

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0122

NPDES NO. CA0004791

WASTE DISCHARGE REQUIREMENTS
FOR
STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME
AND
EAST BAY MUNICIPAL UTILITY DISTRICT
MOKELUMNE RIVER FISH HATCHERY
SAN JOAQUIN COUNTY

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

1. The State of California, Department of Fish and Game (DFG) submitted a Report of Waste Discharge, dated 22 January 2002, and applied for a permit renewal to discharge wastewater under the National Pollution Discharge Elimination System (NPDES) for the Mokelumne River Fish Hatchery (Facility) located near Clements, California.
2. The Facility is a cold-water, flow-through aquaculture operation owned by the East Bay Municipal Utility District (EBMUD) and operated by DFG. DFG and EBMUD together are designated hereafter as the Discharger.
3. The discharge of treated flow-through process wastewater to the Mokelumne River was previously regulated by Waste Discharge Requirements (WDRs) Order No. 97-116 (NPDES No. CA0004791), adopted by the Regional Board on 20 June 1997.
4. The Facility is located at 25800 McIntire Road in Clements, California. The Facility is on the south bank of the Mokelumne River immediately downstream from Camanche Dam in Section 6, T4N, R9E, MDB&M at approximately 38° 13' 29" N latitude and 121° 01' 29" W longitude as shown on Attachment A, a part of this Order.
5. The U.S. Environmental Protection Agency (USEPA) and the Regional Board have classified this discharge as a minor discharge.
6. In communication with the Regional Board dated 11 February 2004, the Facility reports a total annual and maximum harvestable weight of 150,000 pounds of chinook salmon and 48,000 pounds of steelhead and rainbow trout. Steelhead production could be up to 120,000 pounds due to production changes. Eggs are collected from trapped adult chinook salmon and steelhead rainbow trout and the eggs are incubated and hatched at the facility. Juvenile fish are reared at the Facility and are transferred and released to the lower Mokelumne River

and the San Pablo Bay. The total weight of food fed during the calendar month of maximum feeding (April) is 60,000 pounds.

7. The Facility consists of a fish ladder for salmon and steelhead, a gathering tank and four holding ponds, a spawning operation for egg removal and fertilization, one hatchery building, twenty raceways for fish rearing, and ancillary operations. Two stand-alone tanks adjacent to the hatchery building are maintained for holding fish outside of normal operating practices. The stand-alone fish tanks are used to hold fish for research or to segregate fish. The Facility was upgraded in 2001 and 2002.
8. The Facility receives water from the Camanche Reservoir by gravity. Flow records for Calendar Year 2002 indicate an annual average intake, based on weekly measurements) of 25.7 million gallons per day (mgd). The Discharger reports in correspondence from 19 February 2004 that up to 46 million gallons per day (mgd) may be diverted from the Camanche Reservoir to the Facility. Intake flow is adjusted to meet operational needs and varies from month-to-month. All water is used on a once-through basis and supply water to the raceways and holding ponds is aerated. Supply water to the hatchery building can be chilled and filtered through sand filters.
9. The Facility has three outfalls that discharge directly to the Mokelumne River downstream of the Camanche Dam. Wastewater from the Facility may be managed as follows:

Outfall 001: Wastewater from the hatchery building (including water from the anesthetic tank and spawning operations) from settling pond overflow, 48 deep tanks, and incubators is discharged via Outfall 001 to the Mokelumne River via a 24-inch pipe. The Facility uses the settling pond when the raceways are cleaned, or when treatment chemicals are added. Up to 0.01 mg/L of truck fill station overflow water may be discharged via Outfall 001. During an extreme storm event, the Discharger estimates that up to 0.5 mgd of storm water may be collected and discharged via Outfall 001. Reported flow values from January 2002 through October 2003 show a minimum of 0.08 mgd and a maximum of 25.8 mgd discharged via Outfall 001.

Outfall 002: Under normal operating conditions (when raceways are not being cleaned and when chemicals are not added), the raceway flow is routed to the holding ponds and ultimately discharge via the fish ladder (Outfall 002) just upstream of Outfall 001. If too much water is routed down the new fish ladder (Outfall 002), causing it to not operate properly, excess water is routed down the old fish ladder (Outfall 003). In addition, wastewater from fish return tubes are discharged into Outfall 002, however incubators can only be routed to Outfall 001. Reported flow values from January 2002 through October 2003 show a minimum of 5.1 mgd and a maximum of 36.8 mgd discharged via Outfall 002.

Outfall 003: Sand filter backwash and discharge from two 10-foot diameter stand-alone fish tanks are discharged upstream of Outfalls 001 and 002, via a common pipe, to an old fish ladder and then to the Mokelumne River. During a 10 February 2004 NPDES Permit compliance evaluation inspection, the Facility reported that the maximum sand filter backwash time is 2 minutes for each of eight filters, every two hours. The Facility estimates that the maximum flow from Outfall 003, including flow from both the sand filter backwash and the tanks, would be approximately 13 mgd. The Facility also reported that the stand-alone fish tanks have not been used for at least three years, but may be used in the future. Also, flow from the raceways and holding ponds, fish return tubes, and incubators may be routed to Outfall 003.

A Facility flow diagram is shown on Attachment B, a part of this Order.

10. The Facility has a permanent residential trailer and two residential houses for full-time caretakers, located one quarter mile off hatchery grounds. There are a total of three septic systems; one located at the residential houses, one at the trailer, and one for the hatchery facility. The hatchery septic system has an underground pump station vault located on the hatchery grounds that pumps domestic wastewater from the facility restrooms to the leach field above the residences. There is a domestic well located at the residences that provides water for the residences and the hatchery.
11. The Facility has one 2,000-gallon split aboveground petroleum storage tank (AST) for 500 gallons of diesel and 1,500 gallons of gasoline fuel storage. The tank is stand mounted over a concrete pad with secondary containment. The diesel fuel is used for a back-up generator, and the gasoline is used for trucks and a mechanical feeder. No vehicle maintenance is performed on-site.
12. Wastes generated at the Facility include fish fecal material, unconsumed fish food, nutrients, algae, silt, chemicals and therapeutic agents used to treat fish and control disease. Based on monthly monitoring reports for Outfall 001 and Outfall 002 from April 1998 to October 2003, the effluent may be characterized as follows:

<u>Constituent</u>	<u>Maximum</u>	<u>Outfall 001</u>		<u>Maximum</u>	<u>Outfall 002</u>	
		<u>Minimum</u>	<u>Average</u>		<u>Minimum</u>	<u>Average</u>
Total suspended solids (TSS) (mg/L)	8.4	0.12	2.4	12.8	0.4	2.5
Settleable solids (mL/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total dissolved solids (TDS) (mg/L)	192	18	43	66	3.6	34.9
Dissolved oxygen (mg/L)	11.1	6.0	8.7	12.7	7.5	8.8

Data for TSS, TDS, and dissolved oxygen are based on quantified values only. Some data for TSS and TDS were reported as “<RL” (less than the reporting limit).

13. Chemicals are used at the Facility to treat fish directly for parasites, fungi, and bacteria, as well as to clean rearing raceways in order to reduce the spread of disease among the confined fish population. Chemicals currently used at the Facility include sodium chloride (salt), PVP iodine, tricaine methanesulfonate (MS-222), hydrogen peroxide, potassium permanganate, and oxytetracycline (Terramycin®) as a feed additive.
14. The Discharger confirmed in communication with the Regional Board, dated 23 April 2004, the potential use of the following additional aquaculture drugs and chemicals in the future: acetic acid, formalin (as a 37% formaldehyde, methanol-free solution), chloramine-T, Aquis-S®, soluble oxytetracycline and penicillin-G, Romet-30® (sulfadimethoxine-ormetoprim), florfenicol, erythromycin, amoxycillin, carbon dioxide, sodium bicarbonate, vibrio vaccine, and enteric redmouth bacertin. The Facility last used copper sulfate in 2001 and has not used formalin in recent years.

APPLICABLE REGULATIONS, POLICIES, AND PLANS

15. A cold-water concentrated aquatic animal production (CAAP) facility is defined in Title 40 of the Code of Federal Regulations (40 CFR 122.24) as a fish hatchery, fish farm, or other facility which contains, grows, or holds cold-water fish species or other cold-water aquatic animals including, but not limited to, the Salmonidae family of fish (e.g. trout and salmon) in ponds, raceways, or other similar structures. In addition, the facility must discharge at least 30 calendar days per year, produce at least 20,000 pounds harvest weight (9,090 kilograms) of aquatic animals per year, and feed at least 5,000 pounds (2,272 kilograms) of

food during the calendar month of maximum feeding. A facility that does not meet the above criteria may also be designated a cold water CAAP facility upon a determination that the facility is a significant contributor of pollution to waters of the United States [40 CFR 122.24(c)]. Cold-water, flow-through CAAP facilities are designed to allow the continuous flow of fresh water through tanks and raceways used to produce aquatic animals (typically cold-water fish species). Flows from CAAP facilities ultimately are discharged to waters of the United States and of the State. 40 CFR 122.24 specifies that CAAP facilities are point sources subject to the National Pollutant Discharge Elimination System (NPDES) program. The Discharger's facility meets the regulatory definition of a cold-water, flow-through CAAP.

16. The operation of CAAP facilities may introduce a variety of pollutants into receiving waters. USEPA identifies three classes of pollutants: (1) conventional pollutants (i.e., total suspended solids (TSS), oil and grease (O&G), biochemical oxygen demand (BOD₅), fecal coliforms, and pH); (2) toxic pollutants (e.g., metals such as copper, lead, nickel, and zinc and other toxic pollutants; and (3) non-conventional pollutants (e.g., ammonia-N, formalin, and phosphorus). Some of the most significant pollutants discharged from CAAP facilities are solids from uneaten feed and fish feces that settle to the bottom of the raceways. Both of these types of solids are primarily composed of organic matter including BOD₅, organic nitrogen, and organic phosphorus.
17. Fish raised in CAAP facilities may become vulnerable to disease and parasite infestations. Various aquaculture drugs and chemicals are used periodically at CAAP facilities to ensure the health and productivity of the confined fish population, as well as to maintain production efficiency. Aquaculture drugs and chemicals are used to clean raceways and to treat fish for parasites, fungal growths and bacterial infections. Aquaculture drugs and chemicals are sometimes used to anesthetize fish prior to spawning or "tagging" processes. As a result of these operations and practices, drugs and chemicals may be present in discharges to waters of the United States or waters of the State.
18. In August 2004, USEPA promulgated Effluent Limitation Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (hereafter "ELG"). The ELG regulation establishes national technology-based effluent discharge requirements for flow-through and recirculating systems and for net pens based on Best Practicable Control Technology Currently Available (BPT); Best Control Technology for Conventional Pollutants (BCT); Best Available Technology Economically Achievable (BAT); and New Source Performance Standards (NSPS). In its proposed rule, published on 12 September 2002, USEPA proposed to establish numeric limitations for a single constituent – total suspended solids (TSS) – while controlling the discharge of other constituents through narrative requirements. In the final rule, however, USEPA determined that, for a nationally applicable regulation, it would be more appropriate to promulgate qualitative TSS limitations in the form of solids control best management practices (BMP)

- requirements. Furthermore, the final ELG does not include numeric effluent limitations for non-conventional and toxic constituents, such as aquaculture drugs and chemicals, but also relies on narrative limitations to address these constituents.
19. The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and describes an implementation program and policies to achieve water quality objectives for all waters of the Basin. This includes plans and policies adopted by the State Water Resources Control Board (SWRCB) and incorporated by reference, such as Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (Resolution No. 68-16). These requirements implement the Basin Plan. The Basin Plans, as amended, designate beneficial uses, establish water quality objectives, and contain implementation plans and policies for waters of the Basins. Pursuant to the California Water Code §13263(a), waste discharge requirements must implement the Basin Plans.
 20. USEPA adopted the *National Toxics Rule* (NTR) on 22 December 1992, which was amended on 4 May 1995 and 9 November 1999, and the *California Toxics Rule* (CTR) on 18 May 2000, which was amended on 13 February 2001. These Rules contain water quality standards applicable to this discharge. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP) on 2 March 2000, which contains policies and procedures for implementation of the NTR and the CTR.
 21. The Lower Mokelumne River flows east to west from Camanche Reservoir to the Delta. Twenty-eight miles of the Lower Mokelumne River, from Camanche Reservoir toward the Delta (Hydro Unit 531.200), have been identified as a Water Quality Limited Segment under Section 303(d) of the Clean Water Act (CWA). The list of pollutants for which the Lower Mokelumne River is impaired appears on a list (the "California 303(d) List"), which was updated in 2002 and approved by the State Water Resources Control Board (SWRCB) in February 2003 and by USEPA in July 2003. Pollutants identified on the California 303(d) List as impairing the Mokelumne River include copper and zinc. Resource extraction is identified as the primary source of these pollutants. The Mokelumne River Fish Hatchery discharge occurs within the copper and zinc impaired region of the Mokelumne River. Based upon recent practice, the Facility's operations are not expected to contribute zinc to its discharge and the Facility has not used copper sulfate since 2001. This Order includes a Provision that prohibits the use of aquaculture drugs or chemicals in a manner that would contribute copper or zinc to the discharge from Outfall 001, Outfall 002, or Outfall 003.
 22. Resolution No. 68-16 requires the Regional Board, in regulating discharges of waste, to maintain high quality waters of the State until it is demonstrated that any change in water quality will be consistent with the maximum benefit to the people of the State, will not

unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies (e.g., water quality constituents in concentrations that exceed water quality objectives). Resolution 68-16 requires that discharges be regulated to meet best practicable treatment or control in order to assure that pollution or nuisance will not occur; and the highest water quality be consistently maintained for the maximum benefit to the people of the State. The Board has considered Resolution 68-16 and Federal antidegradation regulations at 40 CFR 131.12 and 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.

BENEFICIAL USES

23. The existing beneficial uses of the Mokelumne River, from Camanche Reservoir to the Delta, as identified in Table II-1 of the Basin Plan include: agricultural supply (AGR) including both irrigation and stock watering; body contact recreation, canoeing and rafting, (REC-1); and other non-body contact recreation (REC-2); warm freshwater aquatic habitat (WARM); cold freshwater aquatic habitat (COLD); migration of aquatic organisms (MIGR) both warm and cold habitats, warm and cold habitat spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, provides that "*Where a body of water is not currently designated as MUN (municipal and domestic supply beneficial use) but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation.*" Based upon ambient receiving water data collected by the Discharger, the Mokelumne River, from Camanche Reservoir to the Delta, is suitable for MUN, therefore the MUN use is also designated as a beneficial use of this water body.

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

24. Beneficial uses of the underlying groundwater are municipal and domestic supply (MUN), industrial service supply (IND), industrial process supply (PRO) and agricultural supply irrigation (AGR).

EFFLUENT LIMITATIONS AND OTHER SPECIFICATIONS

25. Federal regulations at 40 CFR 122.44 require NPDES permits to contain effluent limitations, including technology-based and water quality-based limitations for specific constituents and limitations based on toxicity.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

26. USEPA's final ELG for the aquaculture industry does not include numeric effluent limitations on any conventional, non-conventional, or toxic constituents. Rather, USEPA promulgated qualitative limitations in the form of BMP requirements. Technology-based requirements in this Order are based on a combination of application of the ELG for BMP requirements and case-by-case numeric limitations developed using best professional judgment (BPJ) and carried over from the previous Order 97-116. These effluent limitations are 8.0 mg/L net TSS as an average monthly limitation and 15 mg/L net TSS as a maximum daily limitation; and 0.1 ml/L settleable solids as an average monthly limitation and 0.2 ml/L settleable solids as a maximum daily limitation. Section 402(o) of the CWA prohibits backsliding of effluent limitations that are based on BPJ to reflect a subsequently promulgated ELG which is less stringent. Removal of these numeric limitations for TSS and settleable solids would constitute backsliding under CWA Section 402(o). The Regional Board has determined that these numeric effluent limitations for TSS and settleable solids continue to be applicable to the Facility and that backsliding is not appropriate. These limitations are established as a means of controlling the discharge of solids from algae, silt, fish feces and uneaten feed. Previous Orders for hatcheries have expressed effluent limitations for TSS in terms of a net limitation. The Regional Board finds the use of a net TSS effluent limitation is an appropriate measure of performance and a correct interpretation of this limitation, and does not constitute backsliding (40 CFR 122.44(l)(2)(i)(B)(2)). Results of monitoring indicate the Discharger is capable of meeting these limitations. This Order does not include mass effluent limitations for TSS because there are no standards that specifically require a mass-based effluent limitation, mass of the pollutant discharged is not specifically related to a measure of operation (40 CFR 122.45(f)(iii)), and, in addition, mass-based effluent limitations for TSS are not necessary because this Order includes both concentration-based limitations and a maximum flow limitation. These changes are consistent with Federal anti-backsliding provisions of 40 CFR 122.44(l)(1) and 122.62(a)(2).

