

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2002-0210 (AMENDMENT NO. 2)
(AS AMENDED BY RESOLUTION NO. R5-2005-0028 (AMENDMENT NO. 1))

NPDES NO. CA0078662

WASTE DISCHARGE REQUIREMENTS
FOR
EL DORADO IRRIGATION DISTRICT
DEER CREEK WASTEWATER TREATMENT PLANT
EL DORADO COUNTY

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

BACKGROUND

1. El Dorado Irrigation District (hereafter Discharger) submitted a Report of Waste Discharge, dated 22 March 2002, and applied for a permit renewal to discharge waste under the National Pollutant Discharge Elimination System (NPDES) from the Deer Creek Wastewater Treatment Plant (DCWWTP). Supplemental information to complete filing of the application was submitted on 15 July 2002.
2. The Discharger owns and operates a wastewater collection, treatment, reclamation and disposal system, and provides sewerage service to the Cameron Park and Mother Lode Service Area. The treatment plant is in Section 16, T9N, R9E, MDB&M, as shown on Attachment A, a part of this Order. Treated municipal wastewater is discharged to Deer Creek, a water of the United States and a tributary to the Cosumnes River at the point, latitude N38°37'42" and longitude W120°59'11". Treated wastewater discharged for reclamation is regulated under separate waste discharge requirements and must meet the requirements of California Code of Regulations, Title 22.
3. The treatment system main components consists of an influent siphon, headworks, primary clarifier, three aeration basins, an emergency storage basin, three secondary clarifiers, eleven tertiary filters, three ultraviolet disinfection units, one primary sludge thickener, one waste activated sludge thickener, four aerobic digesters, two belt filter presses, two sludge lime addition stations, and a plant drain sump. Sludge is dewatered by the belt filter presses and disposed off-site on farmland or at the local landfill. The Report of Waste Discharge describes the discharge as follows:

Monthly Average Flow:	2.86 million gallons per day (mgd)
Daily Peak Wet Weather Flow:	8.04 mgd

Design Flow (dry weather): 2.5 mgd
 Mean Effluent Temperature: 75.5°F Summer; 59.6 °F Winter

<u>Constituent</u>	<u>mg/l</u>	<u>lb/Day²</u>
CBOD ¹	2.53	60.35
Total Suspended Solids	2.63	62.73

¹ 5-day, 20°C biochemical oxygen demand

² Based on an average daily flow of 2.86 mgd

- The DCWWTP has been significantly upgraded over the past five years. With the exception of the tertiary treatment system, improvements to the primary, secondary, and ancillary treatment processes have been constructed to accommodate an ADWF of 3.6 mgd. The environmental impact report for the expansion of the DCWWTP for 2.5 to 3.6 mgd states that the capacity of the existing tertiary filtration system is rated at 1.5 mgd. Additional filtration capacity is provided by using the tertiary filtration system that was designed and constructed for use as part of the reclamation treatment system, which can be utilized for discharge to Deer Creek when not being used to produce reclaimed water.

The Discharger has not accurately defined the capacity of the reclamation treatment system. There are occasions during peak wet weather flows when the filter capacity is exceeded. As an interim measure, until additional filter capacity is added, the Discharger modified the flow splitter to the tertiary filters so that flows that could not be handled by the filters are diverted from the secondary treatment system to a 1 million gallon seasonally used storage tank. When flows subside in the plant, the stored secondary treated wastewater is returned to the headworks, via the plant drain, for retreatment. After use as flow equalization in the winter, the storage tank is drain and cleaned before use as part of the reclamation distribution system.

The Discharger is in the initial stages of the process to add additional tertiary treatment capacity to accommodate an ADWF of 3.6 MGD. In addition, due to the variability of the receiving water dilution capacity, there are times when 20-to-1-dilution capacity is not available during peak wet weather events. Without this amount of dilution the effluent coliform limit of 2.2 MPN/100 ml (7-day median) will be required. Design parameters for the expanded tertiary system will have to take into consideration the peak wet weather events, when 20-to-1 dilution is not available, and the 2.2 MPN/100 ml (7-day median) is in effect.

A time schedule is included in the permit to allow the Discharger adequate time to construct the necessary facilities to fully expand to 3.6 MGD, and achieve compliance with the coliform limit. Upon completion of the upgrades to the

tertiary treatment system, to be capable of treating both an average dry weather flow of 3.6 MGD, and peak wet weather flows, the capacity of the facility will be rated at 3.6 MGD. At that time mass limits will be calculated using 3.6 MGD. Upon completion of the improvements, the expansion of the facility shall be certified, by a Registered Civil Engineer with experience in the design and operation of wastewater treatment plants, that the facility expansion has been completed and the facility was designed and constructed to achieve the limits established in the permit.

5. The U.S. Environmental Protection Agency (EPA) and the Regional Board have classified this discharge as a major discharge.
6. The Regional Board adopted a *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (hereafter Basin Plan). The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve water quality objectives for all waters of the Basin. These requirements implement the Basin Plan.

BENEFICIAL USES OF THE RECEIVING STREAM

7. The Basin Plan at page II-2.00 states: "Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify beneficial uses for Deer Creek, but the Basin Plan does identify present and potential uses for the Cosumnes River, to which is tributary.

The Basin Plan identifies the following beneficial uses for the Cosumnes River: municipal and domestic supply; agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. In addition, State Board Resolution No 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

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."

In reviewing whether the existing and/or potential uses of the Cosumnes River apply to the Deer Creek, the Regional Board has considered the following facts:

a. *Domestic Supply and Agricultural Supply*

The State Water Resources Control Board (SWRCB) Resolution No. 88-63 "Sources of Drinking Water" provides that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards..."

The SWRCB has issued water rights to existing water users along Deer Creek and the Cosumnes River downstream of the discharge for domestic and irrigation uses. Since Deer Creek is an ephemeral stream the creek likely provides groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Deer Creek.

b. *Water Contact and Noncontact Recreation and Esthetic Enjoyment*

The Regional Board finds that the discharge flows through residential areas, there is ready public access to Deer Creek, exclusion of the public are unrealistic and contact recreational activities currently exist along Deer Creek and downstream waters and these uses are likely to increase as the population in the area grows. Prior to discharge into the Cosumnes River, Deer Creek flows through areas of general public access, meadows, residential areas and parks, to the Cosumnes River. The Cosumnes River also offers recreational opportunities.

c. *Groundwater Recharge*

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

d. *Freshwater Replenishment*

When water is present in Deer Creek, there is hydraulic continuity between Deer Creek and the Cosumnes River. During periods of

hydraulic continuity, Deer Creek adds to the water quantity and may impact the quality of water flowing down stream in the Cosumnes River.

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

Deer Creek flows to the Cosumnes River. The California Department of Fish and Game (DFG) has verified that the fish species present in Deer Creek and downstream waters are consistent with both cold and warm water fisheries, that there is a potential for anadromous fish migration necessitating a cold water designation and that trout, a cold water species, have been found both upstream and downstream of the wastewater treatment plant. The Basin Plan (Table II-1) designates the Cosumnes River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Deer Creek. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l.

Upon review of the flow conditions, habitat values, and beneficial uses of Deer Creek, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Cosumnes River are applicable to Deer Creek.

The Regional Board also finds that based on the available information and on the Discharger's application, that Deer Creek, absent the discharge, is an ephemeral stream. The ephemeral nature of Deer Creek means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flows within Deer Creek help support the aquatic life. Both conditions may exist within a short time span, where Deer Creek would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Cosumnes River. Dry conditions occur primarily in the summer months, but dry conditions may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water standards, agricultural water quality goals and aquatic life. Significant dilution may occur during and immediately following high rainfall events.

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

BASIN PLAN AMENDMENT PROCESS

9. Discharge from the DCWWTP can at times dominate the flow in Deer Creek. This condition caused violation of the Basin Plan water quality objectives for inland surface waters for pH, dissolved oxygen, temperature, and turbidity. The Discharger has made significant upgrades to the facility, however during low flow conditions in the creek, receiving water limitations for these pollutants were not being consistently achieved. The Regional Water Board issued Cease and Desist Order (CDO) No. 95-255 on 7 December 1995 requiring the Discharger to implement corrective actions to comply with these and other discharge limitations. Subsequent to the CDO being issued, significant improvements to the facilities were made which brought the facility into compliance with the dissolved oxygen limitation, however, pH, turbidity, and temperature remained problematic. When the current WDRs were issued in 1997, a CDO with compliance time schedules was also adopted to allow further time to comply with the Basin Plan objectives for pH, turbidity, and temperature.

The Discharger chose to pursue a Site-Specific Basin Plan Amendment (SSBPA) in lieu of making physical improvements to the treatment plant for compliance with Basin Plan objectives for pH, turbidity, and temperature. Due to the lengthy SSBPA process, the time schedule was modified to reflect the additional time needed to complete the Basin Plan Amendments (BPAs). In 2000, CDO No. 5-00-033, Amendment 1, required the Discharger to complete the BPAs by 1 December 2003. On 9 July 2002, the Regional Board adopted the BPAs for pH and turbidity.

Due to Discharger compliance difficulties with the receiving water limitations for pH, turbidity, and temperature, the effluent limitations for trihalomethanes, nitrites, and nitrate plus nitrite, and the length of the SSBPA process, the Regional Water Board adopted CDO No. R5-2002-0211 on 6 December 2002. The CDO continued to require completion of BPA for site-specific pH, turbidity, and temperature objectives for Deer Creek by 1 December 2003. On 17 October 2003, the Regional Water Board adopted CDO No. R5-2002-0211 Amendment 1 to allow the Discharger until 1 December 2004 to complete the SSBPA process.

