH— The ponds at the City of Yuba City WWTF are unlined, so wastewater stored in the pond or disposed of by spray irrigation may percolate to groundwater. The Basin Plan includes a water quality objective for groundwater that "[g]*round waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses*." The beneficial uses of groundwater include municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

U.S. EPA has a Secondary Maximum Contaminant Level (or Secondary Standard) for drinking water pH of 6.5 to 8.5 units. The noticeable effects of pH outside of the Secondary Standard range include (a) for a low pH: bitter metallic taste; corrosion and (b) for a high pH: slippery feel; soda taste; deposits [U.S. EPA, Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals, http://www.epa.gov/safewater].

Potential corrosion and deposits caused by a pH outside of the 6.5 to 8.5 range would adversely affect the beneficial use of industrial process supply, which is defined in the Basin Plan as: "*Uses of water for industrial activities that depend primarily on water quality*."

Low pH values cause metals to dissolve, allowing them to percolate into groundwater. Elevated metal concentrations in the groundwater would violate the groundwater toxicity objective included in the Basin Plan. Monitoring for groundwater pH is required by Order No. R5-2003-0085.

POND LIMITATIONS AND MONITORING

Dissolved Oxygen—Anaerobic (lacking in oxygen) processes tend to produce aesthetically undesirable odors. To minimize production of undesirable odors, the Discharger is required to maintain some (at least 1.0 mg/*l*) dissolved oxygen in the upper one foot of the pond.

pH—The disposal ponds at the City of Yuba City WWTF are unlined, so wastewater may percolate to groundwater. The Basin Plan includes a water quality objective for groundwater that "[g]*round waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses*." The beneficial uses of groundwater include municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

U.S. EPA has a Secondary Maximum Contaminant Level (or Secondary Standard) for drinking water pH of 6.5 to 8.5 units. The noticeable effects of pH outside of the Secondary Standard range include (a) for a low pH: bitter metallic taste; corrosion and (b) for a high pH: slippery feel; soda taste; deposits [U.S. EPA, Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals, http://www.epa.gov/safewater]. A pond pH limitation range of 6.5 to 8.5 helps to ensure that the Discharger's wastewater treatment activities do not cause the groundwater taste and odor objective to be violated.

Potential corrosion and deposits caused by a pH outside of the 6.5 to 8.5 range would adversely affect the beneficial use of industrial process supply, which is defined in the Basin Plan as: "Uses of water for industrial activities that depend primarily on water quality."

Low pH values cause metals to dissolve, allowing them to percolate into groundwater. Many metals are priority toxic pollutants. Elevated metal concentrations in the groundwater would violate the groundwater toxicity objective included in the Basin Plan.

Freeboard—The Order contains a limitation for pond freeboard. Pond levees can fail for a variety of reasons, typically, a lack of maintenance or overtopping due to wave action. The Order requires a minimum pond freeboard of two feet be maintained to prevent overtopping.

MRH/mrh 3 July 2003