WATER QUALITY-BASED EFFLUENT LIMITATIONS

27. The federal regulations at 40 CFR 122.44(d)(1) require effluent limitations for all pollutants that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above a numeric water quality criterion (such as a CTR criterion) or a narrative water quality criterion within a State water quality standard. These regulations also set forth a methodology for establishing effluent limitations based on narrative state water quality criteria [40 CFR 122.44(d)(1)(vi)(A-C)].
28. The USEPA, SWRCB, and Regional Board have adopted or published standards that are used to implement 40 CFR 122.44. The USEPA has promulgated the CTR and NTR that

established water quality criteria. The SWRCB has adopted the SIP that implements the CTR and NTR. The USEPA also has published recommended ambient water quality criteria and the Basin Plan contains numeric and narrative water quality objectives. The Basin Plan contains an Implementation 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. The USEPA ambient water quality criteria, results of toxicity studies conducted by DFG, and the Basin Plan “Policy of Application of Water Quality Objectives” are used to implement 40 CFR 122.44(d)(1)(v).

29. In 10 September 2001 the Executive Officer of the Regional Board issued a letter pursuant to Section 13267 of the California Water Code (CWC) requiring all NPDES Dischargers to conduct effluent and receiving water monitoring and submit results of this monitoring in accordance with a time schedule provided in the letter. The Discharger conducted a study to determine whether levels of NTR, CTR, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives and CTR/NTR criteria. Results of this study were submitted to the Regional Board for samples taken on 19 August 2003. The effluent samples were proportionally composited from grab samples taken from Outfall 001 and Outfall 002. Some constituents monitored in this study were not detected at concentrations equal to or greater than appropriate analytical technique Minimum Levels (ML’s) specified by Appendix 4 of the SIP. Where an approved laboratory analytical method and associated ML could not, at this time, determine whether an analyte is present in the discharge above the applicable criteria, a Provision of this Order requires resampling for the constituent if new ML’s are adopted by the SWRCB. The Discharger did not sample the discharge from Outfall 003. A Provision of this Order requires sampling and study of the discharge from Outfall 003. Results of the study for discharges from Outfalls 001 and 002 and the receiving water, routine effluent and receiving water monitoring conducted by the Discharger, and information from the Discharger regarding use of aquaculture drugs and chemicals indicate the discharge has the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard for pH and formaldehyde. There was no reasonable potential to cause or contribute to an in-stream excursion of any CTR criteria. As required by 40 CFR Part 122.44 (d)(1)(i)-(iii), this Order includes effluent limitations for pH and formaldehyde.
30. Effluent limitations are being established without benefit of dilution. The Regional Board is not obligated to delegate the assimilative capacity of receiving waters to a Discharger. Further, formaldehyde limitations are based protection of aquatic life from acute effects. Therefore, it is appropriate calculate effluent limitations with no dilution allowance.

Non-CTR Constituents

31. The Basin Plan contains water quality objectives for pH in the form of a range of acceptable pH values (measured in standard units). In the previous Order, the Regional Board established effluent limitations in the form of an acceptable range of pH between 6.5 and 8.5 standard units for discharges to the Mokelumne River. This existing pH limitation is carried over to this Order and will control the discharge of drugs or chemicals (e.g., acetic acid) that may alter the pH of the effluent. Based on recent self-monitoring reports, the discharge has remained within this acceptable range.

32. A 37 percent formaldehyde solution (formalin) is periodically used at hatcheries as a fungicide treatment on fish eggs and fish in the raceways. Although the Discharger has not used formalin on a routine basis, they have requested the ability to be able to use formalin in the future. Formalin (also known by the trade names Formalin-F®, Paracide-F®, PARASITE-S®) is approved through FDA's New Animal Drug Application (NADA) program for use in controlling external protozoa and monogenetic trematodes on fish, and for controlling fungi of the family *Saprolegniaceae* in food-producing aquatic species (including trout and salmon). For control of other fungi, formalin may be used under an Investigational New Animal Drug (INAD) exemption. Formalin typically is used as a "drip" treatment to control fungus on fish eggs at a concentration of 1,000 to 2,000 ppm for 15 minutes, or as a "flush" treatment in raceways of 1-8 hours in duration at a concentration of 170 to 250 ppm for 1-hour or, based on DFG use assumptions, at 25 ppm for 8-hours. At the maximum usage of 167ppm formalin for one hour in one raceway, the estimated maximum calculated concentration in the discharge from the settling basin would be 7.0 mg/L as formalin (2.6 mg/L as formaldehyde) for the one hour treatment period. A more practical use of formalin may be the 25 ppm, 8 hour treatment. This would reduce the discharge level from the settling pond to 1.0 mg/L formalin (0.37 mg/L formaldehyde) for the 8 hours.

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 Mokelumne River. The DFG Pesticide Unit conducted biotoxicity studies to determine the aquatic toxicity of formalin using *Pimephales promelas* and *Ceriodaphnia dubia* in accordance with the analytical methods specified in EPA600/4-91-002, *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. These "short-term chronic tests" measure effects such as reduced growth of the organism, reduced reproduction rates, or lethality. Results were reported as a No Observed Effect Concentration (NOEC) and a Lowest Observed Effect Concentration (LOEC). The DFG Pesticide Unit also conducted acute toxicity tests using *Ceriodaphnia dubia* in accordance with methods specified in EPA600/4-90/027, *Methods for Measuring the Acute Toxicity of Effluents and*

Receiving Waters to Freshwater and Marine Organisms. Acute toxicity test results typically are reported as the No Observed Adverse Effect Level (NOAEL), Lowest Observed Adverse Effect Level (LOAEL), and LC₅₀. Results of both acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit were considered along with the Basin Plan narrative toxicity objective when determining whether water quality-based effluent limitations for formalin as formaldehyde were necessary.

Results of 7-day chronic toxicity tests indicated *Ceriodaphnia dubia* was the most sensitive species, with a 7-day NOEC value of 1.3 mg/l formaldehyde for survival and < 1.3 mg/l for reproduction (the Regional Board used an NOEC of 1.3 mg/L). Acute toxicity tests conducted using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 1.3 mg/l formaldehyde. Additional acute toxicity tests with *Ceriodaphnia dubia* were conducted using only an 8-hour exposure, resulting in a 96-hour NOAEL concentration of 6.7 mg/L formaldehyde. Based on the results of these toxicity tests and DFG estimates of potential discharges of formaldehyde from the facility, if formalin is used at this Facility in the future at the DFG estimated maximum dose rate, formaldehyde may be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of the narrative water quality objective for toxicity from the Basin Plan. Accordingly, this Order includes water quality-based effluent limitations for formaldehyde. Effluent concentrations of formaldehyde may persist because of potential application procedures (e.g., successive raceway treatments, drip treatments for eggs) and due to retention of effluent in the settling basins. Therefore, as shown in the Information Sheet, both an average monthly effluent limitation of 0.65 mg/L and a maximum daily effluent limitation of 1.3 mg/L were calculated based on the 96-hour NOAEL value and using the procedure in USEPA's TSD for calculating water quality-based effluent limitations. These effluent limitations are included in this Order and have been established for protection of aquatic life against toxic effects from exposure to formaldehyde in the discharge.

33. DFG reports that sodium chloride (salt) is used at the Facility at a rate of up to 400 lbs per 3-hour flush treatment in the raceways as a fish-cleansing agent to control the spread of fish disease and to reduce stress among the confined fish population. Sodium chloride is also used at a rate of 50 lbs per 600 gallon tank in the hatchery building. Application of salt in a single raceway would result in an estimated concentration of approximately 9.3 mg/L sodium chloride in the discharge from the Facility during the 3-hour treatment. These calculations assume the flow from the raceways mixes completely with the volume of the settling basin. For a two-hour discharge time from a hatchery building tank, the estimated discharge concentration would be 100 mg/L sodium chloride. FDA considers sodium chloride an unapproved new animal drug of low regulatory priority (LRP drug) for use in aquaculture. Consequently, FDA is unlikely to take regulatory action if an appropriate grade is used, good management practices are followed, and local environmental requirements are met. A composited (Outfall 001 and Outfall 002) effluent sample taken on 19 August 2003 showed a discharge concentration of 2.1 mg/L chloride and conductivity of 53 µmhos/cm.

The maximum effluent concentration of total dissolved solids (TDS) from data received for January 1998 through October 2003 was 192 mg/L from Outfall 001 and 66 mg/L from Outfall 002. As shown in the Information Sheet, these values were compared to Agricultural Water Quality Limits for chloride, conductivity, and total dissolved solids, which are used to interpret the Basin Plan narrative objective for chemical constituents. The discharge of sodium chloride from the Facility at the application rates described by DFG will not cause, have a reasonable potential to cause, or contribute to an in-stream excursion of applicable water quality criteria or objectives. Monitoring of conductivity is required and monthly use of sodium chloride must be reported as specified in the Monitoring and Reporting Program.

34. Hydrogen peroxide (35 % H₂O₂) is used by the Discharger as a flow-through raceway treatment. FDA considers hydrogen peroxide to be an LRP drug when used to control fungi on fish at all life stages, including eggs. Hydrogen peroxide may also be used under an INAD exemption to control bacterial gill disease in various fish, fungal infections, external bacterial infections, and external parasites. DFG reports that a 35% hydrogen peroxide solution is used as a one-hour treatment of 100 ppm (mg/L) in only one raceway at a time resulting in an estimated discharge concentration of 4 mg/L. DFG's calculations assume the flow from the raceways mixes completely with the volume of water in the settling basin and is discharged with no further concentration, breakdown, or dilution of hydrogen peroxide. Hydrogen peroxide is a strong oxidizer that breaks down into water and oxygen; however, it exhibits toxicity to aquatic life during the oxidation process. Results of a single acute toxicity test using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 1.3 mg/L. The estimated discharge concentration of hydrogen peroxide exceeds the NOAEL value. However, since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of hydrogen peroxide, this Order does not include water quality-based effluent limitations for hydrogen peroxide. Use and monitoring of hydrogen peroxide must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 7. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.
35. Potassium permanganate (also known by the trade name CairoxTM) is used to control gill disease as a 1-hour bath treatment in a single raceway at up to 2 mg/L resulting in an estimated discharge of 0.08 mg/L potassium permanganate. It also is used as a flush treatment at 5 mg/L prophylactically in a single raceway as a treatment for external parasites, resulting in an estimated discharge of 0.2 mg/L potassium permanganate. DFG's calculations assume the flow from the raceways mixes completely with the volume of water in the settling basin and is discharged with no further concentration, breakdown, or dilution of potassium permanganate. Potassium permanganate has a low estimated lifetime in the environment, being readily converted by oxidizable materials to insoluble manganese

- dioxide (MNO₂). In non-reducing and non-acidic environments, MNO₂ is insoluble and has a very low bioaccumulative potential. Potassium permanganate is not approved for use in aquaculture under FDA's NADA program and should therefore be used in accordance with an INAD exemption granted by FDA. Results of a single acute toxicity test using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 0.25 mg/L for potassium permanganate. The estimated concentrations of potassium permanganate in the discharge do not exceed this NOAEL value. Furthermore, there is limited toxicity information available at this time and no information regarding actual discharge concentrations of potassium permanganate. This Order does not include water quality-based effluent limitations for potassium permanganate. However, use and monitoring of potassium permanganate must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 7. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.
36. PVP Iodine, a solution composed of 10% PVP Iodine Complex and 90% inert ingredients, is used at the Facility as a fish egg disinfectant (fungicide) from approximately 25 October through 15 February. DFG estimated a maximum usage of 1.2 gallons of PVP Iodine (225mls x 20 stacks/hour). These calculations assume the flow from the hatchery building is discharged via Outfall 001 while mixing with effluent from the 48 deep troughs, 48 hatch jars, and 20 incubator stacks, for a combined flow of 7 cfs. Assuming a one hour flow-through time, the maximum calculated concentration of PVP Iodine in the discharge from Outfall 001 would be 0.42 mg/L or 0.042 mg/L PVP Iodine Complex. FDA considers PVP Iodine an LRP drug for use in aquaculture. Results of a single acute toxicity test with *Ceriodaphnia dubia* showed a 96-hour NOAEL of 0.86 mg/L. The estimated discharge concentration of PVP Iodine Complex is below the NOAEL value. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of PVP Iodine, this Order does not include water quality-based effluent limitations for PVP Iodine. Use and monitoring of PVP Iodine must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 7. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.
37. Chloramine-T is not currently used but may be used by the Discharger in the future as a possible replacement for formalin. Chloramine-T is available for use in accordance with an INAD exemption by FDA. Chloramine-T breaks down into para-toluenesulfonamide (p-TSA) and, unlike other chlorine-based disinfectants, does not form harmful chlorinated compounds. The Regional Board does not have estimates of discharge concentrations of chloramine-T at this Facility. The Discharger has not conducted biotoxicity tests using chloramine-T, however results of toxicity testing from other sources show a 96-hour LC₅₀ for rainbow trout of 2.8 mg/L. The 48-hour NOEC for *Daphnia magna* was reported as 1.8

mg/L. The DFG Pesticide Unit is proposing to conduct additional toxicity testing on chloramine-T to determine NOAEL concentrations. Since there is limited toxicity information available and no information regarding actual discharge concentrations of chloramine-T, this Order does not include water quality-based effluent limitations for chloramine-T. However, use and monitoring of chloramine-T must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 7. The Regional Board will review this information, and other information as it becomes available, and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

38. The Discharger uses the anesthetic Tricaine methanesulfonate, commonly known as MS-222 (with trade names of Finquel® or Tricaine-S®). MS-222 has been approved by FDA for use as an anesthetic for Salmonidae. It is intended for the temporary immobilization of fish, amphibians and other aquatic, cold-blooded animals. It has been recognized as a valuable tool for the proper handling of these animals during manual spawning (fish stripping), weighing, measuring, marking, surgical operations, transport, photography, and research. In the future, the Discharger may use the anesthetic Aqui-S®. Aqui-S® is a water dispersible liquid anesthetic for fin fish, crustaceans and shell fish and is used in the US under an INAD exemption. The Regional Board does not have specific toxicity information for MS-222 or Aqui-S® or estimates of potential discharge concentrations of MS-222 and Aqui-S® at this Facility. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of MS-222 or Aqui-S®, this Order does not include water quality-based effluent limitations for MS-222 or Aqui-S®. However, use and monitoring of MS-222 and Aqui-S® must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in Provision No. 7. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.
39. In the future, the hatchery may periodically use the antibiotics oxytetracycline and Penicillin G as therapeutic agents in bath treatments to control fish diseases. The bath treatments would be used to treat small fish in 600 gallon tanks. DFG calculated estimated concentrations of oxytetracycline and Penicillin G discharged from the facility as 5.5 mg/L and 3.0 mg/L respectively.