On 19 July 2002, the Regional Water Board adopted the Site-Specific Water Quality Objectives for pH and Turbidity for Deer Creek in El Dorado County, which was approved by the State Water Resources Control Board (State Water Board), State of California Office of Administrative Law (OAL) and the U.S. EPA and became effective on 21 October 2003. On 17 March 2005, the Regional Water Board approved Resolution No. 2005-0028, amending the permit receiving water requirements in WDR Order No. 5-2002-021 to reflect the pH and Turbidity

BPA. This Order incorporates amendments made through Resolution No. 2005-0028 to reflect the BPA for pH and Turbidity.

On 16 September 2005, the Regional Water Board adopted the Site-Specific Temperature Objective for Deer Creek in El Dorado and Sacramento Counties. The Temperature BPA was approved by the State Water Board, OAL and U.S. EPA and became effective on 17 May 2006. This Order amends WDR Order No. R-2002-021 (as amended by Resolution No. 2005-0028) to include receiving water temperature limitations based on the objectives set forth by the BPA.

The Discharger has complied with the requirements of CDO No. 2002-0211, Amendment 1 and the corresponding compliance dates. On 25 January 2007, the Regional Water Board rescinded CDO No. 2002-0211.

EFFLUENT LIMITATIONS AND REASONABLE POTENTIAL

10. U.S. EPA adopted the *National Toxics Rule* (NTR) on 5 February 1993 and the *California Toxics Rule* (CTR) on 18 May 2000. These Rules contain water quality standards applicable to this discharge. The State Water Resources Control Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Plan (SIP)), which contains guidance on implementation of the NTR and the CTR.
11. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. This Order contains provisions that:
 - a. require the Discharger to conduct a study to provide information as to whether the levels of NTR and CTR constituents, EPA Priority Pollutants, or other pollutants in the discharge have the reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, including Basin Plan numeric and narrative objectives and NTR and CTR criteria;
 - b. if the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard, require the Discharger to submit information to calculate effluent limitations for those constituents; and
 - c. allow the Regional Board to reopen this Order and include effluent limitations for those constituents.

On 10 September 2001, the Executive Officer issued a letter, in conformance with State Water Code, Section 13267, requiring the Discharger to prepare a technical report assessing water quality. This Order is intended to be consistent with the requirements of the technical report in requiring sampling for NTR, CTR, and additional constituents to determine the full water quality impacts of the discharge. The technical report requirements are intended to be more detailed, listing specific constituents, detection levels, and acceptable time frames and shall take precedence in resolving any conflicts.

12. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality objectives. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality objective for ammonia, chloroform, coliform, copper, dichlorobromomethane, dibromochloromethane, and nitrates. Effluent limitations for these constituents are included in this Order.
13. Section 13263.6(a), California Water Code, requires that “the Regional Board shall prescribe effluent limitations as part of the waste discharge requirements of a POTW for all substances that the most recent toxic chemical release data reported to the state emergency response commission pursuant to Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (42 U.S.C. Sec. 11023) (EPCRA) indicate as discharged into the POTW, for which the state board or the regional board has established numeric water quality objectives, and has determined that the discharge is or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to, an excursion above any numeric water quality objective”.

The Regional Board has adopted a narrative objective for toxicity in the Basin Plan. The narrative toxicity objective and the Basin Plan *Policy for Application of Water Quality Objectives* provides that the objective may be translated using numerical limits published by other agencies and organizations. As detailed elsewhere in this Permit, available effluent quality data indicate that effluent concentrations of ammonia, chloroform, coliform, copper, dichlorobromomethane, dibromochloromethane, nitrate, and nitrite does have a reasonable potential to cause or contribute to an excursion above numeric or narrative water quality objectives. The EPCRA Section 313 toxic chemical release data report indicates that ammonia, coliform, copper, and nitrate discharge into the Discharger’s collection system. Effluent limitations for ammonia, chloroform, coliform, copper, dichlorobromomethane, dibromochloromethane, nitrate, and nitrite are included in this permit pursuant to CWC Section 13263.6(a).

14. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.
15. **Ultraviolet Disinfection** – The Discharger replaced the existing chlorination/dechlorination effluent disinfection process with an ultraviolet light disinfection system. Chlorine is not used in the treatment process. However, chlorine is used in the reclaimed water distribution system for flushing of pipelines and algae control. This Order includes a prohibition of use of chlorine and/or chlorine containing substances within the treatment process and discharge of chlorine and/or chlorine containing substances into the receiving water.
16. **Ammonia and Nitrates** - Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan prohibits the discharge of chemical constituents in concentrations that adversely affect beneficial uses. Domestic water supply is a beneficial use of Deer Creek. U.S. EPA has developed Drinking Water Standards for protection of human health for nitrite and nitrate and Ambient Water Quality Criteria for ammonia. The discharge from the DCWWTP has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for ammonia, nitrite, and nitrate. Effluent limitations for ammonia, nitrite, and nitrate are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial uses of the receiving stream and to prevent aquatic toxicity.

Under current operational conditions, due to the variable inflow conditions of wastewater into the treatment plant, nitrification on a consistent basis has been achievable. In addition to nitrification, to achieve ammonia limits, de-nitrification is necessary to meet nitrate and nitrite limits. Upgrades to the facility will be necessary to achieve these limits.

17. **Coliform** - The beneficial uses of Deer Creek and the Cosumnes River include contact recreation uses and irrigation. To protect these beneficial uses, the

Regional Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered) to protect contact recreational and food crop irrigation uses. The method of treatment is not prescribed by Order No. R5-2002-0210; however, wastewater must be treated to a level equivalent to that specified in Title 22 and in other recommendations by the DHS.

The DHS is consulted by the Regional Board and makes recommendations for protection of the public's health when contacting wastewater effluent. Generally, DHS recommends that it is necessary to treat wastewater to a tertiary level or provide a 20-to-1 dilution for secondary treated wastewater, in order to protect the public health for contact recreational activities or the irrigation of food crops. The Discharger has been unable to quantify significant dilution within Deer Creek. The Discharger has, however, requested this Order contain secondary treatment effluent limitations to provide relief under a significant storm event when a 20-to-1 dilution is available. The Discharger will be required to establish an in-stream flow measuring system to accurately determine periods when 20-to-1 dilution exists. During these high flow periods, assimilative capacity has not been quantified for individual pollutants and end-of-pipe limits have been established. The BOD and TSS limits for secondary treatment are 30 mg/l as a monthly average and the total coliform limit is 23 MPN as a 7-day median. When there is less than 20-to-1 dilution full tertiary treatment is required. The tertiary limits for both BOD and TSS are 10 mg/l, and the effluent limit for total coliform organisms is 2.2 MPN/100 ml as a 7-day median. The effluent limits are based on the critical low flow, or zero dilution, and have also resulted in "end-of-pipe" limits.

The DHS has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 ml as a 7-day median. Title 22 is not directly applicable to surface waters; however, the Regional Board finds that it is appropriate to apply the DHS reclamation criteria because Deer Creek and the Cosumnes River are used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops. Coliform organisms are intended as an indicator of the effectiveness of the entire

treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

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

18. This Order requires a tertiary level of treatment or 20-to-1 dilution in order to meet the requirements of the beneficial uses of Deer Creek. Sampling at the facility has shown that it can meet the 7-day 2.2 MPN/100 ml coliform standard and the 2 NTU monthly averages for turbidity the majority of the time. There is not a correlation between receiving water dilution capacity and violation of the 7-day 2.2 MPN/100 ml coliform standard. The DCWWTP tertiary treatment system must be upgraded to achieve compliance with tertiary limits up to peak wet weather flow to insure compliance with the coliform limit. With the exception of the tertiary treatment portion of the facility, the DCWWTP has been upgraded to handle peak wet weather flows. Additional tertiary filtration capacity is necessary to insure full compliance with the coliform standard.

The Discharger is currently in the process of design to upgrade the tertiary system. A time schedule is included in this Order to achieve compliance with the 7-day 2.2 MPN/100 ml coliform standard. The Discharger has not defined the actual capacity of the existing tertiary filtration system. Based on the discharger self monitoring reports and other available information, the tertiary filtration system has consistently achieved compliance with the 7-day median 2.2 MPN/100 ml coliform standard when flows to the plant are less than or equal to 5.0 MGD. Until the upgrades are completed, an interim limit for coliform is included in this Order, as follows: when the average daily flow exceeds 5.0 MGD the daily coliform standard will be 23 MPN/100 ml; and, when the daily average flow subsides to less than 5.0 MGD, the 7-day 2.2 MPN/100 ml coliform standard applies. When calculating the 7-day median, days that exceed 5.0 MGD are excluded from the calculation.

19. This Order contains Effluent Limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. In accordance with California Water Code, Section 13241, the Regional Board has considered the following:

As stated in the above Findings, the past, present and probable future beneficial uses of the receiving stream include municipal and domestic supply, agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat.

The environmental characteristics of the hydrographic unit including the quality of water available will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities that would otherwise be unsafe according to recommendations from the DHS.

Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors that affect water quality in the area.

The economic impact of requiring an increased level of treatment has been considered. The current monthly domestic sewer user fee is \$42.94, approximately double the California average monthly domestic sewer user fee of \$20.46. The Discharger has already expanded the capacity of the treatment facility to 3.6 MGD, except for the tertiary treatment system. In 2001 the District estimated the cost to expand the tertiary treatment capacity to be \$4.9 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, include prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment.

The requirement to provide tertiary treatment for this discharge will not adversely impact the need for housing in the area. The potential to develop housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DHS recommends that, in order to protect the public health, undiluted wastewater effluent must be treated to a tertiary level, for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.

It is the Regional Board's policy, (Basin Plan, page IV-15.00, Policy 2) to encourage the reuse of wastewater. The Regional Board requires Dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of wastewater treatment, which will allow for a greater variety of uses in accordance with California Code of Regulations, Title 22.

20. In accordance with a previous permit, Order No, 97-211, the Discharger performed a study entitled "Phase II Effluent and Receiving Water Quality Assessment for the El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant, dated 12 February 1999. The purpose of this report was to accurately identify contaminant levels in the treated effluent discharged from the DCWWTP into Deer Creek, and to assess the potential for effluent discharges to cause a receiving water exceedance of the water quality standards, including chronic toxicity. The study provided a significant amount of data to determine compliance with the CTR and other applicable water quality objectives. From the study the following constituents were determined to have a reasonable potential to exceed water quality objectives.
 - a. **Total Trihalomethanes and Chloroform** - Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and USEPA in evaluating health risks via drinking water exposure of 70 kg body weight and 2 liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 ug/L (ppb) at the 1-in-a-million cancer risk level. This risk level is consistent with that used by the DHS to set *de minimus* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters. A recent decision by the State Water Resources Control Board, Order No. WQ2002-0015, found that application of a chloroform limitation for a discharge to an

ephemeral stream based on a cancer risk analysis was not appropriate since the U.S. EPA is evaluating the science used to develop the CTR and has reserved application of a water quality standard. This Order establishes an Effluent Limitation at the maximum contaminate level (MCL) for total trihalomethanes, the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane, based on protection of the municipal beneficial use of 80 µg/l. Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have an average concentration of 48 µg/l, with a maximum concentration of 76 µg/l of chloroform. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality objective for municipal uses by causing exceedance of the primary MCL for trihalomethanes. Therefore, an Effluent Limitation for total trihalomethanes is included in this Order and is based on the Basin Plan objective for municipal use. If U.S. EPA or the State Board develops a water quality objective for chloroform and/or total trihalomethanes, this Order may be reopened and a new Effluent Limitation established.

- b. **Chlorodibromomethane** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge had an average concentration of 1.07 µg/l and a maximum concentration of 1.90 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for chlorodibromomethane. The CTR establishes numeric water quality standards for chlorodibromomethane. The criterion for waters from which both water and organisms are consumed is 0.41 µg/l. An Effluent Limitation for chlorodibromomethane is included in this Order.
- c. **Dichlorobromomethane** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have a average concentration of 9.40 µg/l and a maximum concentration of 12.0 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for dichlorobromomethane. The CTR establishes numeric water quality standards for dichlorobromomethane. The criterion for waters from which both water and organisms are consumed is 0.56 µg/l. An Effluent Limitation for dichlorobromomethane is included in this Order.
- d. **Copper**- Based on analytical results of effluent samples collected by the Discharger, the discharge total recoverable copper concentration has been measured up to 30.7 µg/l, with an average concentration of 19.4 µg/l. The lowest recorded upstream receiving water hardness value was 23 mg/l. However, further investigation indicates that this value represents an analytical reporting error. Upstream receiving water hardness values recorded for the same day indicates an upstream hardness of 226 mg/l.

(Corresponding EC measurements are consistent during this same time period.) The lowest representative upstream receiving water hardness value of 66 mg/l is used to determine if the concentration of copper in the effluent has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for copper. At the worst-case hardness of 66 mg/l, the criterion continuous concentration and criterion maximum concentration limitations for total recoverable copper are 6.54 µg/l and 9.46 µg/l, respectively.

The CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria. In March of 2005, the Discharger submitted the results of three studies for addressing copper compliance issues at the Facility: (1) Copper Corrosion Control Methods to Minimize Wastewater Copper Discharges; (2) Bench Testing of Polymers for Copper Removal at the Deer Creek Wastewater Treatment Plant; and (3) Deer Creek Wastewater Treatment Plant Copper Water-Effects Ratio Study. As detailed in the Information Sheet, the Regional Water Board has reviewed the studies and has concurred with the conclusions reached.

Based on analysis and monitoring results, final copper water-effect ratios (WER) of 9.70 and 8.86 have been developed for total recoverable and dissolved forms of copper respectively. When the total recoverable WER is applied to the criterion values for copper, the total recoverable criterion continuous concentration and criterion maximum concentration become 63.44 µg/l and 91.76 µg/l, respectively. The maximum total recoverable copper effluent concentration (MEC) is 30.7 µg/l. The MEC is less than the criterion value, therefore, there is no reasonable potential to cause or contribute to an in-stream excursion above water quality standards for copper. An effluent limit for copper is not included in this Order, however, monitoring is required.

- e. **Diethyl phthalate and Dimethyl phthalate-** Ten samples were taken monthly and analyzed for Diethyl phthalate and Dimethyl phthalate, all of the samples were non-detect except for the first sample taken. Diethyl phthalate and Dimethyl phthalate were present in the first round of samples at concentrations of 78 µg/l and 17 µg/l, respectively. Diethyl phthalate and Dimethyl phthalate are used in the manufacturing of plastics and polyvinyl chloride (PVC) pipe and tubing. The presence in the first round of sampling may have been due to the use of new sampling equipment that was not properly sanitized before it's first use. The CTR standards for Diethyl phthalate and Dimethyl phthalate are 23 mg/l and 313 mg/l, respectively. There is no reasonable potential to exceed the CTR standard.

GENERAL

21. 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.
22. The discharge is presently governed by Waste Discharge Requirements Order No. 99-130, adopted by the Regional Board on 17 September 1999.
23. The action to adopt an NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), requiring preparation of an environmental impact report or negative declaration in accordance with Section 13389 of the California Water Code.
24. The El Dorado Irrigation District has certified a final environmental impact report (EIR) in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), and the State CEQA Guidelines. The Regional Board has reviewed the EIR and concurs that with adoption of these waste discharge requirements there are no significant impacts on water quality.
25. The Regional Board has considered the information in the attached Information Sheet in developing the Findings of this Order. The attached Information Sheet is part of this Order.
26. 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.
27. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.
28. This Order shall serve as an NPDES permit pursuant to Section 402 of the CWA, and amendments thereto, and shall take effect upon the date of hearing, provided EPA has no objections.

IT IS HEREBY ORDERED that Order No. 99-130 is rescinded and El Dorado Irrigation District, its agents, successors and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the

provisions of the Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of wastewater at a location or in a manner different from that described in the Findings is prohibited.
2. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Standard Provision A.13. [See attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)"].
3. Use of chlorine and/or chlorine containing substances within the treatment process and discharge of chlorine and/or chlorine containing substances into the receiving water is prohibited.
4. Neither the discharge nor its treatment shall create a nuisance as defined in Section 13050 of the California Water Code.

B. Effluent Limitations:

1. Wastewater shall be oxidized, coagulated and filtered, or equivalent treatment provided, and the effluent shall not exceed the following limits when flow Deer Creek provides less dilution than 20:1 (stream flow:effluent):

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>7-day Median⁶</u>	<u>Daily Maximum</u>	<u>1-hour Average</u>
Ammonia ⁵	mg/l	Table A	---	---	Table B	---
	lbs/day ³	calculated	---	---	calculated	---
BOD ¹	mg/l	10 ²	15 ²	---	30 ²	---
	lbs/day ³	208	313	---	626	---
Chlorodibromomethane ⁷	μg/l	0.41	---	---	---	---
	lbs/day ³	0.009	---	---	---	---
Dichlorobromomethane	μg/l	0.56	---	---	---	---
	lbs/day ³	0.012	---	---	---	---
Nitrite (as N)	mg/l	1	---	---	---	---
	lbs/day ³	21	---	---	---	---
Nitrate + Nitrite (as N)	mg/l	10	---	---	---	---
	lbs/day ³	208	---	---	---	---
Settleable Solids	ml/l	0.1	---	---	0.2	---
Total Coliform Organisms	MPN/100 ml	---	---	2.2	23 ⁶	---
Total Suspended Solids	mg/l	10 ²	15 ²	---	30 ²	---
	lbs/day ³	208	313	---	626	---
Total Trihalomethanes ⁷	μg/l	80 ⁷	---	---	---	---
	lbs/day ³	1.66	---	---	---	---
Turbidity ⁴	NTU	2 ⁴	---	---	5 ⁴	---

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

² To be ascertained by a 24-hour flow proportional composite sample.

³ Based upon a design treatment capacity of 2.5 mgd ($x \text{ mg/l} \times 8.345 \times 2.5 \text{ mgd} = y \text{ lbs/day}$)

⁴ The daily average turbidity shall not exceed 2 NTU. Turbidity shall not exceed 5 NTU more than 5 percent of the time within a 24-hour period. At no time shall the turbidity exceed 10 NTU.

⁵ The mass limit (lb/day) for ammonia shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 2.5 mgd and the unit conversion factor of 8.345 (see footnote 3 for equation).

⁶ 7-day median is based on the previous seven daily sample results. The total coliform organisms concentration shall not exceed 23 MPN/100 ml more than once in any 30-day period. No sample shall exceed a concentration of 240 MPN/100 ml.

⁷ The monthly average for total trihalomethanes shall not exceed 80 μg/l. Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane.