Oxytetracycline, also known by the brand name Terramycin®, is an antibiotic approved through FDA's NADA program for use in controlling ulcer disease, furunculosis, bacterial hemorrhagic septicemia, and pseudomonas disease in salmonids. Oxytetracycline is most commonly used at CAAP facilities as a feed additive. However, oxytetracycline may also be used as an extra-label use under a veterinarian's prescription in an immersion bath of approximately six to eight hours in duration. Because oxytetracycline may be applied in an immersion bath for up to eight hours at a time, results of acute and chronic aquatic life

toxicity testing conducted by the DFG Pesticide Unit were considered, along with the Basin Plan narrative toxicity objective, when determining whether water quality-based effluent limitations for oxytetracycline used in an immersion bath treatment were necessary in this Order. Results of acute toxicity tests using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 40.4 mg/L. Results of chronic toxicity tests using *Ceriodaphnia dubia* showed a 7-day NOEC for reproduction of 48 mg/L. The estimated discharge concentration of 5.5 mg/L of oxytetracycline is well below the lowest NOEC and NOAEL. Therefore, at this time, oxytetracycline when used in an immersion bath treatment, is not expected to be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of a narrative water quality objective for toxicity from the Basin Plans. Accordingly, this Order does not include an effluent limitation for oxytetracycline. However, monthly use of oxytetracycline must be reported as specified in the attached Monitoring and Reporting Program. The Regional Board will review this information, and other information as it becomes available, and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

Penicillin G, also known as Pen-G, is an antibiotic used in a six to eight hour immersion bath treatment to control acute disease outbreaks. Penicillin G is not approved under FDA's NADA program and its' extra-label use in aquaculture requires a veterinarian's prescription. Due to the length of treatment time (up to eight hours), results of acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit were considered, along with the Basin Plan narrative toxicity objective, when determining whether water quality-based effluent limitations for penicillin G were necessary in this Order. Results of acute toxicity tests using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 890 mg/L. Results of 7-day chronic toxicity testing using *Pimephales promelas* showed 7-day NOEC for survival of 350 mg/L. The estimated discharge concentration of 3.0 mg/L of penicillin G is well below the lowest NOEC and NOAEL. Therefore, at this time, penicillin G when used in an immersion bath treatment, is not expected to be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of a narrative water quality objective for toxicity from the Basin Plans. Accordingly, this Order does not include an effluent limitation for penicillin G. However, monthly use of penicillin G must be reported as specified in the attached Monitoring and Reporting Program. The Regional Board will review this information, and other information as it becomes available, and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

40. The antibiotic oxytetracycline is currently used and the antibiotics Romet-30® (sulfadimethoxine, ormetoprim) and florfenicol may potentially be used by the Discharger in feed formulations to control acute disease outbreaks. Erythromycin (injected or used in feed formulations) and amoxicillin (injected) also are antibiotics that may be used in the future to control disease. These antibiotics must be used under conditions in the NADA approval (oxytetracycline and Romet-30®) or an INAD exemption or a veterinarian's prescription for

extra-label use. In the NPDES General Permit for Aquaculture Facilities in Idaho (Idaho General Permit), USEPA Region 10 distinguishes between antibiotics applied in feed formulations and antibiotics applied in immersion baths. The Idaho General Permit concludes that drugs or chemicals administered via feed, and ingested by fish, pose little threat to aquatic life or beneficial uses because a majority of the drug is utilized by the fish, though some literature suggests otherwise. As stated in the Idaho General Permit, "U.S. EPA believes that disease control drugs and other chemicals provided for ingestion by fish do not pose a risk of harm or degradation to aquatic life or other beneficial uses." Based on similar conclusions as those drawn by USEPA for the Idaho General Permit, the Regional Board has determined that oxytetracycline, Romet-30®, and florfenicol, (when used in feed formulations), erythromycin (when injected or used in feed formulations) and amoxicillin (when injected) are used in a manner that reduces the likelihood of direct discharge to waters of the United States or waters of the State, particularly when Dischargers implement BMPs, as required by this Order. Therefore, oxytetracycline, Romet-30®, and florfenicol, (when used in feed formulations), erythromycin (when injected or used in feed formulations) and amoxicillin (when injected) are not likely to be discharged from the Facility at levels that would cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this Order does not include water quality-based effluent limitations for these substances; however, it does require reporting use as specified in the attached Monitoring and Reporting Program. If, in the future, additional information becomes available regarding the use or toxicity of any of these substances, the Regional Board will re-evaluate whether its discharge may cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limitations.

41. Carbon dioxide gas is used to anesthetize fish prior to spawning. Sodium bicarbonate, or baking soda, also is used as a means of introducing carbon dioxide into the water to anesthetize fish. Acetic acid may be used for the control of external parasites. These substances are or may be discharged from the Facility in the future. FDA considers these substances LRP drugs for use in aquaculture. Based upon available information regarding the use of these substances at CAAP facilities in the Region, the Regional Board does not believe that carbon dioxide gas, sodium bicarbonate, or acetic acid will be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this Order does not include water quality-based effluent limitations for any of these substances; however, their use must be reported as specified in the attached Monitoring and Reporting Program. In the future, as additional information becomes available regarding the use or toxicity of carbon dioxide gas, sodium bicarbonate, or acetic acid, the Regional Board will re-evaluate whether the discharge of any of these substances to receiving waters may cause, have the reasonable potential to cause, or contribute to an excursion of the Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limitations.

42. The Discharger has indicated that it may use a vibrio vaccine and an enteric redmouth bacertin in the future. Vibrio vaccine may be used as an immersion or an injectable vaccine and helps protect salmonid species from vibriosis disease caused by *Vibrio anguillarum* serotype I and *Vibrio ordalii*. Vibrio vaccine stimulates the fish's immune system to produce protective antibodies, helping the animal defend itself against vibriosis. Enteric redmouth (or yersiniosis) bacertins are formulated from inactivated *Yersinia ruckeri* bacteria and may also be used as an immersion or vaccine to help protect salmonid species from enteric redmouth disease caused by *Yersinia ruckeri*. These bacertins stimulate the fish's immune system to produce protective antibodies. These veterinary biologics are licensed for use by the US Department of Agriculture's (USDA's) Center for Veterinary Biologics. Veterinarians should be consulted before beginning an immunization program. According to USDA, most biologics leave no chemical residues in animals and most disease organisms do not develop resistance to the immune response by a veterinary biologic. Based upon available information regarding the use of these substances at CAAP facilities, the Regional Board does not believe that vibrio vaccine or enteric redmouth bacertins, when used according to label and veterinarian instructions, are discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this Order does not include water quality-based effluent limitations for these substances; however, use of these substances must be reported as specified in the attached Monitoring and Reporting Program. In the future, as additional information becomes available regarding the use or toxicity of these biologics, the Regional Board will re-evaluate whether the discharge of any of these substances to receiving waters may cause, have the reasonable potential to cause, or contribute to an excursion of the Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limitations.

OTHER CONSIDERATIONS

43. California Water Code Section 13267 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.*" California Water Code Section 13383 states in part, "a regional board may establish monitoring, inspection, entry, reporting, and record keeping requirements . . . for any person who discharges pollutants . . . to navigable waters." The attached Monitoring and Reporting Program No. R5-2004-0122 is necessary to assure compliance with waste discharge requirements and is incorporated by reference herein. The attached Monitoring and Reporting Program is established pursuant to California Water Code Sections 13267 and 13383.

44. 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.
45. Best Management Practices plan requirements are established based on requirements in Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category at 40 CFR Part 451.
46. The Regional Board has considered the information in the attached Information Sheet in developing the findings in this Order. The attached Information Sheet is part of this Order.
47. The action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (CEQA), Public Resources Code Section 21000, et seq., in accordance with Section 13389 of the California Water Code.
48. 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.
49. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
50. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided USEPA has no objections.

IT IS HEREBY ORDERED that Order No. 97-116 is rescinded and that the State of California, Department of Fish and Game, and the East Bay Municipal Utility District, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes in a manner other than as described in this Permit, or at a location different from that described in the Findings is prohibited, and may be considered a violation of the Clean Water Act and the California Water Code.

2. The by-pass or overflow of untreated wastewater or wastes into any surface water or surface water drainage course is prohibited, except as allowed by Standard Provision A.13.
3. Discharge of waste classified as “hazardous” as defined in §2521(a) of Title 23, California Code of Regulations (CCR), §2510, et seq., (hereafter Chapter 15), or “designated”, as defined in §13173 of the California Water Code, is prohibited.
4. Practices that allow accumulated sludge, grit, and solid residues to be discharged to surface waters or surface water drainage courses are prohibited.
5. Use of aquaculture drugs and chemicals in a manner that would result in the addition of copper or zinc to wastewater discharged from the Facility is prohibited.

B. Effluent Limitations – Outfall 001, Outfall 002, Outfall 003

1. The combined monthly average combined flow through wastewater from Outfall 001, Outfall 002 and Outfall 003 shall not exceed 46 mgd.
2. Effluent discharged from Outfall 001, Outfall 002, or Outfall 003 shall not have a pH less than 6.5 nor greater than 8.5. If the effluent pH is less than 6.5, it shall not be less than the concurrent influent pH. If the effluent pH is greater than 8.5, it shall not be greater than the concurrent influent pH.
3. Effluent discharged from Outfall 001, Outfall 002, or Outfall 003 shall not exceed the following limitations:

<u>Constituent</u>	<u>Units</u>	<u>Average Monthly Effluent Limitation</u>	<u>Maximum Daily Effluent Limitation</u>
Total Suspended Solids (TSS) (net) ¹	mg/L	8	15
Settleable Solids	mL/L	0.1	0.2
Formaldehyde	mg/L	0.65	1.3

¹ Effluent limitations for total suspended solids are net values
 (Net TSS concentration = Effluent TSS concentration – Influent TSS concentration)

C. Discharge Specifications

1. The discharge shall not cause the degradation of any water supply or ground water.
2. Neither the treatment nor the discharge shall cause a nuisance or conditions of pollution as defined by California Water Code §13050.
3. There shall be no direct discharge of domestic sewage to surface waters or surface water drainage courses.

D. Best Management Practices (BMP) Plan

Within 12 months of adoption of this Order, the Discharger shall certify in writing to the Regional Board that it has developed a Best Management Practices (BMP) plan. The Discharger shall develop and implement the BMP plan to prevent or minimize the generation and discharge of wastes and pollutants to the waters of the United States and waters of the State. The Discharger shall develop and implement a BMP plan consistent with the following objectives:

1. Solids Management

- a. Conduct fish feeding in raceways in a manner that limits feed input to the minimum amount reasonably necessary to achieve production goals and sustain targeted rates of aquatic animal growth and minimizes the discharge of unconsumed food and waste products to surface waters.
- b. Clean raceways using procedures and at frequencies that minimize the disturbance and subsequent discharge of accumulated solids during routine activities such as inventorying, grading, and harvesting.
- c. Report the final disposition of all other solids and liquids, including aquaculture drugs and chemicals, not discharged to surface waters in the effluent.
- d. Collect, store, and dispose of fish mortalities and other solids in an environmentally safe manner and in manner so as to minimize discharge to waters of the United States or waters of the State.

2. Operations and Maintenance

- a. Maintain in-system production and wastewater treatment technologies to prevent the overflow of any floating matter or bypassing of treatment technologies.

- b. Inspect the production system and the wastewater treatment system on a routine basis in order to identify and promptly repair any damage.
 - c. Ensure storage and containment of drugs, chemicals, fuel, waste oil, or other materials to prevent spillage or release into the aquatic animal production Facility, waters of the United States, or waters of the State.
 - d. Implement procedures for properly containing, cleaning, and disposing of any spilled material.
 - e. Prevent fish from being released within the FDA-required withdrawal time of any drug or chemical with which they have been treated.
3. Training
- a. Adequately train all relevant facility personnel in spill prevention and how to respond in the event of a spill in order to ensure the proper clean-up and disposal of spilled material.
 - b. Train staff on the proper operation and cleaning of production and wastewater treatment systems, including training in feeding procedures and proper use of equipment.

The Discharger shall ensure that its operations staff are familiar with the BMP Plan and have been adequately trained in the specific procedures it requires.

E. Waste Disposal

1. Collected screenings, sludges, and other solids, including fish carcasses, shall be disposed of in a manner approved by the Executive Officer and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.
2. All aquaculture drugs and chemicals not discharged to receiving waters in accordance with the provisions of this Order shall be disposed of in an environmentally safe manner, according to label guidelines, Material Safety Data Sheet guidelines and BMPs. Any other form of disposal requires approval from the Executive Officer.
3. Any proposed change in disposal practices, shall be reported to the Executive Officer at least **90 days** in advance of the change.

F. Receiving Water Limitations

Receiving water limitations are site-specific interpretations of water quality objectives contained in the Basin Plan. As such, they are a required part of this Order. However, a receiving water condition not in conformance with the limitation is not necessarily a violation of this Order. The Regional Board may require an investigation to determine cause and culpability prior to asserting a violation has occurred. The discharge shall not cause the following in the Mokelumne River:

1. Fecal coliform concentrations, based on a minimum of not less than five samples for any 30-day period, to exceed a geometric mean of 200/100 ml or more than ten percent of the total number of samples taken during any 30-day period to exceed 400/100 ml.
2. Biostimulatory substances to be present which promote aquatic growths that cause nuisance or adversely affect beneficial uses.
3. Discoloration that causes nuisance or adversely affects beneficial uses.
4. Dissolved oxygen concentrations to fall below 7.0 mg/L, the monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass or the 95th percentile concentration of dissolved oxygen to fall below 75 percent of saturation.
5. Floating material in amounts that cause nuisance or adversely affect beneficial uses.
6. Oils, greases, waxes, or other materials that result in a visible film or coating on the water surface or on objects in the water.
7. The normal ambient pH to fall below 6.5, exceed 8.5, or change by more than 0.5 units.
8. Pesticides to be present in concentrations in the receiving water, bottom sediments, or aquatic life in concentrations that adversely affect beneficial uses or in concentrations that exceed the lowest levels technically and economically achievable.
9. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

10. Suspended sediment load and suspended sediment discharge rates to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.
11. Deposition of material that causes nuisance or adversely affects beneficial uses.
12. Suspended material in concentrations that adversely affect beneficial uses.
13. Taste or odor-producing substances to impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or to cause nuisance or adversely affect beneficial uses.
14. An increase in the normal ambient temperature of waters by more than 5°F (3°C).
15. Toxic pollutants to be present in concentrations that adversely affect beneficial uses or that produce detrimental physiological responses in human, plant, animal, or aquatic life.
16. The turbidity of receiving waters to increase over background levels by more than:
 - a. 1 NTU when background turbidity is between 0 and 5 NTUs;
 - b. 20 percent when background turbidity is between 5 and 50 NTUs;
 - c. 10 NTUs when background turbidity is between 50 and 100 NTUs; and
 - d. 10 percent when background turbidity is greater than 100 NTUs.

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

17. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
18. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the SWRCB pursuant to the CWA and regulations adopted thereunder.

G. Provisions

1. The Discharger shall comply with the attached Monitoring and Reporting Program No. R5-2004-0122, which is part of this Order, and any revisions thereto, as ordered by the Executive Officer. If sufficient information is collected and indicates that the

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

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

2. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated February 2004, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."
3. In accordance with the requirements in Section D. – Best Management Practices (BMP) Plan, of this Order, the Discharger shall develop and implement a BMP Plan which achieves the objectives and the specific requirements outlined in that section of the Order. Through implementation of a BMP Plan, the Discharger shall prevent or minimize the generation and discharge of wastes and pollutants from the Facility to the waters of the United States. In the BMP Plan, each component of the Facility shall be evaluated by the Discharger for its waste minimization opportunities and its potential for causing a release of significant amounts of pollutants to receiving waters due to the failure or improper operation of equipment. The examination shall include all normal operations, including raw material and product storage areas, feeding of fish, internal movement of fish, cleaning of rearing/holding units and settling systems, processing and product handling areas, loading or unloading operations, spillage or leaks from the processing floor and dock, and sludge and waste disposal. The BMP Plan shall contain an explicit quantification of the inputs and outputs of the Facility, including fish, feed, feed components, mortalities due to predation and disease, dissolved and solid pollutants, and water. The BMP Plan shall contain a description of specific management practices and standard operating procedures used to achieve the above objectives, including, for example, schedules for solids removal from each waste collection component including what procedures will be used to determine when cleaning is necessary to prevent accumulated solids from being discharged. The BMP Plan shall contain a statement that the BMP Plan has been reviewed and endorsed by the Facility Manager and the individuals responsible for implementation of the BMP operating plan. The Discharger shall ensure that its operations staff is familiar with the BMP Plan and have been adequately trained in the specific

procedures which it requires. The Discharger shall maintain a copy of the BMP Plan at the Facility and shall make the plan available upon request to representatives of the Regional Board.

4. The discharger shall sample and conduct a study of effluent from Outfall 003 to determine if the effluent contains constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. Although the Discharger conducted a study of effluent composited from Outfall 001 and Outfall 002, wastewater discharged from Outfall 003 is from processes that differ from those contributing to Outfall 001 and Outfall 002 (e.g., sand filter backwashing). The constituents of concern for this study are specifically listed in a technical report requirement issued by the Executive Officer in September 2001 and include NTR, CTR and additional constituents, which could exceed Basin Plan numeric or narrative water quality objectives. The Discharger shall comply with the following time schedule in conducting a study of these constituents potential effect in surface waters:

<u>Task</u>	<u>Compliance Date</u>
Submit Study Report	1 September 2007
Submit Study Report for dioxins	1 September 2008

This Order is intended to be consistent with the requirements of the 10 September 2001 technical report requirements. The technical report requirements shall take precedence in resolving any conflicts. 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 the subject constituents.