2. When flow in Deer Creek provides a minimum dilution of 20:1 (stream flow:effluent) full secondary treatment shall be provided and the coagulation system and filters shall be used to the maximum extent possible and effluent shall not exceed the following limits:

WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2002-0210 (AMENDMENT NO. 2) -19-
 (AS AMENDED BY RESOLUTION NO. R5-2005-0028 (AMENDMENT NO. 1))
 EL DORADO IRRIGATION DISTRICT
 DEER CREEK WASTEWATER TREATMENT PLANT
 EL DORADO COUNTY

<u>Constituents</u>	<u>Units</u>	<u>Monthly Average</u>	<u>Weekly Average</u>	<u>7-day Median⁵</u>	<u>Daily Maximum</u>	<u>1-hour Average</u>
Ammonia ⁴	mg/l	Table A	---	---	Table B	---
	lbs/day ³	calculated	---	---	calculated	---
BOD ¹	mg/l	30 ²	45 ²	---	60 ²	---
	lbs/day ³	625	938	---	1251	---
Chlorodibromomethane	μg/l	0.41	---	---	---	---
	lbs/day ³	0.009	---	---	---	---
Dichlorobromomethane	μg/l	0.56	---	---	---	---
	lbs/day ³	0.012	---	---	---	---
Nitrite (as N)	mg/l	1	---	---	---	---
	lbs/day ³	21	---	---	---	---
Nitrate + Nitrite (as N)	mg/l	10	---	---	---	---
	lbs/day ³	208	---	---	---	---
Settleable Solids	ml/l	0.1	---	---	0.2	---
Total Coliform Organisms	MPN/100 ml	---	---	23	230	---
Total Suspended Solids	mg/l	30 ²	45 ²	---	60 ²	---
	lbs/day ³	250	376	---	750	---
Total Trihalomethanes ⁶	μg/l	80 ⁶	---	---	---	---
	lbs/day ³	1.66	---	---	---	---

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

² To be ascertained by a 24-hour flow proportional composite sample.

³ Based upon a design treatment capacity of 2.5 mgd ($x \text{ mg/l} \times 8.345 \times 2.5 \text{ mgd} = y \text{ lbs/day}$)

⁴ The mass limit (lb/day) for ammonia shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 2.5 mgd and the unit conversion factor of 8.345 (see footnote 3 for equation).

⁵ 7-day median is based on the previous seven daily sample results.

⁶ The monthly average for total trihalomethanes shall not exceed 80μg/l. Total trihalomethanes is the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane.

3. The arithmetic mean of 20°C BOD (5-day) and total suspended solids in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).
4. The discharge shall not have a pH less than 6.5 nor greater than 8.5.
5. The average dry weather discharge flow shall not exceed 2.5 million gallons per day. With the exception of the tertiary treatment system, the facility has been upgraded to 3.6 MGD (average daily flow). Upon completion of the upgrades to the tertiary treatment system, to be capable of treating both an average dry weather flow of 3.6 MGD, and peak wet weather flows, the capacity of the facility will be rated at 3.6 MGD. At that time mass limits will be calculated using 3.6 MGD. Upon completion of the improvements, the expansion of the facility shall certified, by a Registered Civil Engineer with

experience in the design and operation of wastewater treatment plants, that the facility expansion has been completed and the facility was designed and constructed to achieve the limits established by this Order.

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

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

C. Sludge Disposal:

1. Collected screenings, sludges, and other solids removed from liquid wastes shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.
2. Any proposed change in sludge use or disposal practice from a previously approved practice shall be reported to the Executive Officer and EPA Regional Administrator at least **90 days** in advance of the change.
3. Use and disposal of sewage sludge shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in 40 CFR 503.

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

4. The Discharger is encouraged to comply with the "Manual of Good Practice for Agricultural Land Application of Biosolids" developed by the California Water Environment Association.
5. By 1 May 2003, the Discharger shall submit a sludge disposal plan describing the annual volume of sludge generated by the plant and specifying the disposal practices.

D. Receiving Water Limitations:

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

The discharge shall not cause the following in the receiving water:

1. Concentrations of dissolved oxygen to fall below 7.0 mg/l. The monthly median of the mean daily dissolved oxygen concentration shall not fall below 85 percent of saturation in the main water mass, and the 95th percentile concentration shall not fall below 75 percent of saturation.
2. Oils, greases, waxes, or other materials to form a visible film or coating on the water surface or on the stream bottom.
3. Oils, greases, waxes, floating material (liquids, solids, foams, and scums) or suspended material to create a nuisance or adversely affect beneficial uses.
4. Esthetically undesirable discoloration.
5. Fungi, slimes, or other objectionable growths.
6. The turbidity to increase as follows:
 - a. When the dilution ratio for discharges is less than 20:1 and where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), discharges shall not cause the receiving water daily average turbidity to exceed 2 NTUs or daily maximum turbidity to exceed 5 NTUs. Where natural turbidity is between 1 and 5 NTUs, dischargers shall not cause receiving water daily average turbidity to increase more than 1 NTU or daily maximum turbidity to exceed 5 NTUs.
 - b. Where discharge dilution ratio is 20:1 or greater, or where natural turbidity is greater than 5 NTUs, the following shall apply:
 - Where natural turbidity is between 5 and 50 NTUs, receiving water increases due to discharge shall not exceed 20 percent
 - Where natural turbidity is between 50 and 100 NTUs, receiving water increases due to discharge shall not exceed 10 NTUs
 - Where natural turbidity is greater than 100 NTUs, receiving water increases due to discharge shall not exceed 10 percent
7. The ambient pH to fall below 6.5 nor rise above 8.5.

8. The ambient temperature to be equal or below to be elevated above the following temperatures:

DEER CREEK TEMPERATURE OBJECTIVES (TABLE III-4A of Basin Plan)		
Date	Daily Maximum (°F)^a	Monthly Average (°F)^b
January and February	63	58
March	65	60
April	71	64
May	77	68
June	81	74
July through September	81	77
October	77	72
November	73	65
December	65	58

^a Maximum not to be exceeded.

^b Defined as a calendar month average.

9. Deposition of material that causes nuisance or adversely affects beneficial uses.
10. Radionuclides to be present in concentrations that exceed maximum contaminant levels specified in the California Code of Regulations, Title 22; that harm human, plant, animal or aquatic life; or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.
11. Aquatic communities and populations, including vertebrate, invertebrate, and plant species, to be degraded.
12. Toxic pollutants to be present in the water column, sediments, or biota in concentrations that adversely affect beneficial uses; that produce detrimental response in human, plant, animal, or aquatic life; or that bioaccumulate in aquatic resources at levels which are harmful to human health.
13. Violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Water Resources Control Board pursuant to the CWA and regulations adopted thereunder.
14. 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.

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

E. Groundwater Limitations:

Release of waste constituents from any storage, treatment, or disposal component associated with the WWTP shall not degrade groundwater.

F. Provisions:

1. The Discharger shall not allow pollutant-free wastewater to be discharged into the collection, treatment, and disposal system in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
2. There are indications that the discharge may contain constituents that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. The constituents are specifically listed in a technical report requirement issued by the Executive Officer on 10 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 March 2003
Submit Study Report for dioxins	1 March 2004

This Order is intended to be consistent with the requirements of the 10 September 2001 technical report. 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 will be reopened and effluent limitations added for the subject constituents.

3. New or revised effluent limitations for coliform, dichlorobromomethane, and dibromochloromethane, have been included in this Order. To comply with these limits, it will be necessary for the Discharger to modify the existing treatment facility.

Additional tertiary filtration capacity is necessary during peak wet weather events to achieve total coliform limits when 20-to-1 dilution is not available in Deer Creek. A time schedule is included in this Order for the Discharger to expand the tertiary capacity of the facility to comply with Effluent Limitation B.1. for total coliform. The facility has demonstrated that it can reliably comply with this limit up to 5.0 MGD. The Discharger can not achieve immediate compliance with the total coliform limit during peak wet weather events, therefore an interim limit is provided until the construction of the additional facilities are completed. The interim limit is as follows:

When the average daily flow exceeds 5.0 MGD the daily coliform standard will be 23 MPN/100 ml; and, when the daily average flow subsides to less than 5.0 MGD, the 7-day 2.2 MPN/100 ml coliform standard applies. When calculating the 7-day median, days that exceed 5.0 MGD are excluded from the calculation.

To allow for these modifications a time schedule to comply with these new limits and construction of additional tertiary capacity is included. The Discharger shall comply with the following time schedule to complete the necessary improvements and fully comply with the new discharge limits.

<u>Task</u>	<u>Compliance Date</u>
Submit Workplan and Time Schedule	6 February 2003
Identify and Scope of Projects	31 December 2003
Complete Facility Modifications	30 September 2006
Full Compliance	30 December 2006

The Discharger shall submit to the 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 Board by letter when it returns to compliance with the time schedule.

4. The Discharger shall conduct the chronic toxicity testing specified in the Monitoring and Reporting Program. If the testing indicates that the discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the water quality objective for toxicity, the Discharger initiate a Toxicity Identification Evaluation (TIE) to identify the causes of toxicity. Upon completion of the TIE, the Discharger shall submit a workplan to conduct a Toxicity Reduction Evaluation (TRE) and, after Regional Board evaluation, conduct the TRE. This Order will be reopened and a chronic toxicity limitation included and/or a limitation for the specific toxicant identified in the TRE included. Additionally, if a chronic toxicity water quality objective is adopted by the State Water Resources Control Board, this Order may be reopened and a limitation based on that objective included.
5. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986.
6. The Discharger shall comply with all the items of the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements (NPDES)", dated 1 March 1991, which are part of this Order. This attachment and its individual paragraphs are referred to as "Standard Provisions."
7. The Discharger shall comply with Monitoring and Reporting Program No. R5-2002-2010, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
8. When requested by USEPA, the Discharger shall complete and submit Discharge Monitoring Reports. The submittal date shall be no later than the submittal date specified in the Monitoring and Reporting Program for Discharger Self Monitoring Reports.
9. This Order expires on **31 December 2007** and the Discharger must file a Report of Waste Discharge in accordance with Title 23, CCR, not later than 180 days in advance of such date in application for renewal of waste discharge requirements if it wishes to continue the discharge.
10. The Discharger shall enforce the Pretreatment Standards promulgated under Sections 307(b), 307(c) and 307(d) of the Clean Water Act. The Discharger shall perform the pretreatment functions required by 40 CFR Part 403 including but not limited to:
 - a. Adopting the legal authority required by 40 CFR 403.8(f)(1);