5. The Discharger shall comply with the standards contained in the Health and Safety Code, Chapter 6.67, Aboveground Storage of Petroleum.
6. This Order authorizes the discharge of formalin (formaldehyde), sodium chloride, hydrogen peroxide, potassium permanganate, PVP iodine, chloramine-T, MS-222, Aqui-S®, oxytetracycline, penicillin G, Romet-30®, florfenicol, erythromycin, amoxicillin, carbon dioxide, sodium bicarbonate, acetic acid, vibrio vaccine, and

enteric redmouth bacertin to the Mokelumne River in accordance with the effluent limitations and other conditions herein. The Discharger shall submit to the Regional Board in writing the following information prior to the use of any other chemical or aquaculture drug that may enter the wastewater discharge:

- a. The common name(s) and active ingredient(s) of the drug or chemical proposed for use and discharge.
- b. The purpose for the proposed use of the drug or chemical (i.e. list the specific disease for treatment and specific species for treatment).
- c. The amount proposed for use and the resulting calculated estimate of concentration in the discharge.
- d. The duration and frequency of the proposed use.
- e. Material Safety Data Sheets and available toxicity information.
- f. Any related Investigational New Animal Drug (INAD), New Animal Drug Application (NADA) information, extra-label use requirements and/or veterinarian prescriptions.

Prior to discharging the chemical or aquaculture drug, the Discharger also shall conduct and/or submit the results of acute toxicity test information on any new chemical or drug in accordance with *EPA-821-R-02-012*, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, *Fifth Edition, October 2002*, using *C. dubia*, to determine the NOAEL, and LOAEL.

If the toxicity testing, or above listed information submitted to the Regional Board indicates that the drug or chemical is, or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above any chemical-specific water quality criteria, narrative water quality objective for chemical constituents from the Basin Plan, or narrative water quality objective for toxicity from the Basin Plan, this Order may be reopened to established effluent limitations.

7. The Discharger shall conduct short term toxicity studies in accordance with methods specified in *EPA-821-R-02-012*, to determine the NOAEL, and LOAEL for hydrogen peroxide, potassium permanganate, PVP iodine, chloramine-T, MS-222, and AQUI-S® to reflect concentrations and exposure times that are applicable to this facility. The results shall be submitted to the Regional Board **within 12 months of adoption of this Order**. The Regional Board will review this information and this permit may be reopened to establish effluent limits based on additional use and toxicity information.
8. The Discharger may conduct studies pertaining to Facility operations, the effluent discharge, and the receiving water. For example, such studies may include a mixing

zone and dilution study. The Regional Board will review such studies and, if warranted, will reopen this Order to make appropriate changes.

9. **Adoption of new Minimum Level's (ML's):** Where an approved laboratory analytical method and associated ML cannot, at this time, determine whether a CTR or NTR constituent is present in the discharge above the applicable criteria, the Discharger shall resample for these constituents if new ML's are adopted by the SWRCB.
10. The Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.
11. A copy of this Order shall be kept at the discharge Facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
12. This Order expires on **1 September 2009** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than **180 days** in advance of such date an application for renewal of waste discharge requirements if it wishes to continue the discharge.
13. The East Bay Municipal Utility District, as owner of the real property at which the discharge will occur, is ultimately responsible for ensuring compliance with these requirements. The Department of Fish and Game retains primary responsibility for compliance with these requirements, including day-to-day operations and monitoring. Enforcement actions will be taken against the East Bay Municipal Utility District only in the event that enforcement actions against the Department of Fish and Game are ineffective or have been futile, or that enforcement is necessary to protect public health or the environment.
14. 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, the name, address, and the 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

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2004-0122
STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME AND
EAST BAY MUNICIPAL UTILITY DISTRICT
MOKELUMNE RIVER FISH HATCHERY
SAN JOAQUIN COUNTY

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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 Regional Board, Central Valley Region on 10 September 2004.

THOMAS R. PINKOS, Executive Officer

Tt:JME

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0122

FOR

STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME
AND
EAST BAY MUNICIPAL UTILITY DISTRICT
MOKELUMNE RIVER FISH HATCHERY
SAN JOAQUIN COUNTY

INTRODUCTION

This Monitoring and Reporting Program is issued pursuant to California Water Code Section 13383 and includes: influent monitoring of raw water supply, effluent monitoring of discharges to waters of the United States and waters of the State, and receiving water monitoring. All water quality samples shall be representative of the volume and nature of the discharge, or representative of the matrix of material sampled. The time, date, and location of sample collection shall be recorded on a chain of custody (COC) form. COC forms shall be completed for each sample collected and copies provided to the Regional Board with the monthly monitoring reports.

Water quality samples do not need to be taken during months when there are no pollutant discharges to surface waters resulting from aquaculture operations, or associated on-site fish processing (e.g. no monitoring is required if no fish are being held at the facility, monitoring for specific chemicals or drugs only when being used and discharged to surface waters). However, monitoring forms are still required to be submitted on a monthly basis during these periods documenting no discharge.

All water quality sampling and analyses shall be performed in accordance with the Monitoring and Reporting Requirements as outlined in Section C of the Standard Provisions of this Order. Water quality sample collection, storage, and analyses shall be performed according to 40 CFR Part 136, or other methods approved and specified by the Executive Officer. Water and waste analyses shall be performed by a laboratory approved for these analyses by the State Department of Health Services (DHS).

INFLUENT MONITORING

A sampling station shall be established and located where representative samples of the raw water supply can be obtained. Samples shall be collected at approximately the same time as effluent samples. Influent monitoring shall include at least the following:

<u>Constituent</u>	<u>Unit</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Influent flow	cfs	Calibrated meter, weir, or other approved method	Recorded weekly
Total Suspended Solids (TSS)	mg/L	Grab	1/Month

EFFLUENT MONITORING (Outfall 001, Outfall 002, Outfall 003)

Effluent samples shall be collected from the Outfall 001 downstream of the settling pond and hatchery building after the last point at which wastes from the Facility may be introduced and prior to discharge into the Mokelumne River. Effluent samples from Outfall 002 shall be collected from the channel after the last point at which wastes from the Facility may be introduced and prior to discharge to the Mokelumne River via the fish ladder. Effluent samples from Outfall 003 shall be collected after the last point at which wastes from the facility may be introduced and prior to discharge to the Mokelumne River. Effluent samples shall be representative of the volume and quality of the discharge. Effluent samples shall be collected during or immediately following raceway cleaning or administration of drug or chemical treatments and must be representative of the volume and quality of the discharge at the time when representative levels of solids, drugs, chemicals, or other pollutants are present in the discharge. Time of collection of samples shall be recorded. Effluent monitoring shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>
Effluent Flow	cfs or mgd	Calibrated meter, weir, or other approved method (Influent flow may be used to calculate flow)	Recorded Weekly
Total suspended solids (TSS)	mg/L	Grab	1/Month
Net TSS (Effluent – Influent)	mg/L	Calculation	1/Month
Settleable solids	ml/L	Grab	1/Month
PH	standard units	Grab	1/Month
Conductivity @ 25°C (Specific Conductance) ¹	µmhos/cm	Grab	1/Month
Formaldehyde ²	mg/L	Grab	1/Month during use
Hydrogen peroxide ³	mg/L	Grab	1/Month during use
Potassium permanganate ³	mg/L	Grab	1/Month during use
PVP Iodine ³	mg/L	Grab	1/Month during use
Chloramine-T ³	mg/L	Grab	1/Month during use
MS-222 ³	mg/L	Grab	1/Month during use
Aqui-S® ³	mg/L	Grab	1/Month during use

- ¹ In months when sodium chloride or calcium chloride is added to waters of the Facility, conductivity shall be measured during sodium chloride use.
- ² In months when formalin is added to the waters of the Facility, formaldehyde concentration shall be measured during formalin use.
- ³ The analytical method used for hydrogen peroxide, potassium permanganate, PVP Iodine, chloramine-T, MS-222, and Aqwi-S® shall be approved by the Executive Officer. If no approved methods are available effluent concentrations may be determined by calculation as approved by the Executive Officer.

RECEIVING WATER MONITORING IN THE MOKELUMNE RIVER

Receiving water samples shall be collected monthly when fish are being held at the Facility, and when there is a direct discharge from Outfall 001, Outfall 002, or Outfall 003 to the Mokelumne River. All receiving water samples shall be grab samples collected at a depth of 6 to 12 inches below the surface. The facility discharges treated effluent at the base of Camanche Dam, therefore there is no representative upstream sampling location. Receiving water monitoring shall include at least the following:

R-1 100 feet downstream from Outfall 001

<u>Constituent</u>	<u>Unit</u>	<u>Station</u>	<u>Sampling Frequency</u>
Flow	cfs	R-1	1/Month
PH	standard units	R-1	1/Month
Temperature	°C	R-1	1/Month
Dissolved Oxygen	mg/L	R-1	1/Month
Conductivity @ 25°C (Specific Conductance) ¹	µmhos/cm	R-1	1/Month
Turbidity	NTU	R-1	1/Quarter

¹ In months when sodium chloride is added to waters of the Facility, conductivity shall be measured during sodium chloride use.

In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Stations R-1 through R-2. Attention shall be given to the presence or absence of:

- | | |
|--|---|
| <ul style="list-style-type: none"> a. Floating or suspended matter b. Discoloration c. Bottom deposits d. Aquatic life | <ul style="list-style-type: none"> 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.

MONTHLY DRUG AND CHEMICAL USE REPORT

Order R5-2004-0122 prohibits the discharge of aquaculture chemicals and drugs unless the Regional Board has received prior notice in accordance with Provision G.6. of Order R5-2004-0122, the following information shall be submitted for all aquaculture drugs or chemicals used at the Facility. This information shall be reported at **monthly** intervals using the appropriate Monthly Discharge Monitoring Reports:

- a. The name(s) and active ingredient(s) of the drug or chemical.
- b. The date(s) of application.
- c. The purpose(s) for the application.
- d. The method of application (e.g., immersion bath, administered in feed), duration of treatment, whether the treatment was static or flush (for drugs or chemicals applied directly to water), amount in gallons or pounds used, treatment concentration(s), and the flow in cubic feet per second (cfs) in the treatment units.
- e. The total flow through the facility in cubic feet per second (cfs) to the Mokelumne River after mixing with the treated water.
- f. For drugs and chemicals applied directly to water (i.e., immersion bath, flush treatment) and for which effluent monitoring is not otherwise required, the estimated concentration in the effluent at the point of discharge to the Mokelumne River.
- g. The method of disposal for drugs or chemicals used but not discharged in the effluent.

Calculation of Concentration:

For drugs or chemicals used in a direct application to waters at the facility where the water is routed through the settling pond, use the following formula to calculate concentration (C) at the point of discharge:

C = concentration of chemical or drug at the point of discharge

$$C = \frac{\text{(treatment concentration)} \times \text{(volume of water through treatment area during treatment time)}}{\text{(volume of water discharged to settling pond} + \text{volume of settling pond)}}$$

Example: Acetic acid

$$C = \frac{550 \text{ mg/L (acetic acid)} \times 80784 \text{ gallons water through treatment area during 1-hour treatment}}$$

1,615,680 gallons of water to settling pond in 1-hour + 307,428 gallons of water in settling pond

C = 23 mg/L acetic acid at the point of discharge

For drugs or chemicals used in a direct application to waters at the facility where the water is not routed through the settling pond, use the following formula to calculate concentration (C) at the point of discharge.

C = concentration of chemical or drug at the point of discharge

$$C = \frac{(\text{treatment concentration}) \times (\text{volume of water through treatment area during treatment time})}{\div (\text{total volume of water to outfall during treatment time})}$$

Example: Oxytetracycline concentration

$$C = \frac{100.0 \text{ mg/L (oxytetracycline)} \times 80784 \text{ gallons water in treatment area during 1-hour treatment}}{1,615,680 \text{ gallons of water to outfall in 1-hour}}$$

C = 5.0 mg/L oxytetracycline at the point of discharge

This information shall be submitted quarterly. If the analysis of this chemical use data compared with any toxicity testing results or other available information for the therapeutic agent, chemical or anesthetic indicates that the discharge may cause, have the reasonable potential to cause, or contribute to an excursion of a numeric or narrative water quality criterion or objective, the Executive Officer may require site specific whole effluent toxicity (WET) tests using *C. dubia* or reopen this Order to include an effluent limitation based on that objective.

PRIORITY POLLUTANT METALS MONITORING

The State Water Resources Control Board (SWRCB) adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP). The SIP states that the Regional Boards will require periodic monitoring (at least once prior to issuance and reissuance of a permit) for pollutants for which criteria or objectives apply and for which no effluent limitations have been established.

The Regional Board has determined that, based on priority pollutant data collected from this and similar facilities, discharge of priority pollutants other than metals is unlikely. Accordingly, the Regional Board is requiring, as part of this Monitoring and Reporting Program, that the Discharger monitor effluent and receiving water (at receiving water station R-1, upstream of the point of discharge) and analyze the sample for priority pollutant metals **one time at least 180 days but no more than 365 days prior to expiration of this Order.**

The Discharger must analyze pH and hardness of the effluent and receiving water at the same time as priority pollutant metals. The priority pollutant metals for which this one-time analysis is required are as follows:

- Antimony
- Arsenic
- Beryllium
- Cadmium
- Chromium (III)
- Chromium (IV)
- Copper
- Lead
- Mercury
- Nickel
- Selenium
- Silver
- Thallium
- Zinc

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

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

All priority pollutant metal analyses shall be performed at a laboratory certified by the California Department of Health Services. The laboratory is required to submit the Minimum Level (ML) and the Method Detection Limit (MDL) with the reported results for each constituent. The MDL should be as close as practicable to the USEPA MDL determined by the procedure found in 40 CFR Part 136. The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols:

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

- c. For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration." Numerical estimates of data quality may be by percent accuracy (+ or – a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.
- d. Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

GENERAL REPORTING REQUIREMENTS

The Discharger shall implement this monitoring program on the first day of the month following adoption of the Order. The Discharger shall submit monthly Discharge Monitoring Reports to the Regional Board by the **first day of the second month** following sample collection. Annual monitoring reports shall be submitted by **30 January** each year. All reports submitted in response to this Order shall comply with signatory requirements of Standard Provision D.6.

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

1. A tabulation by month of the pounds of fish produced during the previous year including dates of operation and species and amount (lbs.) of fish harvested, processed, or released per month.
2. A summary of information on monthly land application and land disposal of solids and wastewater during the previous year including the type and amount of solids and wastewater that are land-applied or land disposed.
3. A summary of all feeding practices used at the facility on a monthly basis including:
 - a. The name(s), type(s) and amount(s) of feed(s) used.
 - b. The percent of phosphorus in the feed(s) used (as available).
 - c. The method and frequency of feeding.
4. Septic tank inspection and maintenance report.
5. Monthly records documenting cleaning, inspections, maintenance, and repairs of all fish production and fish wastewater treatment systems.

In the event that there is failure in or damage to the structure of an aquatic animal containment system that results in an unanticipated material discharge of pollutants to waters of the United States or waters of the State, the Discharger shall provide an oral report within 24 hours describing the cause of the failure or damage and identifying the materials that have been released to the environment as a result of the failure or damage. Within 7 days of discovery of the failure or

damage, the Discharger shall provide a written report documenting the cause, the estimated time elapsed until the failure or damage was repaired, and steps being taken to prevent a recurrence.

In the event the Discharger becomes aware of a violation of the prohibitions, specifications, or limitations of this Order, the Discharger shall notify the Board by telephone within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days.

If the Discharger monitors any pollutant more frequently than is required by this Order, the results of such monitoring shall be included in the calculation of the values required in the monthly monitoring report. Such increased frequency also shall be indicated on the monthly monitoring report.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

10 September 2004

(Date)

Tt:JME

INFORMATION SHEET

ORDER NO. R5-2004-0122
STATE OF CALIFORNIA DEPARTMENT OF FISH AND GAME
AND EAST BAY MUNICIPAL UTILITY DISTRICT
MOKELUMNE RIVER FISH HATCHERY
SAN JOAQUIN COUNTY

FACILITY DESCRIPTION

The California Department of Fish and Game (DFG) operates the Mokelumne River Fish Hatchery (the Facility) on land owned by the East Bay Municipal Utilities District (EBMUD) located at 25800 McIntire Road in Clements, California. The Facility is on the south bank of the Mokelumne River immediately downstream from Camanche Dam in Section 6, T4N, R9E, MDB&M in San Joaquin County, California. DFG and EBMUD are hereafter referred to as the Discharger.

The Facility reports a total annual and maximum harvestable weight of 150,000 pounds of chinook salmon and 48,000 pounds of steelhead and rainbow trout. Steelhead production could be up to 120,000 pounds due to production changes. Eggs are collected from trapped adult chinook salmon and steelhead rainbow trout and the eggs are incubated and hatched at the facility. Juvenile fish are reared at the Facility and are transferred and released to the lower Mokelumne River and the San Pablo Bay. The total weight of food fed during the calendar month of maximum feeding (April) is 60,000 pounds.

The Facility consists of a fish ladder for salmon and steelhead, a gathering tank and four holding ponds, a spawning operation for egg removal and fertilization, one hatchery building, twenty raceways for fish rearing, and ancillary operations. Two stand-alone tanks adjacent to the hatchery building are maintained for holding fish outside of normal operating practices. The stand-alone fish tanks are used to hold fish for research or to segregate fish. The Facility was upgraded in 2001 and 2002. The Facility has a permanent residential trailer and two residential houses for full-time caretakers, located one quarter mile off hatchery grounds. There are a total of three septic systems; one located at the residential houses, one at the trailer, and one for the hatchery facility. The hatchery septic system has an underground pump station vault located on the hatchery grounds that pumps domestic wastewater from the facility restrooms to the leach field above the residences. There is a domestic well located at the residences that provides water for the residences and the hatchery.

The Facility has one 2,000-gallon split aboveground petroleum storage tank (AST) for 500 gallons of diesel and 1,500 gallons of gasoline fuel storage. The tank is stand mounted over a concrete pad with secondary containment. The diesel fuel is used for a back-up generator, and the gasoline is used for trucks and a mechanical feeder. No vehicle maintenance is performed on-site.

The Facility receives water from the Camanche Reservoir by gravity. Flow records for Calendar Year 2002 indicate an annual average intake, based on weekly measurements) of 25.7 million gallons per day (mgd). The Discharger reports in correspondence from 19 February 2004 that up to 46 million gallons per day (mgd) may be diverted from the Camanche Reservoir to the Facility.

Intake flow is adjusted to meet operational needs and varies from month-to-month. All water is used on a once-through basis and supply water to the raceways and holding ponds is aerated. Supply water to the hatchery building can be chilled and filtered through sand filters.

Wastewater from the hatchery building (including water from the anesthetic tank and spawning operations) from settling pond overflow, and incubators is discharged via Outfall 001 to the Mokelumne River via a 24-inch pipe. The Facility uses the settling pond when the raceways are cleaned, or when treatment chemicals are added. Up to 0.01 mg/L of truck fill station overflow water may be discharged via Outfall 001. During an extreme storm event, the Discharger estimates that up to 0.5 mgd of storm water may be collected and discharged via Outfall 001. Reported flow values from January 2002 through October 2003 show a minimum of 0.08 mgd and a maximum of 25.8 mgd discharged via Outfall 001

Under normal operating conditions (when raceways are not being cleaned and when chemicals are not added), raceway flow is routed to the holding ponds and ultimately discharge via the fish ladder (Outfall 002) just upstream of Outfall 001. If too much water is routed down the new fish ladder (Outfall 002), causing it to not operate properly, excess water is routed down the old fish ladder (Outfall 003). In addition, wastewater from fish return tubes are discharged into Outfall 002, however incubators can only be routed to Outfall 001. Reported flow values from January 2002 through October 2003 show a minimum of 5.1 mgd and a maximum of 36.8 mgd discharged via Outfall 002.

Sand filter backwash and discharge from two 10-foot diameter stand-alone fish tanks are discharged upstream of Outfalls 001 and 002, via a common pipe, to an old fish ladder and then to the Mokelumne River. During a 10 February 2004 NPDES Permit compliance evaluation inspection, the Facility reported that the maximum sand filter backwash time is 2 minutes for each of eight filters, every two hours. The Facility estimates that the maximum flow from Outfall 003, including flow from both the sand filter backwash and the tanks, would be approximately 13 mgd. The Facility also reported that the stand-alone fish tanks have not been used for at least three years, but may be used in the future. Also, flow from the raceways and holding ponds, fish return tubes, and incubators may be routed to Outfall 003.

Wastes generated at the Facility include fish fecal material, unconsumed fish food, nutrients, algae, silt, chemicals and therapeutic agents used to treat fish and control disease. Based on monthly monitoring reports for Outfall 001 and Outfall 002 from April 1998 to October 2003, the effluent may be characterized as follows:

<u>Constituent</u>	<i>Outfall 001</i>			<i>Outfall 002</i>		
	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>
Total suspended solids (TSS) (mg/L)	8.4		2.4	12.8	0.4	2.5
Settleable solids (mL/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total dissolved solids (TDS) (mg/L)	192	18	43	66	3.6	34.9
Dissolved oxygen (mg/L)	11.1	6.0	8.7	12.7	7.5	8.8

Data for TSS, TDS, and dissolved oxygen are based on quantified values only. Some data for TSS and TDS were reported as “<RL” (less than the reporting limit).

Chemicals are used at the Facility to treat fish directly for parasites, fungi, and bacteria, as well as to clean rearing raceways in order to reduce the spread of disease among the confined fish population. Chemicals currently used at the Facility include sodium chloride (salt), PVP iodine, tricaine methanesulfonate (MS-222), hydrogen peroxide, potassium permanganate, and oxytetracycline (Terramycin®) as a feed additive.

The Discharger confirmed in communication with the Regional Board, dated 23 April 2004, the potential use of the following additional aquaculture drugs and chemicals in the future: acetic acid, formalin (as a 37% formaldehyde, methanol-free solution), chloramine-T, Aqual-S®, soluble oxytetracycline and penicillin-G, Romet-30® (sulfadimethoxine-ormetoprim), florfenicol, erythromycin, amoxicillin, carbon dioxide, sodium bicarbonate, vibrio vaccine, and enteric redmouth bacertin. The Facility last used copper sulfate in 2001 and has not used formalin in recent years.

APPLICABLE REGULATIONS, POLICIES, AND PLANS

A cold-water concentrated aquatic animal production (CAAP) facility is defined in Title 40 of the Code of Federal Regulations (40 CFR 122.24) as a fish hatchery, fish farm, or other facility which contains, grows, or holds cold-water fish species or other cold water aquatic animals including, but not limited to, the Salmonidae family of fish (e.g. trout and salmon) in ponds, raceways, or other similar structures. In addition, the facility must discharge at least 30 calendar days per year, produce at least 20,000 pounds harvest weight (9,090 kilograms) of aquatic animals per year, and feed at least 5,000 pounds (2,272 kilograms) of food during the calendar month of maximum feeding. A facility that does not meet the above criteria may also be designated a cold water CAAP facility upon a determination that the facility is a significant contributor of pollution to waters of the United States [40 CFR 122.24(c)]. Cold water, flow-through CAAP facilities are designed to allow

the continuous flow of fresh water through tanks and raceways used to produce aquatic animals (typically cold-water fish species). Flows from CAAP facilities ultimately are discharged to waters of the United States and of the State. 40 CFR 122.24 specifies that CAAP facilities are point sources subject to the National Pollutant Discharge Elimination System (NPDES) program. The Discharger's facility meets the definition of a cold-water, flow-through CAAP.

The operation of CAAP facilities may introduce a variety of pollutants into receiving waters. The USEPA identifies three classes of pollutants: (1) conventional pollutants (i.e., total suspended solids (TSS), oil and grease (O&G), biochemical oxygen demand (BOD), fecal coliforms, and pH); (2) toxic pollutants (e.g., metals such as copper, lead, nickel, and zinc and other toxic pollutants); and (3) non-conventional pollutants (e.g., ammonia-N, Formalin, and phosphorus). The most significant pollutants discharged from CAAP facilities are solids from uneaten feed, as well as fish feces that settles to the bottom of the raceways. Both of these types of solids are primarily composed of organic matter including BOD, organic nitrogen, and organic phosphorus.

Fish raised in CAAP facilities may become vulnerable to disease and parasite infestations. Various aquaculture drugs and chemicals are used periodically at CAAP facilities to ensure the health and productivity of the confined fish population, as well as to maintain production efficiency. Aquaculture drugs and chemicals are used to clean raceways and to treat fish for parasites, fungal growths and bacterial infections. Aquaculture drugs and chemicals are also used to anesthetize fish prior to spawning or prior to the annual "tagging" process. As a result of these operations and practices, drugs and chemicals may be present in discharges to waters of the United States or waters of the State.

In August 2004, USEPA promulgated Effluent Limitation Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category (hereafter "ELG"). The ELG regulation establishes national technology-based effluent discharge requirements for flow-through and recirculating systems and for net pens based on Best Practicable Control Technology Currently Available (BPT); Best Control Technology for Conventional Pollutants (BCT); Best Available Technology Economically Achievable (BAT); and New Source Performance Standards (NSPS). In its proposed rule, published on 12 September 2002, USEPA proposed to establish numeric limitations for a single constituent – total suspended solids (TSS) – while controlling the discharge of other constituents through narrative requirements. In the final rule, however, USEPA determined that, for a nationally applicable regulation, it would be more appropriate to promulgate qualitative TSS limitations in the form of solids control best management practices (BMP) requirements. Furthermore, the final ELG does not include numeric effluent limitations for non-conventional and toxic constituents, such as aquaculture drugs and chemicals, but also relies on narrative limitations to address these constituents.

The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and describes an implementation program and policies to achieve water quality objectives for all waters of the Basin. This includes plans and policies

adopted by the State Water Resources Control Board (SWRCB) and incorporated by reference, such as Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (Resolution No. 68-16). These requirements implement the Basin Plan. The Basin Plan, as amended, designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for waters of the Basin. Pursuant to the California Water Code Section 13263(a), waste discharge requirements must implement the Basin Plan.

USEPA adopted the *National Toxics Rule* (NTR) on 22 December 1992, which was amended on 4 May 1995 and 9 November 1999, and the *California Toxics Rule* (CTR) on 18 May 2000, which was amended on 13 February 2001. These Rules contain water quality standards applicable to this discharge. The SWRCB adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP) on 2 March 2000, which contains policies and procedures for implementation of the NTR and the CTR.

Resolution No. 68-16 requires the Regional Board, in regulating discharges of waste, to maintain high quality waters of the State until it is demonstrated that any change in water quality will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Board's policies (e.g., water quality constituents in concentrations that exceed water quality objectives). Resolution 68-16 requires that discharges be regulated to meet best practicable treatment or control in order to assure that pollution or nuisance will not occur; and the highest water quality be consistently maintained for the maximum benefit to the people of the State. The Board has considered Resolution 68-16 and Federal antidegradation regulations at 40 CFR 131.12.

The Lower Mokelumne River flows east to west from Camanche Reservoir to the Delta. Twenty-eight miles of the Lower Mokelumne River, from Camanche Reservoir toward the Delta (Hydro Unit 531.200), have been identified as a Water Quality Limited Segment under Section 303(d) of the Clean Water Act (CWA). The list of pollutants for which the Lower Mokelumne River is impaired appears on a list (the "California 303(d) List"), which was updated in 2002 and approved by the State Water Resources Control Board (SWRCB) in February 2003 and by USEPA in July 2003. Pollutants identified on the California 303(d) List as impairing the Mokelumne River include copper and zinc. Resource extraction is identified as the primary source of these pollutants. The Mokelumne River Fish Hatchery discharge occurs within the copper and zinc impaired region of the Mokelumne River. Based upon recent practice, the Facility's operations are not expected to contribute zinc to its discharge and the Facility has not used copper sulfate since 2001. This Order includes a Provision that prohibits the use of aquaculture drugs or chemicals in a manner that would contribute copper or zinc to the discharge from Outfall 001, Outfall 002, or Outfall 003.

Regulation of Aquaculture Drugs and Chemicals

CAAP facilities produce fish and other aquatic animals in greater numbers than natural stream conditions would allow; therefore, system management is important to ensure that fish do not

become overly stressed, making them more susceptible to disease outbreaks. The periodic use of various aquaculture drugs and chemicals is needed to ensure the health and productivity of cultured aquatic stocks and to maintain production efficiency.

CAAP facilities may legally obtain and use aquaculture drugs in one of several ways. Some aquaculture drugs and chemicals used at CAAP facilities in the Region are approved by the U.S. Food and Drug Administration (FDA) for certain aquaculture uses on certain aquatic species. Others have an exemption from this approval process when used under certain specified conditions. Still others are not approved for use in aquaculture, but are considered to be of “low regulatory priority” by FDA (hereafter “LRP drug”). FDA is unlikely to take regulatory action related to the use of a LRP drug if an appropriate grade of the chemical or drug is used, good management practices are followed, and local environmental requirements are met (including NPDES permit requirements). Finally, some drugs and chemicals may be used for purposes, or in a manner not listed on their label (i.e., “extra-label” use) under the direction of licensed veterinarians for the treatment of specific fish diseases diagnosed by fish pathologists. It is assumed that veterinarian-prescribed aquaculture drugs are used only for *short periods of duration* during acute disease outbreaks. Each of these methods of obtaining and using aquaculture drugs is discussed in further detail below.

It is the responsibility of those using, prescribing, or recommending the use of these products to know which aquaculture drugs and chemicals may be used in CAAP facilities in the Region under all applicable federal, State, and local regulations and which aquaculture drugs and chemicals may be discharged to waters of the United States and waters of the State in accordance with this permit. A summary of regulatory authorities related to aquaculture drugs and chemicals is outlined below.

Summary of Regulatory Authorities

FDA is responsible for ensuring the safety, wholesomeness, and proper labeling of food products; ensuring the safety and effectiveness of both human and animal drugs; and ensuring compliance with existing laws governing these drugs. The Federal Food, Drug, and Cosmetic Act (FFDCA), the basic food and drug law of the United States, includes provisions for regulating the manufacture, distribution, and the use of, among other things, new animal drugs and animal feed. FDA’s enforcement activities include correction and prevention of violations, removing illegal products or goods from the market, and punishing offenders. Part of this enforcement includes testing domestic and imported aquacultural products for drug and pesticide residues.

FDA’s Center for Veterinary Medicine (CVM) regulates the manufacture, distribution, and use of animal drugs. CVM is responsible for ensuring that drugs used in food-producing animals are safe and effective and that food products derived from treated animals are free from potentially harmful residues. CVM approves the use of new animal drugs based on data provided by a sponsor (usually a drug company). To be approved by CVM, an animal drug must be effective for the claim on the label and safe when used as directed for (1) treated animals; (2) persons administering the treatment; (3) the environment, including non-target organisms; and (4) consumers. CVM

establishes tolerances and animal withdrawal periods as needed for all drugs approved for use in food-producing animals. CVM has the authority to grant investigational new animal drug (INAD) exemptions so that data can be generated to support the approval of a new animal drug.

There are several options for CAAP facilities to legally obtain and use aquaculture drugs. Aquaculture drugs and chemicals can be divided into four categories as outlined below: approved drugs, investigational drugs, unapproved drugs of low regulatory priority, and extra-label use drugs.

- ***FDA approved new animal drugs***

Approved new animal drugs have been screened by the FDA to determine whether they cause significant adverse public health or environmental impacts when used in accordance with label instructions. Currently, there are six new animal drugs approved by FDA for use in food-producing aquatic species. These six FDA-approved new animal drugs are:

1. Chorionic gonadotropin (Chlorulun®), used for spawning;
2. Oxytetracycline (Terramycin®), an antibiotic;
3. Sulfadimethoxine-orometoprim (Romet-30®), an antibiotic;
4. Tricaine methanesulfonate (MS-222, Finquel® and Tricaine-S), an anesthetic;
5. Formalin (Formalin-F®, Paracide F® and PARASITE-S®), used as a fungus and parasite treatment; and
6. Sulfamerazine, an antibiotic.

Each aquaculture drug in this category is approved by FDA for use on specific fish species, for specific disease conditions, for specific dosages, and with specific withdrawal times. Product withdrawal times must be observed to ensure that any product used on aquatic animals at a CAAP facility does not exceed legal tolerance levels in the animal tissue. Observance of the proper withdrawal time helps ensure that products reaching consumers are safe and wholesome.