- b. Enforcing the Pretreatment Standards of 40 CFR 403.5 and 403.6;
 - c. Implementing procedures to ensure compliance as required by 40 CFR 403.8(f)(2); and
 - d. Providing funding and personnel for implementation and enforcement of the pretreatment program as required by 40 CFR 403.8(f)(3).
11. The Discharger shall implement its approved pretreatment program and the program shall be an enforceable condition of this permit. If the Discharger fails to perform the pretreatment functions, the Regional Water Quality Control Board (RWQCB), the State Water Resources Control Board (SWRCB) or the U.S. Environmental Protection Agency (U.S. EPA) may take enforcement actions against the Discharger as authorized by the Clean Water Act.
12. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the necessary legal authorities, programs, and controls to ensure that the following incompatible wastes are not introduced to the treatment system, where incompatible wastes are:
 - a. Wastes which create a fire or explosion hazard in the treatment works;
 - b. Wastes which will cause corrosive structural damage to treatment works, but in no case wastes with a pH lower than 5.0, unless the works is specially designed to accommodate such wastes;
 - c. Solid or viscous wastes in amounts which cause obstruction to flow in sewers, or which cause other interference with proper operation or treatment works;
 - d. Any waste, including oxygen demanding pollutants (BOD, etc.), released in such volume or strength as to cause inhibition or disruption in the treatment works, and subsequent treatment process upset and loss of treatment efficiency;
 - e. Heat in amounts that inhibit or disrupt biological activity in the treatment works, or that raise influent temperatures above 40°C (104°F), unless the Regional Board approves alternate temperature limits;
 - f. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

- g. Pollutants which result in the presence of toxic gases, vapors, or fumes within the treatment works in a quantity that may cause acute worker health and safety problems; and
 - h. Any trucked or hauled pollutants, except at points predesignated by the Discharger.
- 13. The Discharger shall implement, as more completely set forth in 40 CFR 403.5, the legal authorities, programs, and controls necessary to ensure that indirect discharges do not introduce pollutants into the sewerage system that, either alone or in conjunction with a discharge or discharges from other sources:
 - a. Flow through the system to the receiving water in quantities or concentrations that cause a violation of this Order, or
 - b. Inhibit or disrupt treatment processes, treatment system operations, or sludge processes, use, or disposal and either cause a violation of this Order or prevent sludge use or disposal in accordance with this Order.
- 14. Prior to making any change in the discharge point, place of use, or purpose of use of the wastewater, the Discharger shall obtain approval of, or clearance from the State Water Resources Control Board (Division of Water Rights).
- 15. Minimum detection levels for monitoring required by this Order shall, unless impracticable, be adequate to demonstrate compliance with permit limitations.
- 16. In the event the Discharger does not comply with an effluent limitation or receiving water limitation of this Order, the Discharger shall resample for the specific constituent for which the limitation was exceeded. The Discharger shall continue sampling at an increased frequency sufficient to determine the duration and severity of the violation. The frequency for constituents sampled using 24-hour composites on a 7-day a week schedule are exempted. This information shall be compiled in a written notification, which shall state nature, time, duration, and cause of noncompliance, and shall describe the measures being taken to remedy the noncompliance and, prevent recurrence. All permit violations must be reported to the Board by telephone (916) 255-3000 within 24 hours of having knowledge of such noncompliance.
- 17. 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.

WASTE DISCHARGE REQUIREMENTS, ORDER NO. R5-2002-0210 (AMENDMENT NO. 2) -28-
(AS AMENDED BY RESOLUTION NO. R5-2005-0028 (AMENDMENT NO. 1))
EL DORADO IRRIGATION DISTRICT
DEER CREEK WASTEWATER TREATMENT PLANT
EL DORADO COUNTY

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

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

Transfer shall be approved or disapproved in writing by the Executive Officer.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **25 January 2007**.

PAMELA C. CREEDON, Executive Officer

INFORMATION SHEET

ORDER NO. R5-2002-210
EL DORADO IRRIGATION DISTRICT
DEER CREEK WASTEWATER TREATMENT PLANT
EL DORADO COUNTY
NPDES NO. CA0078662

SCOPE OF PERMIT

This amended Order regulates the discharge of up to 2.5 million gallons per day (mgd), design average dry weather flow (ADWF), of effluent from the El Dorado Irrigation District (Discharger), Deer Creek Wastewater Treatment Plant (DCWWTP). This Order includes effluent, water supply, sludge, and surface water limitations, monitoring and reporting requirements, additional study requirements, and reopener provisions for effluent constituents.

BACKGROUND INFORMATION

The Discharger owns and operates a wastewater collection, treatment, reclamation and disposal system, and provides sewerage service to the Cameron Park and Mother Lode Service Area. The treatment plant is in Section 16, T9N, R9E, MDB&M, as shown on Attachment A, a part of this Order. Treated municipal wastewater is discharged to Deer Creek, a water of the United States and a tributary to the Cosumnes River. Treated wastewater discharged for reclamation is regulated under separate waste discharge requirements and must meet the requirements of California Code of Regulations, Title 22.

The treatment system main components consists of an influent siphon, headworks, primary clarifier, three aeration basins, an emergency storage basin, three secondary clarifiers, eleven tertiary filters, three ultraviolet disinfection channels, one primary sludge thickener, one waste activated sludge thickener, four aerobic digesters, two belt filter presses, two sludge lime addition stations, and a plant drain sump. Sludge is dewatered by the belt filter presses and disposed off-site on farmland or at the local landfill.

The DCWWTP has been significantly upgraded over the past five years. With the exception of the tertiary treatment system, improvements to the primary, secondary, and ancillary treatment processes have been constructed to accommodate an ADWF of 3.6 mgd. The environmental impact report for the expansion of the DCWWTP for 2.5 to 3.6 mgd states that the capacity of the existing tertiary filtration system is rated at 1.5 mgd.

WASTE DISCHARGE REQUIREMENTS ORDER NO. 2002-0210 (AMENDMENT NO. 2)
(AS AMENDED BY RESOLUTION NO R5-2005-0028 (AMENDMENT NO. 1))
DEER CREEK WASTEWATER TREATMENT PLANT
EL DORADO IRRIGATION DISTRICT

Additional filtration capacity is provided by using the tertiary filtration system that was designed and constructed for use as part of the reclamation treatment system, which can be utilized for discharge to Deer Creek when not being used to produce reclaimed water.

The Discharger has not accurately defined the capacity of the reclamation treatment system. There are occasions during peak wet weather flows when the filter capacity is exceeded. As an interim measure, until additional filter capacity is added, the Discharger modified the flow splitter to the tertiary filters so that flows that could not be handled by the filters are diverted from the secondary treatment system to a 1 million gallon seasonally used storage tank. When flows subside in the plant, the stored secondary treated wastewater is returned to the headworks, via the plant drain, for re-treatment.

The Discharger is in the initial stages of the process to add additional tertiary treatment capacity to accommodate an ADWF of 3.6 MGD. In addition, due to the variability of the receiving water dilution capacity, there are times when 20-to-1-dilution capacity is not available during peak wet weather events. Without this amount of dilution the effluent coliform limit of 2.2 MPN/100 ml (7-day median) will be required. Design parameters for the expanded tertiary system will have to take into consideration the peak wet weather events, when 20-to-1 dilutions is not available, and the 2.2 MPN/100 ml (7-day median) is in effect.

A time schedule is included in the permit to allow the Discharger adequate time to construct the necessary facilities to fully expand to 3.6 MGD, and achieve compliance with the coliform limit. Upon completion of the upgrades to the tertiary treatment system, to be capable of treating both an average dry weather flow of 3.6 MGD, and peak wet weather flows, the capacity of the facility will be rated at 3.6 MGD. At that time mass limits will be calculated using 3.6 MGD. Upon completion of the improvements, the expansion of the facility shall be certified, by a Registered Civil Engineer with experience in the design and operation of wastewater treatment plants, that the facility expansion has been completed and the facility was designed and constructed to achieve the limits established in the permit.

RECEIVING WATER BENEFICIAL USES

The DCWWTP discharges treated effluent to Deer Creek, which is tributary to the Cosumnes River. The Basin Plan at page II-2.00 states: "Existing and potential beneficial uses which currently apply to surface waters of the basins are presented in Figure II-1 and Table II-1. The beneficial uses of any specifically identified water body generally apply to its tributary streams." The Basin Plan does not specifically identify

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beneficial uses for Deer Creek, but the Basin Plan does identify present and potential uses for the Cosumnes River, to which is tributary.

The Basin Plan identifies the following beneficial uses for the Cosumnes River: municipal and domestic supply; agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat. In addition, State Board Resolution No 88-63, incorporated into the Basin Plan pursuant to Regional Board Resolution 89-056, requires the Regional Board to assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in Table II-1.

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."

In reviewing whether the existing and/or potential uses of the Cosumnes River apply to the Deer Creek, the Regional Board has considered the following facts:

a. *Domestic Supply and Agricultural Supply*

The State Water Resources Control Board (SWRCB) Resolution No. 88-63 "Sources of Drinking Water" provides that "All surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply and should be so designated by the Regional Boards..."