FDA-approved new animal drugs that are added to aquaculture feed must be specifically approved for use in aquaculture feed. Drugs approved by FDA for use in feed must be found safe and effective. Approved new animal drugs may be mixed in feed for uses and at levels that are specified in FDA medicated-feed regulations only. It is unlawful to add drugs to feed unless the drugs are approved for feed use. For example, producers may not top-dress feed with a water-soluble, over-the-counter antibiotic product. Some medicated feeds, such as Romet-30®, may be manufactured only after the FDA has approved a medicated-feed application (FDA Form 1900) submitted by the feed manufacturer.

- ***FDA Investigational New Animal Drugs (INAD)***

Aquaculture drugs in this category can only be used under an investigational new animal drug or “INAD” exemption. INAD exemptions are granted by FDA CVM to permit the purchase, shipment and use of an unapproved new animal drug for investigational purposes. INAD exemptions are

granted by FDA CVM with the expectation that meaningful data will be generated to support the approval of a new animal drug by FDA in the future. Numerous FDA requirements must be met for the establishment and maintenance of aquaculture INADs.

There are two types of INADs: standard and compassionate. Aquaculture INADs, most of which are compassionate, consist of two types: routine and emergency. A compassionate INAD exemption is used in cases in which the aquatic animal's health is of primary concern. In certain situations, producers can use unapproved drugs for clinical investigations (under a compassionate INAD exemption) subject to FDA approval. In these cases, CAAP facilities are used to conduct closely monitored clinical field trials. FDA reviews test protocols, authorizes specific conditions of use, and closely monitors any drug use under an INAD exemption. An application to renew an INAD exemption is required each year. Data recording and reporting are required under the INAD exemption in order to support the approval of a new animal drug or an extension of approval for new uses of the drug.

- ***FDA Unapproved new animal drugs of low regulatory priority (LRP drugs)***

LRP drugs do not require a new animal drug application (NADA) or INAD exemptions from FDA. Further regulatory action is unlikely to be taken by FDA on LRP drugs as long as an appropriate grade of the drug or chemical is used, good management practices are followed, and local environmental requirements are met (such as NPDES permit requirements contained in this Permit). LRP drugs commonly used at CAAP facilities in the Region include the following:

1. Acetic acid, used as a dip at a concentration of 1,000-2,000 mg/L for 1-10 minutes as a parasiticide for fish.
2. Carbon dioxide gas, used for anesthetic purposes in cold, cool and warm water fish.
3. Hydrogen peroxide, used at 250-500 mg/L to control fungi on all species and life stages of fish, including eggs.
4. Povidone iodine (PVP) compounds, used as a fish egg disinfectant at rates of 50 mg/L for 30 minutes during egg hardening and 100 mg/L solution for 10 minutes after water hardening.
5. Sodium bicarbonate (baking soda), used at 142-642 mg/L for 5 minutes as a means of introducing carbon dioxide into the water to anesthetize fish.
6. Sodium chloride (salt), used at 0.5-1% solution for an indefinite period as an osmoregulatory aid for the relief of stress and prevention of shock. Used as 3% solution for 10-30 minutes as a parasiticide.

FDA is unlikely to object at present to the use of these LRP drugs if the following conditions are met:

1. The aquaculture drugs are used for the prescribed indications, including species and life stages where specified.
2. The aquaculture drugs are used at the prescribed dosages (as listed above).

3. The aquaculture drugs are used according to good management practices.
4. The product is of an appropriate grade for use in food animals.
5. An adverse effect on the environment is unlikely.

FDA's enforcement position on the use of these substances should be considered neither an approval nor an affirmation of their safety and effectiveness. Based on information available in the future, FDA may take a different position on their use. In addition, FDA notes that classification of substances as new animal drugs of LRP does not exempt CAAP facilities from complying with all other federal, state and local environmental requirements, including compliance with this Permit.

- ***Extra-label use of an approved new animal drug***

Extra-label drug use is the actual or intended use of an approved new animal drug in a manner that is not in accordance with the approved label directions. This includes, but is not limited to, use on species or for indications not listed on the label. Only a licensed veterinarian may prescribe extra-label drugs under FDA CVM's extra-label drug use policy. CVM's extra-label use drug policy (CVM Compliance Policy Guide 7125.06) states that licensed veterinarians may consider extra-label drug use in treating food-producing animals if the health of the animals is immediately threatened and if further suffering or death would result from failure to treat the affected animals. CVM's extra-label drug use policy does not allow the use of drugs to prevent diseases (prophylactic use), improve growth rates, or enhance reproduction or fertility. Spawning hormones cannot be used under the extra-label policy. In addition, the veterinarian assumes the responsibility for drug safety and efficacy and for potential residues in the aquatic animals.

RECEIVING WATER BENEFICIAL USES

The existing beneficial uses of the Mokelumne River, from Camanche Reservoir to the Delta, as identified in Table II-1 of the Basin Plan include: agricultural supply (AGR) including both irrigation and stock watering; body contact recreation, canoeing and rafting, (REC-1); and other non-body contact recreation (REC-2); warm freshwater aquatic habitat (WARM); cold freshwater aquatic habitat (COLD); migration of aquatic organisms (MIGR) both warm and cold habitats, warm and cold habitat spawning, reproduction, and/or early development (SPWN); and wildlife habitat (WILD). In addition, State Board Resolution No. 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution No. 89-056, provides that "*Where a body of water is not currently designated as MUN (municipal and domestic supply beneficial use) but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation.*" Based upon ambient receiving water data collected by the Discharger, the Mokelumne River, from Camanche Reservoir to the Delta, is suitable for MUN, therefore the MUN use is also designated as a beneficial use of this water body.

The Basin Plan on page II-1.00 states: "Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning..." and with respect to disposal of

wastewaters states that "... disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses."

Beneficial uses of the underlying groundwater are municipal and domestic supply (MUN), industrial service supply (IND), industrial process supply (PRO) and agricultural supply irrigation (AGR).

REASONABLE POTENTIAL ANALYSIS AND EFFLUENT LIMITATIONS

Federal regulations at 40 CFR 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 CFR 122.44(d)(1) require effluent limitations for all pollutants that are or may be discharged at a level that will cause, have the reasonable potential to cause, or contribute to an in-stream excursion above a numeric water quality criterion (such as CTR criterion) or a narrative water quality criterion within a State water quality standard. These regulations also set forth a methodology for establishing effluent limitations based on narrative state water quality criteria [40 CFR 122.44(d)(1)(vi)(A-C)].

The USEPA, SWRCB, and Regional Board have adopted or published standards that are used to implement 40 CFR 122.44. The USEPA has promulgated the CTR and NTR that established water quality criteria. The SWRCB has adopted the SIP that implements the CTR and NTR. The USEPA also has published recommended ambient water quality criteria and the Basin Plan contains numeric and narrative water quality objectives. The Basin Plan contains an Implementation 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. The USEPA ambient water quality criteria, results of toxicity studies conducted by the California Department of Fish and Game, and the Basin Plan "Policy of Application of Water Quality Objectives" have been used to implement 40 CFR 122.44(d)(1)(v).

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Total Suspended Solids and Settleable Solids

Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the Regional Board determined that numeric technology-based effluent limitations for total suspended solids (TSS) and settleable solids are appropriate. In addition, based upon application of the final ELG for CAAP facilities, the Regional Board is establishing requirements for a BMP plan.

The Regional Board considered the existing treatment processes (settling basin, raceway cleaning) as well as best management practices (BMPs), such as feed management and other solids

management practices, as the most viable options for treating and controlling pollutants in effluent from this facility.

Background

As noted above, USEPA's final ELG for the aquaculture industry does not include numeric effluent limitations on any conventional, non-conventional, or toxic constituents. Rather, USEPA promulgated qualitative limitations in the form of BMP requirements. Technology-based requirements in this Order are based on a combination of application of the ELG for BMP requirements and case-by-case numeric limitations developed using best professional judgment (BPJ) and carried over from the previous Order 97-116. These effluent limitations are 8.0 mg/L net TSS as an average monthly limitation and 15 mg/L net TSS as a maximum daily limitation; and 0.1 ml/L settleable solids as an average monthly limitation and 0.2 ml/L settleable solids as a maximum daily limitation. Section 402(o) of the CWA prohibits backsliding of effluent limitations that are based on BPJ to reflect a subsequently promulgated ELG which is less stringent. Removal of these numeric limitations for TSS and settleable solids would constitute backsliding under CWA Section 402(o). The Regional Board has determined that these numeric effluent limitations for TSS and settleable solids continue to be applicable to the Facility and that backsliding is not appropriate. These limitations are established as a means of controlling the discharge of solids from algae, silt, fish feces and uneaten feed. Previous Orders for hatcheries have expressed effluent limitations for TSS in terms of a net limitation. The Regional Board finds the use of a net TSS effluent limitation is an appropriate measure of performance and a correct interpretation of this limitation, and does not constitute backsliding (40 CFR 122.44(l)(2)(i)(B)(2)). Results of monitoring indicate the Discharger is capable of meeting these limitations. This Order does not include mass effluent limitations for TSS because there are no standards that specifically require a mass-based effluent limitation, mass of the pollutant discharged is not specifically related to a measure of operation (40 CFR 122.45(f)(iii)), and, in addition, mass-based effluent limitations for TSS are not necessary because this Order includes both concentration-based limitations and a maximum flow limitation. These changes are consistent with Federal anti-backsliding provisions of 40 CFR 122.44(l)(1) and 122.62(a)(2).

Relationship Between Technology-based and Water Quality-based Requirements

In addition to carrying over numeric technology-based requirements based on BPJ, the Regional Board considered the need for water quality-based limitations for TSS and settleable solids. The Regional Board determined that the numeric technology-based TSS and settleable solids limitations, along with the requirement for a BMP plan, are sufficient to ensure attainment of Basin Plan water quality objectives for sediment, settleable material, and suspended material.

WATER QUALITY-BASED EFFLUENT LIMITATIONS (WQBELs)

In September 2001 the Executive Officer of the Regional Board issued a letter pursuant to Section 13267 of the California Water Code (CWC) requiring all NPDES Dischargers to conduct effluent

and receiving water monitoring and submit results of this monitoring in accordance with a time schedule provided in the letter. The Discharger conducted a study to determine whether levels of NTR, CTR, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a numeric or narrative water quality standard, including Basin Plan numeric or narrative objectives and CTR/NTR criteria. Results of this study were submitted to the Regional Board for samples taken on 19 August 2003. The effluent samples were proportionally composited from grab samples taken from Outfall 001 and Outfall 002. Some constituents monitored in this study were not detected at concentrations equal to or greater than appropriate analytical technique Minimum Levels (ML's) specified by Appendix 4 of the SIP. Where an approved laboratory analytical method and associated ML could not, at this time, determine whether an analyte is present in the discharge above the applicable criteria, a Provision of this Order requires resampling for the constituent if new ML's are adopted by the SWRCB. The Discharger did not sample the discharge from Outfall 003. A Provision of this Order requires sampling and study of the discharge from Outfall 003.

Results of the study for discharges from Outfalls 001 and 002 and the receiving water, routine effluent and receiving water monitoring conducted by the Discharger, and information from the Discharger regarding use of aquaculture drugs and chemicals indicate the discharge has the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numeric water quality standard for pH and formaldehyde. As required by 40 CFR Part 122.44 (d)(1)(i)-(iii), this Order includes effluent limitations for pH and formaldehyde. Effluent limitations are being established without benefit of dilution. The Regional Board is not obligated to delegate the assimilative capacity of receiving waters to a Discharger. Further, formaldehyde limitations are based protection of aquatic life from acute effects. Therefore, it is appropriate calculate effluent limitations with no dilution allowance.

CTR Constituents

Results of the study for discharges from Outfalls 001 and 002 and the receiving water, routine effluent and receiving water monitoring conducted by the Discharger, and information from the Discharger regarding use of aquaculture drugs and chemicals have not indicated that the discharge has reasonable potential to cause, or contribute to an in-stream excursion above any CTR criteria. As noted above, however, the Lower Mokelumne River is listed on the CWA Section 303(d) list of impaired waters as being impaired for copper and zinc, and this Order includes a Provision prohibiting the use of aquaculture drugs or chemicals in a manner that would contribute copper or zinc to the discharge from Outfall 001, Outfall 002, or Outfall 003. Also, this Order requires the Discharger to conduct a study of the discharge from Outfall 003.

Non-CTR Constituents

pH

The Basin Plan contains water quality objectives for pH in the form of a range of acceptable pH values (measured in standard units). In the previous Order, the Regional Board established effluent limitations in the form of an acceptable range of pH between 6.5 and 8.5 standard units for discharges to the Mokelumne River. This existing pH limitation is carried over to this Order and will control the discharge of drugs or chemicals (e.g., acetic acid) that may alter the pH of the effluent. Based on recent self-monitoring reports, the discharge has remained within this acceptable range.

Aquaculture Drugs and Chemicals

Numeric water quality criteria, or Basin Plan numeric objectives currently are not available for most of the aquaculture drugs and chemicals used by the Discharger or proposed for use at this facility. Therefore, the Regional Board used the narrative water quality objective for toxicity from the Basin Plan and applied the Policy for “Application of Water Quality Objectives” as a basis for determining “reasonable potential” for discharges of these drugs and chemicals. This objective states, in part: “All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.” The Basin Plan states that compliance with this objective will be determined by several factors, including biotoxicity tests of appropriate duration, or other analytical methods as specified by the Regional Board. (Biotoxicity testing involves measuring the toxic effects of an effluent on specified organisms according to nationally approved protocols). USEPA’s TSD specifies two toxicity measurement techniques that can be employed in effluent characterization; the first is Whole Effluent Toxicity (WET) testing, and the second is chemical-specific toxicity analyses. WET testing is used most appropriately when the toxic constituents in an effluent are not completely known; whereas chemical-specific analysis is more appropriately used when an effluent contains only one, or very few, well-known constituents. Due to the nature of operations and chemical treatments at most CAAP facilities in the Region, CAAP facility effluents generally contain only one or two known chemicals at any given a time. Therefore, the Regional Board is using a chemical-specific approach to determine “reasonable potential” for discharges of aquaculture drugs and chemicals from CAAP facilities. The California Department of Fish and Game (DFG) Pesticide Unit has initiated biotoxicity studies to determine the aquatic toxicity of certain aquaculture drugs and chemicals commonly used at their CAAP facilities in the Region; specifically, formalin, hydrogen peroxide, oxytetracycline, penicillin G, potassium permanganate, and PVP iodine and is required by this Order to conduct toxicity testing on several additional aquaculture drugs and chemicals.

Formalin as Formaldehyde

A 37 percent formaldehyde solution (formalin) is periodically used at hatcheries as a fungicide treatment on fish eggs and fish in the raceways. Although the Discharger has not used formalin on a routine basis, the it has requested the ability to be able to use formalin in the future. Formalin (also known by the trade names Formalin-F®, Paracide-F®, PARASITE-S®) is approved through FDA's New Animal Drug Application (NADA) program for use in controlling external protozoa and monogenetic trematodes on fish, and for controlling fungi of the family *Saprolegniaceae* in food-producing aquatic species (including trout and salmon).

It is likely that a more practical use of formalin would have to be a 25 ppm, 8 hour treatment. This would reduce the discharge level from the settling pond to 1.0 mg/L formalin (0.37 mg/L formaldehyde) for the 8 hours.

DFG Flow Assumptions

The hatchery's settling basin dimensions are 3425ft x 24 ft x 0.5 ft (307,428 gal). The hatchery has 20 raceways, each 300 ft long with a minimum 3 cfs flow, or 1,615,680 gallons total for all in one hour (80,784 gal each). The raceway water is diverted through the settling basin during cleaning and treatments. The hatchery building has 48 deep (600 gal) tanks averaging 2,817 gallons per minute, 48 hatch jars at 264 gallons per minute, and 20 incubator stacks at 110 gallons per minute; this discharge does not go to the settling pond but directly to the river. The total maximum flow from the hatchery building can be up to 7.1 cfs. The total dilution volume for treatment of a single raceway during a one-hour treatment, plus the volume of the settling basin is 1,923,108 gallons.

Estimate of Formaldehyde Discharge Concentrations

For control of other fungi, formalin may be used under an Investigational New Animal Drug (INAD) exemption. Formalin typically is used as a "drip" treatment to control fungus on fish eggs at a concentration of 1,000 to 2,000 ppm for 15 minutes, or as a "flush" treatment in raceways of 1-8 hours in duration at a concentration of 170 to 250 ppm for 1-hour or, based on DFG use assumptions, at 25 ppm for 8-hours. At the maximum usage of 167 ppm formalin for one hour in one raceway, DFG estimates the maximum calculated concentration in the discharge from the settling basin would be 7.0 mg/L as formalin (2.6 mg/L as formaldehyde) for the one hour treatment period:

$$\begin{aligned} \text{One hour treatment: } & \frac{167 \text{ mg/L} \times 80,784 \text{ gallons (raceway flow in 1-hour)}}{1,923,108 \text{ gallons total dilution}} \\ & = 167 \text{ mg/L formalin} \times 0.042 \\ & = 7.0 \text{ mg/L formalin} \times 0.37 = \mathbf{2.6 \text{ mg/L formaldehyde}} \end{aligned}$$

Using the same flow assumptions and a 25 mg/L concentration of formalin for an eight hour treatment period, the discharge level from the settling pond would be 1.0 mg/L formalin or 0.37 mg/L formaldehyde.

$$\begin{aligned} \text{8 hour treatment:} \quad & \frac{25 \text{ mg/L} \times 80,784 \text{ gallons (raceway flow in 1-hour)}}{1,923,108 \text{ gallons total dilution}} \\ & = 25 \text{ mg/L formalin} \times 1.0 \\ & = 1.0 \text{ mg/L formalin} \times 0.37 = \mathbf{0.37 \text{ mg/L formaldehyde}} \end{aligned}$$

These calculations are based on the simplifying assumption that formalin entering the settling pond is flushed every hour and that there is no accumulation or degradation of formalin in the settling pond. Accumulation of formalin in the settling pond would lead to higher discharge concentrations, while degradation of formalin would lead to lower discharge concentrations. A longer detention time for effluent in the settling pond would mean that formalin would be discharged over a period of time that exceeds the treatment time.

The State of California Department of Health Services (DHS) does not have a Maximum Containment Level (MCL) for formaldehyde, however the DHS historic Drinking Water Action Level is listed as 0.1 mg/L based on calculation by standard risk assessment methods, with a Modifying Factor = 10. The USEPA Integrated Risk Information System (IRIS) lists a reference dose of 1.4 mg/L as a drinking water level. There are no recommended criteria for formaldehyde for protection of aquatic life.

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 Mokelumne River. The DFG Pesticide Unit conducted biotoxicity studies to determine the aquatic toxicity of Formalin using *Pimephales promelas* and *Ceriodaphnia dubia* in accordance with the analytical methods specified in EPA600/4-91-002, *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. These “short-term chronic tests” measure effects such as reduced growth of the organism, reduced reproduction rates, or lethality. Results were reported as a No Observed Effect Concentration (NOEC) and a Lowest Observed Effect Concentration (LOEC). The DFG Pesticide Unit also conducted acute toxicity tests using *Ceriodaphnia dubia* in accordance with methods specified in EPA600/4-90/027, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*. Acute toxicity test results typically are reported as the No Observed Adverse Effect Level (NOAEL), Lowest Observed Adverse Effect Level (LOAEL), and LC₅₀. A summary of the data submitted follows:

Species	7-day LC50 (mg/L)	LOEC (mg/L)	NOEC (mg/L)	LOAEL (mg/L)	NOAEL (mg/L)
<i>Ceriodaphnia dubia</i>	2.4	5.8 ¹ 1.3 ²	1.3 ¹ <1.3 ²	5.8	1.3
<i>Pimephales promelas</i>	23.3	9.09	2.28	--	--
<i>Selenastrum capricornutum</i>	<5.2	--	--	--	--

¹ Survival

² Reproduction

Since Formalin treatments are utilized as a batch or flush treatment which result in discharges from three to eight hours, short-term tests were conducted with *C. dubia*, exposing the organisms for 2-hour and 8-hour periods, removing them from the chemical, and continuing the observation period for 7 days in clean water. The results were as follows:

Species	7-day LC50 (mg/L)	LOAEL (mg/L)	NOAEL (mg/L)
<i>C. dubia</i> —2-hour exposure	73.65	46.3	20.7
<i>C. dubia</i> —8-hour exposure	13.99	15.3	6.7

Results of both acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit were considered along with the Basin Plan narrative toxicity objective when determining whether water quality-based effluent limitations for formalin as formaldehyde were necessary. Results of 7-day chronic toxicity tests indicated *Ceriodaphnia dubia* was the most sensitive species, with a 7-day NOEC value of 1.3 mg/l formaldehyde for survival and < 1.3 mg/l for reproduction (the Regional Board used an NOEC of 1.3 mg/L). Acute toxicity tests conducted using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 1.3 mg/l formaldehyde. The additional acute toxicity tests with *Ceriodaphnia dubia* conduct using only an 8-hour exposure, resulted in a 96-hour NOAEL concentration of 6.7 mg/L formaldehyde. Based on the results of these toxicity tests and DFG estimates of potential discharges of formaldehyde from the facility, if formalin is used at this Facility in the future at the DFG estimated maximum dose rate, formaldehyde may be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of the narrative water quality objective for toxicity from the Basin Plan. Accordingly, this Order includes water quality-based effluent limitations for formaldehyde. Effluent concentrations of formaldehyde may persist because of potential application procedures (e.g., successive raceway treatments, drip treatments for eggs) and due to retention of effluent in the settling basins. Therefore, both an average monthly effluent limitation of 0.65 mg/L and a maximum daily effluent limitation of 1.3 mg/L were calculated based on the 96-hour NOAEL value and using the procedure in USEPA's TSD for calculating water quality-based effluent limitations. These effluent limitations are included in this Order and have been established for protection of aquatic life against toxic effects from exposure to formaldehyde in the discharge.

The Regional Board used USEPA's TSD guidance to calculate the MDEL and AMEL for formaldehyde as follows:

Assuming:

- No in-stream dilution allowance.
- Coefficient of Variation (CV) = 0.6 for the lognormal distribution of pollutant concentrations in effluent.

Effluent Concentration Allowance based on NOAEL (acute toxicity) with no dilution allowance

$$ECA_a = 1.3 \text{ mg/l}$$

Effluent Concentration Allowance based on NOEC (chronic toxicity) with no dilution allowance

$$ECA_c = 1.3 \text{ mg/l}$$

Long Term Average concentration based on acute ECA

$$LTA_a = 1.3 \text{ mg/l} \times 0.321 = 0.4173 \text{ mg/l}$$

(where 0.321 = acute ECA multiplier at 99% occurrence probability and 99% confidence)

Long Term Average concentration based on chronic ECA

$$LTA_c = 1.3 \text{ mg/l} \times 0.527 = 0.6851 \text{ mg/l}$$

(where 0.527 = chronic ECA multiplier at 99% occurrence probability and 99% confidence)

Most Limiting LTA concentration

$$LTA = 0.4173 \text{ mg/l}$$

Average Monthly Effluent Limit

$$AMEL = LTA \times 1.55$$

(where 1.55 = AMEL multiplier at 95% occurrence probability, 99% confidence, and $n = 4$)

$$\text{AMEL} = 0.4173 \text{ mg/l} \times 1.55 = \mathbf{0.65 \text{ mg/l}}$$

Maximum Daily Effluent Limit

$$MDEL = LTA \times 3.11$$

(where 3.11 = MDEL multiplier at 99% occurrence probability and 99% confidence)

$$\text{MDEL} = 0.4173 \text{ mg/l} \times 3.11 = \mathbf{1.3 \text{ mg/l}}$$

Sodium Chloride

DFG reports that sodium chloride (salt) is used at the Facility at a rate of up to 400 lbs per 3-hour flush treatment in the raceways as a fish-cleansing agent to control the spread of fish disease and to reduce stress among the confined fish population. Sodium chloride is also used at a rate of 50 lbs per 600 gallon tank in the hatchery building. Application of salt in a single raceway would result in an estimated concentration of approximately 9.3 mg/L sodium chloride in the discharge from the Facility during the 3-hour treatment. These calculations assume the flow from the raceways mixes completely with the volume of the settling basin. For a two-hour discharge time from a hatchery building tank, the estimated discharge concentration would be 100 mg/L sodium chloride. FDA considers sodium chloride an unapproved new animal drug of low regulatory priority (LRP drug) for use in aquaculture. Consequently, FDA is unlikely to take regulatory action if an appropriate grade is used, good management practices are followed, and local environmental requirements are met. A composited (Outfall 001 and Outfall 002) effluent sample taken on 19 August 2003 showed a discharge concentration of 2.1 mg/L chloride and conductivity of 53 μ mhos/cm. The maximum effluent concentration of total dissolved solids (TDS) from data received for January 1998 through October 2003 was 192 mg/L from Outfall 001 and 66 mg/L from Outfall 002. The discharge of sodium chloride from the Facility at the application rates described by DFG will not cause, have a reasonable potential to cause, or contribute to an in-stream excursion of applicable water quality criteria or objectives. Monitoring of conductivity is required and monthly use of sodium chloride must be reported as specified in the Monitoring and Reporting Program.

Hydrogen Peroxide

Hydrogen peroxide (35 % H₂O₂) is used by the Discharger as a flow-through raceway treatment. FDA considers hydrogen peroxide to be an LRP drug when used to control fungi on fish at all life stages, including eggs. Hydrogen peroxide may also be used under an INAD exemption to control bacterial gill disease in various fish, fungal infections, external bacterial infections, and external parasites. DFG reports that a 35% hydrogen peroxide solution is used as a one-hour treatment of 100 ppm (mg/L) in only one raceway at a time resulting in an estimated discharge concentration of 4 mg/L. DFG's calculations assume the flow from the raceways mixes completely with the volume of water in the settling basin and is discharged with no further concentration, breakdown, or dilution of hydrogen peroxide. Hydrogen peroxide is a strong oxidizer that breaks down into water and oxygen; however, it exhibits toxicity to aquatic life during the oxidation process. Results of a single acute toxicity test using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 1.3 mg/L. The estimated discharge concentration of hydrogen peroxide exceeds the NOAEL value. However, since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of hydrogen peroxide, this Order does not include water quality-based effluent limitations for hydrogen peroxide. However, use and monitoring of hydrogen peroxide must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in a Provision to this Order. The Regional

Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

Potassium Permanganate

Potassium permanganate (also known by the trade name of Cairox™) is used to control gill disease as a 1-hour bath treatment in a single raceway at up to 2 mg/L resulting in an estimated discharge of 0.08 mg/L potassium permanganate. It also is used as a flush treatment at 5 mg/L prophylactically in a single raceway as a treatment for external parasites, resulting in an estimated discharge of 0.2 mg/L potassium permanganate. DFG's calculations assume the flow from the raceways mixes completely with the volume of water in the settling basin and is discharged with no further concentration, breakdown, or dilution of potassium permanganate. Potassium permanganate has a low estimated lifetime in the environment, being readily converted by oxidizable materials to insoluble manganese dioxide (MNO₂). In non-reducing and non-acidic environments, MNO₂ is insoluble and has a very low bioaccumulative potential. Potassium permanganate is not approved for use in aquaculture under FDA's NADA program and should therefore be used in accordance with an INAD exemption granted by FDA. Results of a single acute toxicity test using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 0.25 mg/L for potassium permanganate. The estimated concentrations of potassium permanganate in the discharge do not exceed this NOAEL value. Furthermore, there is limited toxicity information available at this time and no information regarding actual discharge concentrations of potassium permanganate. This Order does not include water quality-based effluent limitations for potassium permanganate. Use and monitoring of potassium permanganate must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in a Provision to this Order. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

PVP Iodine

PVP Iodine, a solution composed of 10% PVP Iodine Complex and 90% inert ingredients, is used at the Facility as a fish egg disinfectant (fungicide) from approximately 25 October through 15 February. DFG estimated a maximum usage of 1.2 gallons of PVP Iodine (225mls x 20 stacks/hour). These calculations assume the flow from the hatchery building is discharged via Outfall 001 while mixing with effluent from the 48 deep troughs, 48 hatch jars, and 20 incubator stacks, for a combined flow of 7 cfs. Assuming a one hour flow-through time, the maximum calculated concentration of PVP Iodine in the discharge from Outfall 001 would be 0.42 mg/L or 0.042 mg/L PVP Iodine Complex. FDA considers PVP Iodine an LRP drug for use in aquaculture. Results of a single acute toxicity test with *Ceriodaphnia dubia* showed a 96-hour NOAEL of 0.86 mg/L. The estimated discharge concentration of PVP Iodine Complex is below the NOAEL value. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of PVP Iodine, this Order does not include water quality-based effluent limitations for PVP Iodine. Use and monitoring of PVP Iodine must be reported as specified in the

attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in a Provision to this Order. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

Chloramine-T

Chloramine-T is not currently used but may be used by the Discharger in the future as a possible replacement for formalin. Chloramine-T is available for use in accordance with an INAD exemption by FDA. Chloramine-T breaks down into para-toluenesulfonamide (p-TSA) and, unlike other chlorine-based disinfectants, does not form harmful chlorinated compounds. The Regional Board does not have estimates of discharge concentrations of chloramine-T at this Facility. The Discharger has not conducted biotoxicity tests using chloramine-T, however results of toxicity testing from other sources show a 96-hour LC₅₀ for rainbow trout of 2.8 mg/L. The 48-hour NOEC for *Daphnia magna* was reported as 1.8 mg/L. The DFG Pesticide Unit is proposing to conduct additional toxicity testing on chloramine-T to determine NOAEL concentrations. Since there is limited toxicity information available and no information regarding actual discharge concentrations of chloramine-T, this Order does not include water quality-based effluent limitations for chloramine-T. However, use and monitoring of chloramine-T must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in a Provision to this Order. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

MS-222 and AQUI-S®

The Discharger uses the anesthetic Tricaine methanesulfonate, commonly known as MS-222 (with trade names of Fiquel® or Tricaine-S®). MS-222 has been approved by FDA for use as an anesthetic for Salmonidae. It is intended for the temporary immobilization of fish, amphibians and other aquatic, cold-blooded animals. It has been recognized as a valuable tool for the proper handling of these animals during manual spawning (fish stripping), weighing, measuring, marking, surgical operations, transport, photography, and research. In the future, the Discharger may use the anesthetic AQUI-S®. AQUI-S® is a water dispersible liquid anesthetic for fin fish, crustaceans and shell fish and is used in the US under an INAD exemption. The Regional Board does not have specific toxicity information for MS-222 or AQUI-S® or estimates of potential discharge concentrations of MS-222 and AQUI-S® at this Facility. Since there is limited toxicity information available at this time and no information regarding actual discharge concentrations of MS-222 or AQUI-S®, this Order does not include water quality-based effluent limitations for MS-222 or AQUI-S®. However, use and monitoring of MS-222 and AQUI-S® must be reported as specified in the attached Monitoring and Reporting Program and results of additional toxicity tests must be submitted as specified in a Provision to this Order. The Regional Board will review this information, and other information as it becomes available and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

Oxytetracycline and Penicillin G

In the future, the hatchery may periodically use the antibiotics oxytetracycline and Penicillin G as therapeutic agents in bath treatments to control fish diseases. The bath treatments would be used to treat small fish in 600 gallon tanks. DFG calculated estimated concentrations of oxytetracycline and Penicillin G discharged from the facility as 5.5 mg/L and 3.0 mg/L respectively.