The SWRCB has issued water rights to existing water users along Deer Creek and the Cosumnes River downstream of the discharge for domestic and irrigation uses. Since Deer Creek is an ephemeral stream the creek likely provides groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Deer Creek.

b. *Water Contact and Noncontact Recreation and Esthetic Enjoyment*

The Regional Board finds that the discharge flows through residential areas, there is ready public access to Deer Creek, exclusion of the public are unrealistic and contact recreational activities currently exist along Deer Creek and

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downstream waters and these uses are likely to increase as the population in the area grows. Prior to discharge into the Cosumnes River, Deer Creek flows through areas of general public access, meadows, residential areas and parks, to the Cosumnes River. The Cosumnes River also offers recreational opportunities.

c. *Groundwater Recharge*

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

d. *Freshwater Replenishment*

When water is present in Deer Creek, there is hydraulic continuity between Deer Creek and the Cosumnes River. During periods of hydraulic continuity, Deer Creek adds to the water quantity and may impact the quality of water flowing down stream in the Cosumnes River.

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

Deer Creek flows to the Cosumnes River. The California Department of Fish and Game (DFG) has verified that the fish species present in Deer Creek and downstream waters are consistent with both cold and warm water fisheries, that there is a potential for anadromous fish migration necessitating a cold water designation and that trout, a cold water species, have been found both upstream and downstream of the wastewater treatment plant. The Basin Plan (Table II-1) designates the Cosumnes River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the cold designation applies to Deer Creek. The cold-water habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/l.

Upon review of the flow conditions, habitat values, and beneficial uses of Deer Creek, and the facts described above, the Regional Board finds that the beneficial uses identified in the Basin Plan for the Cosumnes River are applicable to Deer Creek.

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The Regional Board also finds that based on the available information and on the Discharger's application, that Deer Creek, absent the discharge, is an ephemeral stream. The ephemeral nature of Deer Creek means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. Although the discharge, at times, maintains the aquatic habitat, constituents may not be discharged that may cause harm to aquatic life. At other times, natural flows within Deer Creek help support the aquatic life. Both conditions may exist within a short time span, where Deer Creek would be dry without the discharge and periods when sufficient background flows provide hydraulic continuity with the Cosumnes River. Dry conditions occur primarily in the summer months, but dry conditions may also occur throughout the year, particularly in low rainfall years. The lack of dilution results in more stringent effluent limitations to protect contact recreational uses, drinking water standards, agricultural water quality goals and aquatic life. Significant dilution may occur during and immediately following high rainfall events.

WATER RIGHTS

On 22 June 1995, the State Water Resources Control Board (SWRCB) adopted Water Rights Order No. WR95-9. The Order established that the Discharger is required to maintain specified quantities of discharge to Deer Creek. Terms and conditions of the water rights decisions to allow reclamation of a portion of the discharge from the WWTP are as follows:

"IT IS HEREBY ORDERED THAT treated waste water change petition WW-20 filed by El Dorado Irrigation District on September 14, 1992 pursuant to Water Code sections 1210 and 1211 is approved, subject to the following terms and conditions:

- 1. The source of treated wastewater shall be from the Deer Creek Waste Water Treatment Plant located within Section 15, T9N, R9E, MDB&M: California Coordinate System: Zone 2, North 353,200, East 2,290,750.*
- 2. Irrigation shall be added as a purpose of use of the treated wastewater. This purpose of use is in addition to the existing purposes of use for habitat and fish and wildlife preservation within Deer Creek.*
- 3. The added place of use and point of discharge shall be within the El Dorado Hills Development, north of Highway 50 near Cameron Park, as shown on a map on file with the State Water Resources Control Board. This place of use and point of discharge are in addition to the existing point of discharge to Deer Creek and in addition to the existing place of use of treated wastewater in Deer Creek downstream from the wastewater treatment plant.*

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4. *EID shall install continuous recording devices at the outlet to Deer Creek and in the pipe used for delivery to the added place of use from the wastewater treatment plant. Such measuring devices shall be satisfactory to the SWRCB and capable of measuring the flows discharged to Deer Creek and to the added place of use. Said measuring devices shall be installed and operational no later than August 1, 1995, and shall be properly maintained thereafter. The measuring devices shall be monitored on a weekly basis. A record of the measurements and their sum shall be maintained by EID and made available for inspection by interested parties upon reasonable request. A copy of the records shall be submitted annually to the Chief, Division of Water Rights. Construction, operation, and maintenance costs of the measuring devices are the responsibility of EID.*

- 5.a. *Whenever the Deer Creek Waste Water Treatment Plant produces less than a daily average of 2.5 million gallons per day, EID may discharge up to 1.5 million gallons per day of treated waste water through the added point of discharge to the added place of use within the El Dorado Hills Development as described in term 3, provided that EID shall discharge a minimum of 0.5 million gallons per day of treated waste water into Deer Creek as measured at the point of discharge to Deer Creek.*

- 5.b. *Whenever the Deer Creek Waste Water Treatment Plant produces more than a daily average of 2.5 million gallons per day, EID shall discharge a minimum of 1.0 million gallons per day of treated waste water to Deer Creek, and may discharge to the added point of discharge and place of use within the El Dorado Hills Development described in term 3 any treated waste water in excess of the 1.0 million gallons per day released to Deer Creek.*

- 5.c. *EID shall continue such releases so long as the California Regional Water Quality Control Board, Central Valley Region, permits discharge to the creek.*

6. *The SWRCB reserves jurisdiction in the public interest to modify the terms and conditions of this order, including imposition of requirements to alter project facilities or operations and to modify instream flow releases. SWRCB action will be taken only after notice to interested parties and opportunity for hearing."*

Water Rights Order No. WR95-9 is a condition of operation of the DCWWTP. The Monitoring and Reporting Program, requires the Discharger to report to the influent, effluent, and reclamation flows on a daily basis in order to validate compliance with the water rights order.

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EFFLUENT LIMITATIONS

Disinfection- The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. The Discharger installed an ultraviolet disinfection (UV) process in place of its existing chlorination system for disinfection of the effluent waste stream. Chlorine is no longer used in the routine treatment process. The effluent limitations previously established in this Order are no longer applicable and have been removed. A prohibition of the use and discharge of chlorine and/or chlorine-containing substances from the treatment facility has been added to this Order.

Ammonia and Nitrates - Untreated domestic wastewater contains ammonia. Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrogen gas, which is then released to the atmosphere. Wastewater treatment plants commonly use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. The Basin Plan prohibits the discharge of toxic materials in toxic concentrations. Nitrate and nitrite are known to cause adverse health effects in humans. The Basin Plan prohibits the discharge of chemical constituents in concentrations that adversely affect beneficial uses. Domestic water supply is a beneficial use of Deer Creek. U.S. EPA has developed Drinking Water Standards for protection of human health for nitrite and nitrate and Ambient Water Quality Criteria for ammonia. The discharge from the DCWWTP has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for ammonia, nitrite, and nitrate. Effluent limitations for ammonia, nitrate, and nitrite are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial uses of the receiving stream and to prevent aquatic toxicity.

Under current operational conditions, due to the variable inflow conditions of wastewater into the treatment plant, nitrification on a consistent basis has been achievable. In addition to nitrification, to achieve ammonia limits, de-nitrification is necessary to meet nitrate and nitrite limits. Upgrades to the facility will be necessary to achieve these limits.

Coliform - The beneficial uses of Deer Creek and the Cosumnes River include contact recreation uses and irrigation. To protect these beneficial uses, the Regional Board finds that the wastewater must be disinfected and adequately treated to prevent disease. The principal infectious agents (pathogens) that may be present in raw sewage may be classified into three broad groups: bacteria, parasites, and viruses. Tertiary treatment, consisting of chemical coagulation, sedimentation, and filtration, has been found to remove approximately 99.5% of viruses. Filtration is an effective means of reducing viruses and parasites from the waste stream. The wastewater must be treated to tertiary standards (filtered) to protect contact recreational and food crop

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irrigation uses. The method of treatment is not prescribed by Order No. R5-2002-0210; however, wastewater must be treated to a level equivalent to that specified in Title 22 and in other recommendations by the DHS.

The DHS is consulted by the Regional Board and makes recommendations for protection of the public's health when contacting wastewater effluent. Generally, DHS recommends that it is necessary treat wastewater to a tertiary level or provide a 20-to-1 dilution for secondary treated wastewater, in order to protect the public health for contact recreational activities or the irrigation of food crops. The Discharger has been unable to quantify significant dilution within Deer Creek. The Discharger has, however, requested this Order contain secondary treatment effluent limitations to provide relief under a significant storm event when a 20-to-1 dilution is available. The Discharger will be required to establish an in-stream flow measuring system to accurately determine periods when 20-to-1 dilution exists. During these high flow periods, assimilative capacity has not been quantified for individual pollutants and end-of-pipe limits have been established. The BOD and TSS limits for secondary treatment are 30 mg/l as a monthly average and the total coliform limit is 23 MPN as a 7-day median. When there is less than 20-to-1 dilution full tertiary treatment is required. The tertiary limits for both BOD and TSS are 10 mg/l, and the effluent limit for total coliform organisms is 2.2 MPN/100 ml as a 7-day median. The effluent limits are based on the critical low flow, or zero dilution, and have also resulted in "end-of-pipe" limits.

The DHS has developed reclamation criteria, California Code of Regulations, Title 22, Division 4, Chapter 3 (Title 22), for the reuse of wastewater. Title 22 requires that for spray irrigation of food crops, parks, playgrounds, schoolyards, and other areas of similar public access, wastewater be adequately disinfected, oxidized, coagulated, clarified, and filtered, and that the effluent total coliform levels not exceed 2.2 MPN/100 mL as a 7-day median. Title 22 is not directly applicable to surface waters; however, the Regional Board finds that it is appropriate to apply DHS's reclamation criteria because Deer Creek and the Consumnes River are used for irrigation of agricultural land and for contact recreation purposes. The stringent disinfection criteria of Title 22 are appropriate since the undiluted effluent may be used for the irrigation of food crops. Coliform organisms are intended as an indicator of the effectiveness of the entire treatment train and the effectiveness of removing other pathogens. The method of treatment is not prescribed by this Order; however, wastewater must be treated to a level equivalent to that recommended by DHS.