Oxytetracycline, also known by the brand name Terramycin®, is an antibiotic approved through FDA's NADA program for use in controlling ulcer disease, furunculosis, bacterial hemorrhagic septicemia, and pseudomonas disease in salmonids. Oxytetracycline is most commonly used at CAAP facilities as a feed additive. However, oxytetracycline may also be used as an extra-label use under a veterinarian's prescription in an immersion bath of approximately six to eight hours in duration. Because oxytetracycline may be applied in an immersion bath for up to eight hours at a time, results of acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit were considered, along with the Basin Plan narrative toxicity objective, when determining whether water quality-based effluent limitations for oxytetracycline used in an immersion bath treatment were necessary in this Order. Results of acute toxicity tests using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 40.4 mg/L. Results of chronic toxicity tests using *Ceriodaphnia dubia* showed a 7-day NOEC for reproduction of 48 mg/L. The estimated discharge concentration of 5.5 mg/L of oxytetracycline is well below the lowest NOEC and NOAEL. Therefore, at this time, oxytetracycline when used in an immersion bath treatment, is not expected to be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of a narrative water quality objective for toxicity from the Basin Plans. Accordingly, this Order does not include an effluent limitation for oxytetracycline. However, monthly use of oxytetracycline must be reported as specified in the attached Monitoring and Reporting Program. The Regional Board will review this information, and other information as it becomes available, and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

Penicillin G, also known as Pen-G, is an antibiotic used in a six to eight hour immersion bath treatment to control acute disease outbreaks. Penicillin G is not approved under FDA's NADA program and its' extra-label use in aquaculture requires a veterinarian's prescription. Due to the length of treatment time (up to eight hours), results of acute and chronic aquatic life toxicity testing conducted by the DFG Pesticide Unit were considered, along with the Basin Plan narrative toxicity objective, when determining whether water quality-based effluent limitations for penicillin G were necessary in this Order. Results of acute toxicity tests using *Ceriodaphnia dubia* showed a 96-hour NOAEL of 890 mg/L. Results of 7-day chronic toxicity testing using *Pimephales promelas* showed 7-day NOEC for survival of 350 mg/L. The estimated discharge concentration of 3.0 mg/L of penicillin G is well below the lowest NOEC and NOAEL. Therefore, at this time, penicillin G when used in an immersion bath treatment, is not expected to be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of a narrative water quality objective for toxicity from the Basin Plans. Accordingly, this Order does not include an effluent limitation for penicillin G. However, monthly use of penicillin G must be reported as specified in

the attached Monitoring and Reporting Program. The Regional Board will review this information, and other information as it becomes available, and this Order may be reopened to establish effluent limitations based on additional use and toxicity information.

Antibiotics in Feed Formulations and Injected

The antibiotic oxytetracycline is currently used and the antibiotics Romet-30® (sulfadimethoxine, ormetoprim) and florfenicol may potentially be used by the Discharger in feed formulations to control acute disease outbreaks. Erythromycin (injected or used in feed formulations) and amoxicillin (injected) also are antibiotics that may be used in the future to control disease. These antibiotics must be used under conditions in the NADA approval (oxytetracycline and Romet-30®) or an INAD exemption or a veterinarian's prescription for extra-label use. In the NPDES General Permit for Aquaculture Facilities in Idaho (Idaho General Permit), USEPA Region 10 distinguishes between antibiotics applied in feed formulations and antibiotics applied in immersion baths. The Idaho General Permit concludes that drugs or chemicals administered via feed, and ingested by fish, pose little threat to aquatic life or beneficial uses because a majority of the drug is utilized by the fish, though some literature suggests otherwise. As stated in the Idaho General Permit, "U.S. EPA believes that disease control drugs and other chemicals provided for ingestion by fish do not pose a risk of harm or degradation to aquatic life or other beneficial uses." Based on similar conclusions as those drawn by USEPA for the Idaho General Permit, the Regional Board has determined that oxytetracycline, Romet-30®, and florfenicol, (when used in feed formulations), erythromycin (when injected or used in feed formulations) and amoxicillin (when injected) are used in a manner that reduces the likelihood of direct discharge to waters of the United States or waters of the State, particularly when Dischargers implement BMPs, as required by this Order. Therefore, oxytetracycline, Romet-30®, and florfenicol, (when used in feed formulations), erythromycin (when injected or used in feed formulations) and amoxicillin (when injected) are not likely to be discharged from the Facility at levels that would cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this Order does not include water quality-based effluent limitations for these substances; however, it does require reporting use as specified in the attached Monitoring and Reporting Program. If, in the future, additional information becomes available regarding the use or toxicity of any of these substances, the Regional Board will re-evaluate whether its discharge may cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limits.

Carbon Dioxide Gas, Sodium Bicarbonate, and Acetic Acid

Carbon dioxide gas is used to anesthetize fish prior to spawning. Sodium bicarbonate, or baking soda, also is used as a means of introducing carbon dioxide into the water to anesthetize fish. Acetic acid may be used for the control of external parasites. These substances are or may be discharged from the Facility in the future. FDA considers these substances LRP drugs for use in aquaculture. Based upon available information regarding the use of these substances at CAAP facilities in the Region, the Regional Board does not believe that carbon dioxide gas, sodium

bicarbonate, or acetic acid will be discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this Order does not include water quality-based effluent limitations for any of these substances; however, use of these substances must be reported as specified in the attached Monitoring and Reporting Program. In the future, as additional information becomes available regarding the use or toxicity of carbon dioxide gas, sodium bicarbonate, or acetic acid, the Regional Board will re-evaluate whether the discharge of any of these substances to receiving waters may cause, have the reasonable potential to cause, or contribute to an excursion of the Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limits.

Vibrio Vaccine and Enteric Redmouth Bacertin

The Discharger has indicated that it may use a vibrio vaccine and an enteric redmouth bacertin in the future. Vibrio vaccine may be used as an immersion or an injectable vaccine and helps protect salmonid species from vibriosis disease caused by *Vibrio anguillarum* serotype I and *Vibrio ordalii*. Vibrio vaccine stimulates the fish's immune system to produce protective antibodies, helping the animal defend itself against vibriosis. Enteric redmouth (or yersiniosis) bacertins are formulated from inactivated *Yersinia ruckeri* bacteria and may also be used as an immersion or vaccine to help protect salmonid species from enteric redmouth disease caused by *Yersinia ruckeri*. These bacertins stimulate the fish's immune system to produce protective antibodies. These veterinary biologics are licensed for use by the US Department of Agriculture's (USDA's) Center for Veterinary Biologics. Veterinarians should be consulted before beginning an immunization program. According to USDA, most biologics leave no chemical residues in animals and most disease organisms do not develop resistance to the immune response by a veterinary biologic. Based upon available information regarding the use of these substances at CAAP facilities, the Regional Board does not believe that vibrio vaccine or enteric redmouth bacertins, when used according to label and veterinarian instructions, are discharged at levels that cause, have the reasonable potential to cause, or contribute to an excursion of Basin Plan narrative water quality objectives for toxicity. Accordingly, this General Order does not include water quality-based effluent limitations for these substances; however, use of these substances must be reported as specified in the attached Monitoring and Reporting Program. In the future, as additional information becomes available regarding the use or toxicity of these biologics, the Regional Board will re-evaluate whether the discharge of any of these substances to receiving waters may cause, have the reasonable potential to cause, or contribute to an excursion of the Basin Plan objectives for toxicity and, if necessary, re-open this Order to include numeric effluent limitations.

BASIS FOR WASTE DISPOSAL PROVISIONS

Solid waste disposal provisions in this Permit are based on the requirements of CCR Title 27 and prevention of unauthorized discharge of solid wastes into waters of the United States or waters of the State.

BASIS FOR BEST MANAGEMENT PRACTICES PROVISIONS

Best Management Practices plan requirements are established based on requirements in Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category at 40 CFR Part 451.

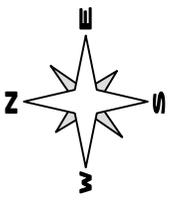
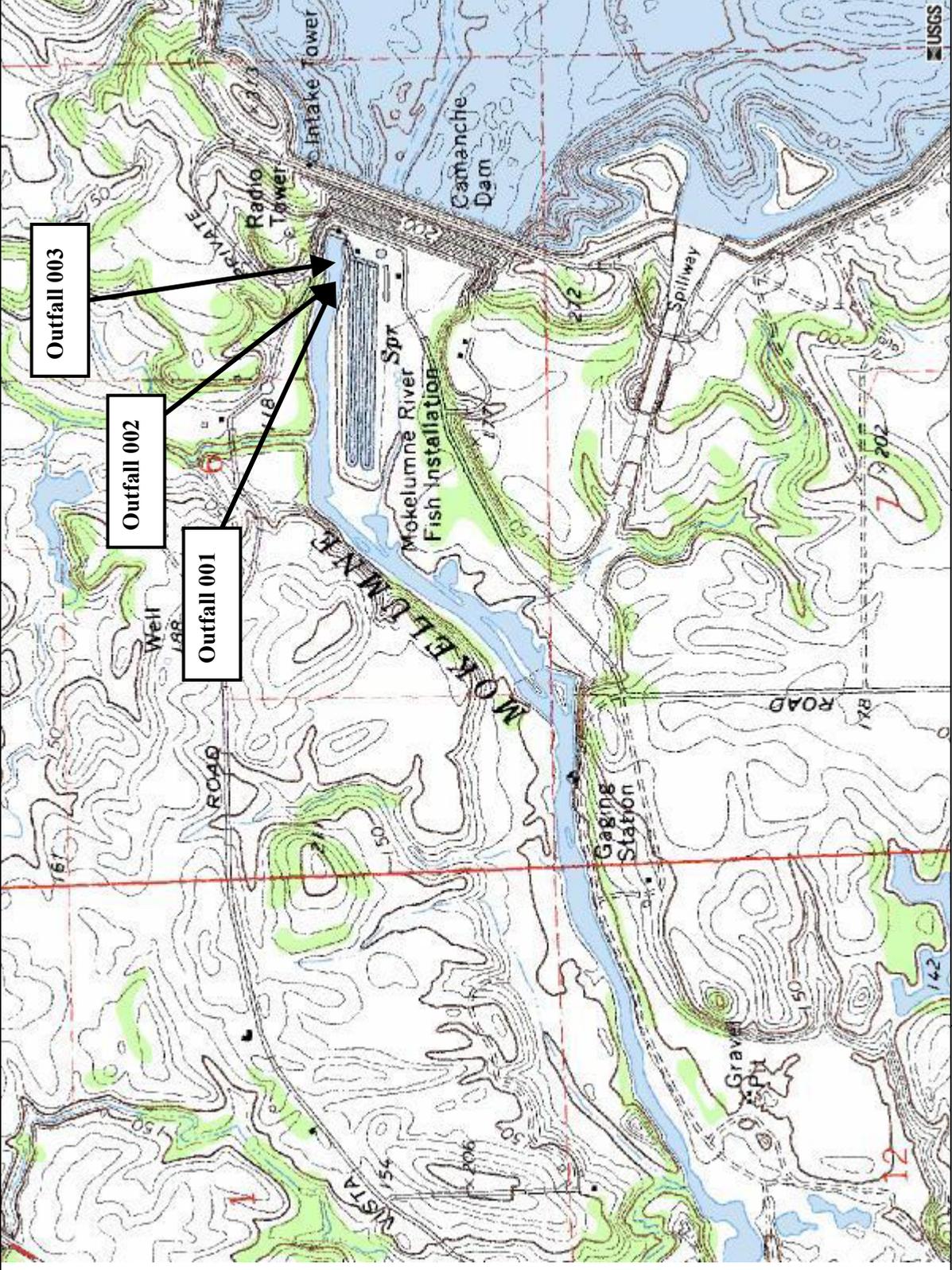
BASIS FOR RECEIVING WATER LIMITATIONS

Receiving water limitations are interpretations of water quality objectives from the Basin Plan. Receiving water limitations in this Permit are included to ensure protection of beneficial uses of receiving waters. A receiving water condition not in conformance with a limitation is not necessarily a violation of the Permit. However, the Regional Board may require an investigation to determine cause and culpability prior to asserting that a violation has occurred.

MONITORING AND REPORTING PROGRAM

Receiving water monitoring requirements are based on the Basin Plan and authorized by California Water Code Section 13383. Receiving water monitoring requirements are standard requirements in almost all NPDES permits issued by the Regional Board. The facility discharges treated effluent at the base of Camanche Dam, therefore there is no representative upstream sampling location. Downstream receiving water monitoring station R-1 must be located within 100 feet downstream of Outfall 001.

Tt:JME



Approx. Scale
1" = 1/4 mile.

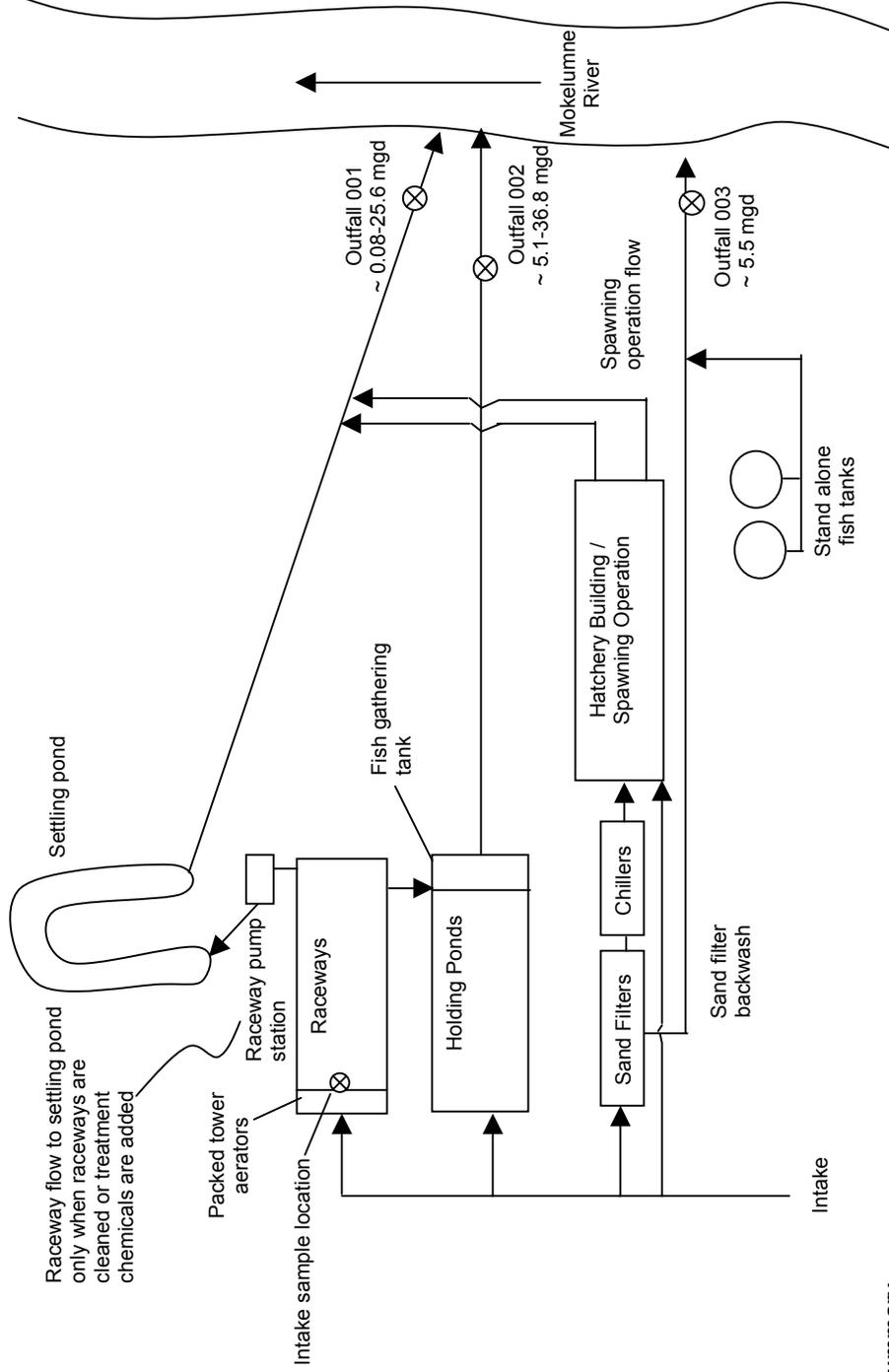
Site Location Map

California Department of Fish and Game and
East Bay Municipal Utility District
Mokelumne River Fish Hatchery
San Joaquin County
Latitude: 38° 13' 29" N Longitude: 121° 01' 29"

Drawing Reference:

U.S.G.S TOPOGRAPHIC MAPS
7.5 MINUTE QUADRANGLE

FACILITY FLOW DIAGRAM
 California Department of Fish and Game and East Bay Municipal Utilities District
 Mokelumne River Fish Hatchery
 San Joaquin County, California



Outfall Summary

- 001** - Water used for egg hatching, incubation, fish troughs and the spawning operation (hatchery building wastewaters); settling pond overflow.
- 002** - Raceway and holding pond/gathering tank flow.
- 003** - Sand filter back wash and separate fish tank discharge
- ⊗ - required monitoring location

Note: Effluent flows are estimated, as reported on DMRs