The permit contains Effluent Limitations and a tertiary level of treatment, or equivalent, necessary to protect the beneficial uses of the receiving water. In accordance with California Water Code, Section 13241, the Board has considered the following:

As stated in the above Findings, the past, present and probable future beneficial uses of the receiving stream include municipal and domestic supply, agricultural irrigation, agricultural stock watering, body contact water recreation, canoeing and rafting, non-

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contact water recreation, warm freshwater aquatic habitat, cold freshwater aquatic habitat, warm fish migration habitat, cold fish migration habitat, warm spawning habitat, cold spawning habitat, and wildlife habitat.

The environmental characteristics of the hydrographic unit including the quality of water available will be improved by the requirement to provide tertiary treatment for this wastewater discharge. Tertiary treatment will allow for the reuse of the undiluted wastewater for food crop irrigation and contact recreation activities which would otherwise be unsafe according to recommendations from the DHS.

Fishable and swimmable water quality conditions can be reasonably achieved through the coordinated control of all factors which affect water quality in the area. The economic impact of requiring an increased level of treatment has been considered. The economic impact of requiring an increased level of treatment has been considered. The current monthly domestic sewer user fee is \$42.94, approximately double the California average monthly domestic sewer user fee of \$20.46. The Discharger has already expanded the capacity of the treatment facility to 3.6 MGD, except for the tertiary treatment system. In 2001 the District estimated the cost to expand the tertiary treatment capacity to be \$4.9 million. The loss of beneficial uses within downstream waters, without the tertiary treatment requirement, include prohibiting the irrigation of food crops and prohibiting public access for contact recreational purposes, would have a detrimental economic impact. In addition to pathogen removal to protect irrigation and recreation, tertiary treatment may also aid in meeting discharge limitations for other pollutants, such as heavy metals, reducing the need for advanced treatment.

The need to develop housing in the area will be facilitated by improved water quality, which protects the contact recreation and irrigation uses of the receiving water. DHS recommends that, in order to protect the public health, undiluted wastewater effluent must be treated to a tertiary level, for contact recreational and food crop irrigation uses. Without tertiary treatment, the downstream waters could not be safely utilized for contact recreation or the irrigation of food crops.

It is the Regional Board's policy, (Basin Plan, page IV-15.00, Policy 2) to encourage the reuse of wastewater. The Regional Board requires Dischargers to evaluate how reuse or land disposal of wastewater can be optimized. The need to develop and use recycled water is facilitated by providing a tertiary level of wastewater treatment, which will allow for a greater variety of uses in accordance with California Code of Regulations, Title 22.

Turbidity- In addition to coliform testing, a turbidity effluent limitation has been included as a second indicator of the effectiveness of the treatment process and to assure compliance with the required level of treatment. The tertiary treatment process, or equivalent, is also capable of reliably meeting a reduced turbidity limitation of 2 NTU as a daily average, 5 NTU at least 95 percent of the time within a day, and 10 NTU at all

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times. Failure of the filtration system, such that virus removal is impaired, would normally result in increased particles in the effluent and higher effluent turbidity. Turbidity monitoring has a major advantage over coliform monitoring for evaluating filter performance, allowing immediate detection of filter failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours to days to identify high coliform concentrations.

Phase II Effluent and Receiving Water Quality Assessment

In accordance with a previous permit, Order No, 97-211, the Discharger performed a study entitled "Phase II Effluent and Receiving Water Quality Assessment for the El Dorado Irrigation District's Deer Creek Wastewater Treatment Plant, dated 12 February 1999. The purpose of this report was to accurately identify contaminant levels in the treated effluent discharged from the DCWWTP into Deer Creek, and to assess the potential for effluent discharges to cause a receiving water exceedance of the water quality standards, including chronic toxicity. The study provided a significant amount of data to determine compliance with the CTR and other applicable water quality objectives. From the study the following constituents were determined to have a reasonable potential to exceed water quality objectives.

- a. **Total Trihalomethanes and Chloroform** - Municipal and domestic supply is a beneficial use of the receiving stream. The narrative toxicity objective and this beneficial use designation comprise a water quality standard applicable to pollutants in the receiving stream. The Basin Plan contains the *Policy for Application of Water Quality Objectives*, which provides that narrative objectives may be translated using numerical limits published by other agencies and organizations. The Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA) has published the Toxicity Criteria Database, which contains cancer potency factors for chemicals, including chloroform, that have been used as a basis for regulatory actions by the boards, departments and offices within Cal/EPA. The OEHHA cancer potency value for oral exposure to chloroform is 0.031 milligrams per kilogram body weight per day (mg/kg-day). By applying standard toxicologic assumptions used by OEHHA and USEPA in evaluating health risks via drinking water exposure of 70 kg body weight and 2 liters per day water consumption, this cancer potency factor is equivalent to a concentration in drinking water of 1.1 ug/L (ppb) at the 1-in-a-million cancer risk level. This risk level is consistent with that used by the DHS to set *de minimus* risks from involuntary exposure to carcinogens in drinking water in developing MCLs and Action Levels and by OEHHA to set negligible cancer risks in developing Public Health Goals for drinking water. The one-in-a-million cancer risk level is also mandated by USEPA in applying human health protective criteria contained in the NTR and the CTR to priority toxic pollutants in California surface waters. A recent decision by the State Water Resources Control Board, Order No. WQ2002-0015, found that application of a chloroform limitation for a discharge to an

- ephemeral stream based on a cancer risk analysis was not appropriate since the U.S. EPA is evaluating the science used to develop the CTR and has reserved application of a water quality standard. This Order establishes an Effluent Limitation at the maximum contaminate level (MCL) for total trihalomethanes, the sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane, based on protection of the municipal beneficial use of 80 µg/l. Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have an average concentration of 48 µg/l, with a maximum concentration of 76 µg/l of chloroform. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the water quality objective for municipal uses by causing exceedance of the primary MCL for trihalomethanes. Therefore, an Effluent Limitation for total trihalomethanes is included in this Order and is based on the Basin Plan objective for municipal use. If U.S. EPA or the State Board develop a water quality objective for chloroform and/or total trihalomethanes, this Order may be reopened and a new Effluent Limitation established.
- b. **Chlorodibromomethane** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge had an average concentration of 1.07 µg/l and a maximum concentration of 1.90 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for chlorodibromomethane. The CTR establishes numeric water quality standards for chlorodibromomethane. The criterion for waters from which both water and organisms are consumed is 0.41 µg/l. An Effluent Limitation for chlorodibromomethane is included in the permit.
- c. **Dichlorobromomethane** - Based on information included in analytical laboratory results submitted by the Discharger, the discharge was found to have a average concentration of 9.4 µg/l and a maximum concentration of 12.0 µg/l, and has a reasonable potential to cause or contribute to an in-stream excursion above water quality standards for dichlorobromomethane. The CTR establishes numeric water quality standards for dichlorobromomethane. The criterion for waters from which both water and organisms are consumed is 0.56 µg/l. An Effluent Limitation for dichlorobromomethane is included in the permit.
- d. **Copper**- Based on analytical results of effluent samples collected by the Discharger, the discharge has been measured up to a maximum effluent concentration of 30.7 µg/l, with an average concentration of 19.4 µg/l. The CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are

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0.960 for both the acute and the chronic criteria. The reasonable potential analysis conducted for Order No. R5-2002-0210 concluded that there was reasonable potential for copper and hence Order No. R5-2002-0210 included effluent limits for copper and a time schedule to come into compliance with the limits.

The lowest representative upstream receiving water hardness value used to analyze the reasonable potential for copper in this Order is 66 mg/l. The hardness monitoring data submitted by the Discharger indicated that the lowest receiving water hardness value of 23 mg/L as CaCO₃ was measured on 5 November 2003. The Discharger submitted subsequent information and laboratory documentation demonstrating that this value was reported incorrectly. The corresponding laboratory bench sheet indicated that the use of the appropriate conversion factor of "10" to convert hardness units to mg/l of CaCO₃ was overlooked. This documentation shows that the value of 23 was not properly multiplied by 10 for a converted value of 230 mg/L as CaCO₃, for the upstream receiving water hardness on 5 November 2003. The reported receiving water hardness value of 226 mg/L as CaCO₃ measured during the same time period confirmed the error.

Staff determined that the originally reported hardness value for 5 November 2003 was in error and removed it from the dataset used to determine reasonable potential. Therefore, the worse-case receiving water hardness of 66 mg/L as CaCO₃ was used in the reasonable potential analysis.

The Discharger conducted a Water Effect Ratio (WER) study for copper, to determine the site-specific toxicity of copper in the effluent and Deer Creek. The default value for the WER, in calculating the copper effluent limits is 1. The reason for performing this study is to determine if the WER ratio for the site-specific conditions in Deer Creek is greater than the default value, and if that value allows for a higher effluent limit for copper. The study was completed and the report submitted to the Regional Water Board staff in March of 2005. Regional Board Staff evaluated the results and reopened the permit to account for a sites-specific WER for discharge from the DCWWTP.

The results presented in the study report are within the expected range for a WER for a municipal wastewater discharge. The study was conducted in accordance with applicable USEPA guidance (e.g., EPA-822-R-01-005 and EPA-821-R-02-012) and the conclusions were supported by data that generated scientifically defensible results.

The study concludes that the final copper WER of 9.70 and 8.86 apply for total recoverable and dissolved forms of copper, respectively, for this

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discharge. The permit has been amended and in accordance with the CTR, the site-specific total recoverable WER of 9.70 has been applied. Using a reasonable worst-case hardness of 66 mg/l, the following criteria for copper are calculated:

Criterion continuous concentration (CCC) = $(6.54 \text{ ug/L}) \times (9.70) = 63.4 \text{ ug/L}$

Criterion maximum concentration (CMC) = $(9.46 \text{ ug/l}) \times (9.70) = 91.7 \text{ ug/l}$

The maximum effluent total recoverable copper concentration of 30.7 ug/L does not exceed the CMC or CCC. Therefore, the discharge does not have a reasonable potential to cause an exceedance of the water quality criteria for copper. Effluent limitations for copper and Table C (of original Order) have been deleted from this Order.

- e. **Diethyl phthalate and Dimethyl phthalate**- Ten samples were taken monthly and analyzed for Diethyl phthalate and Dimethyl phthalate, all of the samples were non-detect except for the first sample taken. Diethyl phthalate and Dimethyl phthalate were present in the first round of samples at concentrations of 78 $\mu\text{g/l}$ and 17 $\mu\text{g/l}$, respectively. Diethyl phthalate and Dimethyl phthalate are used in the manufacturing of plastics and polyvinyl chloride (PVC) pipe and tubing. The presence in the first round of sampling may have been due to the use of new sampling equipment that was not properly sanitized before its first use. The CTR standards for Diethyl phthalate and Dimethyl phthalate are 23 mg/l and 313 mg/l, respectively. There is no reasonable potential to exceed the CTR standard.
- f. **Toxicity**—The Basin Plan states that “[a]ll waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life. This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.” The Basin Plan requires that “[a]s a minimum, compliance with this objective...shall be evaluated with a 96-hour bioassay.” Order No. R5-2002-0210 requires both acute and chronic toxicity monitoring to evaluate compliance with this water quality objective.

The low-flow nature of Deer Creek means that the designated beneficial uses must be protected, but that no credit for receiving water dilution is available. The use of a dilution series to evaluate compliance with the narrative toxicity objective contained in the Basin Plan is, therefore, inappropriate.

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

GENERAL EFFLUENT LIMITATION INFORMATION

Selected 40 CFR §122.2 definitions:

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

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

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

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

Maximum daily discharge limitation means the highest allowable “daily discharge”.

The SIP contains similar definitions. These definitions were used in the development of Order No. 0210. Alternate limitation period terms were used in the permit for the sake of clarity. Alternates are shown in the following table:

Term Used in Permit	SIP/40 CFR 122.2 Term
Monthly average	Average monthly discharge limitation. 30-day averages may have been converted to monthly averages to conform with 40 CFR §122.45 (see below)
1-Day average	Maximum daily discharge limitation. Since the daily discharge for limitations expressed in concentrations is defined as the average measurement of the pollutant over the day, the term '1-Day Average' was used in the Order.

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40 CFR §122.45 states that:

- (1) “In the case of POTWs, permit effluent limitations...shall be calculated based on design flow.”
- (2) “For continuous discharges all permit effluent limitations...shall unless impracticable be stated as...[a]verage weekly and average monthly discharge limitations for POTWs.”
- (3) “All pollutants limited in permits shall have limitations...expressed in terms of mass except...[f]or pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass...Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.”

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

RECEIVING WATER LIMITATIONS AND MONITORING

Dissolved Oxygen—By the tributary rule, Deer Creek has been designated as having the beneficial use of cold freshwater aquatic habitat (COLD). For water bodies designated as having COLD as a beneficial use, the Basin Plan includes a water quality objective of maintaining a minimum of 7.0 mg/l of dissolved oxygen. Since, by the tributary rule, the beneficial use of COLD does apply to Deer Creek, a receiving water limitation of 7.0 mg/l for dissolved oxygen was included in the Order.

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

pH—For all surface water bodies in the Sacramento River and San Joaquin River basins, the Basin Plan includes water quality objectives stating that “[t]he pH shall not be depressed below 6.5 nor raised above 8.5. Changes in normal ambient pH levels shall not exceed 0.5 in fresh waters with designated COLD or WARM beneficial uses.” By the tributary rule, Deer Creek has the beneficial uses of both COLD and WARM (warm freshwater habitat); therefore, the Order includes receiving water limitations for both pH range and pH change.

The Basin Plan allows an appropriate averaging period for pH change in the receiving stream. Since there is no technical information available that indicates that aquatic

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organisms are adversely affected by shifts in pH within the 6.5 to 8.5 range, an averaging period is considered appropriate and a monthly averaging period for determining compliance with the 0.5 receiving water pH limitation is included in the Order.

Temperature—By the tributary rule, Deer Creek has the beneficial uses of both COLD and WARM. The Basin Plan includes a site-specific objective for Deer Creek. Therefore this Order includes receiving water limitations based on the following objectives:

The ambient temperature to be equal to or below the following temperatures:

DEER CREEK TEMPERATURE OBJECTIVES (TABLE III-4A of Basin Plan)		
Date	Daily Maximum (°F)^a	Monthly Average (°F)^b
January and February	63	58
March	65	60
April	71	64
May	77	68
June	81	74
July through September	81	77
October	77	72
November	73	65
December	65	58

^a Maximum not to be exceeded.

^b Defined as a calendar month average.

Turbidity—The Basin Plan, Chapter III, page III-9.00 has been amended by the addition of the following to the end of the “Turbidity Section”: The turbidity to increase as follows:

Deer Creek, source to Cosumnes River:

- a. When the dilution ratio for discharges is less than 20:1 and where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), discharges shall not cause the receiving water daily average turbidity to exceed 2 NTUs or daily maximum turbidity to exceed 5 NTUs. Where natural turbidity is between 1 and 5 NTUs, dischargers shall not cause receiving water daily average turbidity to increase more than 1 NTU or daily maximum turbidity to exceed 5 NTUs.
- b. Where discharge dilution ratio is 20:1 or greater, or where natural turbidity is greater than 5 NTUs, the general turbidity objectives shall apply.

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Narrative Limitations—Receiving Water Limitations 2 (biostimulatory substances), 3 (color), 5 (floating material), 4 (oil and grease), 5 (radioactivity), 6 (settleable material), 7 (tastes and odors), and 8 (toxicity) are based on narrative Basin Plan objectives. The objectives are located in Chapter III: Water Quality Objectives, under the Water Quality Objectives for Inland Surface Waters heading.

BASIN PLAN AMENDMENT PROCESS

Discharge from the DCWWTP can at times dominate the flow in Deer Creek. This condition caused violation of the Basin Plan water quality objectives for inland surface waters for pH, dissolved oxygen, temperature, and turbidity. The Discharger has made significant upgrades to the facility, however during low flow conditions in the creek, receiving water limitations for these pollutants were not being consistently achieved. The Regional Water Board issued Cease and Desist Order (CDO) No. 95-255 on 7 December 1995 requiring the Discharger to implement corrective actions to comply with these and other discharge limitations. Subsequent to the CDO being issued, the Discharger made significant improvements to the facilities that brought the facility into compliance with the dissolved oxygen limitation. However, pH, turbidity, and temperature remained problematic. When WDRs for the Deer Creek WWTP were issued in 1999, a CDO with compliance time schedules was also adopted to allow further time for the Discharger to comply with the Basin Plan objectives for pH, turbidity, and temperature.

The Discharger chose to pursue a Site-Specific Basin Plan Amendment (SSBPA) in lieu of making physical improvements to the treatment plant for compliance with Basin Plan objectives for pH, turbidity, and temperature. Due to the lengthy SSBPA process, the time schedule was modified to reflect the additional time needed to complete the Basin Plan Amendments (BPAs). In 2000, CDO No. 5-00-033, Amendment 1, required the Discharger to complete the BPAs by 1 December 2003.

Due to Discharger compliance difficulties with the receiving water limitations for pH, turbidity, and temperature, the effluent limitations for trihalomethanes, nitrites, and nitrate plus nitrite, and the length of the SSBPA process, the Regional Water Board adopted CDO No. R5-2002-0211 on 6 December 2002. The CDO continued to require completion of BPA for site-specific pH, turbidity, and temperature objectives for Deer Creek by 1 December 2003. On 17 October 2003, the Regional Water Board adopted CDO No. R5-2002-0211 Amendment 1 to allow the Discharger until 1 December 2004 to complete the SSBPA process.

On 19 July 2002, the Regional Water Board adopted the Site-Specific Water Quality Objectives for pH and Turbidity for Deer Creek in El Dorado and Sacramento Counties, which was approved by the State Water Resources Control Board (State Water Board), State of California Office of Administrative Law (OAL) and the U.S. EPA and became

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effective on 21 October 2003. On 17 March 2005, the Regional Water Board approved Resolution No. 2005-0028, amending the permit receiving water requirements in WDR Order No. 5-2002-021 to reflect the pH and Turbidity BPA.

On 16 September 2005, the Regional Water Board adopted the Site-Specific Temperature Objective for Deer Creek in El Dorado And Sacramento Counties. The Temperature BPA was approved by the State Water Board, OAL and U.S. EPA and became effective on 17 May 2006. This Order amends WDR Order No. R-2002-021 (as amended by Resolution No. 2005-0028) to include receiving water temperature limitations based on the objectives set forth by the BPA.

TABLE A

**Temperature- and pH-Dependent Effluent Limits for Ammonia
Criterion Continuous Concentration, Maximum Average Monthly
Concentration**

Ammonia Concentration Limitation (mg/l)										
Temperature, °C (°F)										
pH	0 (32)	14 (57)	16 (61)	18 (64)	20 (68)	22 (72)	24 (75)	26 (79)	28 (82)	30 (86)
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

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

Where: CCC = criteria continuous concentration
T = temperature in degrees Celsius (°C)

TABLE B

**pH-Dependent Effluent Limits for Ammonia
Criterion Maximum Concentration, Maximum 1-hour Average**

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

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

Where: CMC = criteria maximum concentration