

Central Valley Regional Water Quality Control Board  
7/8 June 2012 Board Meeting

Response to Comments  
for the  
Town of Discovery Bay Community Services District  
Discovery Bay Wastewater Treatment Plant  
Tentative Waste Discharge Requirements

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The following are Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) staff responses to comments submitted by interested parties regarding the tentative order amending Waste Discharge Requirements Order R5-2008-0179 (NPDES Permit No. CA0078590), for the Town of Discovery Bay Community Services District (Discharger), Discovery Bay Wastewater Treatment Plant (Facility).

On 30 September 2010, a Tentative Order amending Order R5-2008-0179 was issued for public review and comment in accordance with a precedential water quality order adopted by the State Water Resources Control Board on 19 May 2009, for the City of Tracy Wastewater Treatment Plant (WQO 2009-0003, Tracy Order). Comments were received by the due date from the Discharger, California Sportfishing Protection Alliance (CSPA), Central Valley Clean Water Association (CVCWA), and San Luis & Delta Water Authority and Westlands Water District. However, due to pending litigation regarding the Tracy Order, the proposed amendment did not proceed for approval at the noticed board meeting. The Tracy litigation was settled on 1 June 2011, when the Superior Court for Sacramento County issued a peremptory writ of mandate regarding the Tracy Order.

A new tentative order was issued for public comment on 20 March 2012 with comments due by 20 April 2012. The March 2012 tentative order is similar to the September 2010 tentative order, but due to the long delay, the comment period was reopened. In the Notice of Public Hearing, Central Valley Water Board staff asked previous commenters to indicate if its comments on the September 2010 tentative order were still valid and to request that they be addressed for the currently noticed item. The Central Valley Water Board received public comments regarding the March 2012 tentative order by the due date from CSPA and CVCWA. CSPA indicated that its comments on the September 2010 tentative order were still valid and requested they be considered for the currently noticed item. CVCWA did not request that its comments on the September 2010 tentative order be considered for the currently noticed item.

This staff response to comments document addresses the comments submitted by CSPA for both the September 2010 and March 2012 tentative orders, while only the comments on the March 2012 tentative order from CVCWA are addressed.

The submitted comments were accepted into the record, and are summarized below, followed by Central Valley Water Board staff responses.

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## CENTRAL VALLEY CLEAN WATER ASSOCIATION (CVCWA) COMMENTS

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### **CVCWA Comment A. The Tentative Order's Ultraviolet Disinfection (UV) Requirements Impermissibly Dictate the Manner of Compliance with the Effluent Limitations Prescribed for Total Coliform**

The Tentative Order includes Ultraviolet Light (UV) disinfection operational and monitoring requirements for the Facility's discharge of treated effluent. (Tentative Order at pp. 25, F-47, F-56.) The stated purpose of the UV requirements is to "ensure adequate disinfection and compliance with the total coliform organisms effluent limitations recommended by DPH." (*Id.* at p. F-57.) CVCWA believes that the UV operating criteria impermissibly specify the manner of compliance with the Tentative Order's effluent limitations for total coliform and violates section 13360 of the California Water Code.

In lieu of the specific UV requirements proposed in the Tentative Order, CVCWA recommends that the Discharger be required to submit an operations and maintenance program to ensure adequate disinfection. This approach is consistent with the Central Valley Water Board's purposes, but does not specifically dictate the manner of compliance with the effluent limitations for total coliform. In particular, we request that you replace the first bullet under section VI.C.4.b of the Tentative Order with the following:

- **UV Dosage.** *The Discharger shall operate the UV disinfection systems ~~to provide a minimum hourly UV dose of 80 mJ/cm<sup>2</sup>~~, in accordance with its UV Disinfection Systems Operating Specifications*

**RESPONSE:** Central Valley Water Board staff does not concur. UV specifications are needed to ensure the disinfection system adequately disinfects the municipal wastewater. When developing NPDES permits, the Central Valley Water Board implements recommendations by the Department of Public Health (DPH) for the appropriate disinfection requirements for the protection of public health. Per a general recommendation by DPH, the permit requires disinfection equivalent to Title 22 of the California Code of Regulations for secondary-disinfected recycled water<sup>1</sup>. The permit includes effluent limits for total coliform organisms based on Title 22 requirements.

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<sup>1</sup> California Code of Regulations, Section 60301.225, defines disinfected secondary-23 recycled water as recycled water that has been oxidized and disinfected so that the median concentration of total coliform bacteria in the disinfected effluent does not exceed a most probable number (MPN) of 23 per 100 milliliters utilizing the bacteriological results of the last seven days for which analyses have been completed, and the number of total coliform bacteria does not exceed an MPN of 240 per 100 milliliters in more than one sample in any 30 day period.

The Facility provides secondary treatment and UV disinfection to meet the Title 22 disinfection requirements, and monitors for total coliform in the effluent twice a week. In addition to coliform limitations, UV disinfection operating specifications are required as a second indicator of the effectiveness of the disinfection system to assure compliance with the required level of treatment. UV dosage and turbidity specifications have a major advantage for monitoring treatment performance, allowing immediate detection of UV disinfection system failure and rapid corrective action. Coliform testing, by comparison, is not conducted continuously and requires several hours, to days, to identify high coliform concentrations.

UV disinfection is typically used after filtration, because low turbidity wastewater is needed for the UV disinfection system to operate effectively. Different from the use of chlorination disinfection, the high level of turbidity in a secondary-level treatment effluent shields pathogens (protozoans, viruses and bacteria) from the UV deactivating light as they are protected among the particles. Therefore, there are concerns that without filtration the UV disinfection system may not be sufficient to consistently meet the disinfection requirements.

Due to these concerns, the Discharger conducted a site-specific study of the effluent to determine UV dose response as a function of turbidity. A laboratory study using a collimated beam was performed by Dr. Robert Emerick. The study results demonstrated that a UV minimum dosage of  $80\text{mJ}/\text{cm}^2$ , at a turbidity of 10 NTUs, the system can consistently meet a total coliform effluent limitation of 23 MPN/100ml (7-day median), and at a turbidity of 40 NTUs, the system can meet the total coliform effluent limitation of 240 MPN/100ml (maximum daily). Based on the study results, the proposed Order modifies the UV Disinfection System Operating Specifications to include minimum UV dose and maximum turbidity specifications in accordance with the study, as requested by the Discharger. Removal of the minimum UV disinfection operating parameters does not provide the assurance needed to protect human health.

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## **CALIFORNIA SPORTFISHING PROTECTION ALLIANCE (CSPA) COMMENTS**

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### **19 April 2012 Comments**

#### **CSPA Comment No. 1. Effluent Limitation for Electrical Conductivity (EC) is not adequate.**

The proposed Permit has been revised to contain a limitation for EC of 2,100  $\mu\text{mhos}/\text{cm}$  as an annual average. The EC limitation does not protect the beneficial uses of the receiving stream specifically:

- In a *Biological Significance* document, dated November 1st 2006, James M. Harrington, Staff Water Quality Biologist with the California Department of Fish

and Game, citing McKee and Wolf (1971 Water Quality Criteria) wrote that: “Surveys of inland fresh waters indicates that good mixes of fish fauna are found where conductivity values range between 150 and 500 umhos/cm. Even in the most alkaline waters, the upper tolerance limit for aquatic life is approximately 2000 umhos/cm.” Obviously, as an annual average EC peak concentrations will be significantly higher than the annual average. Freshwater aquatic life is a beneficial use of the receiving stream, which will be degraded by the proposed EC limitation.

- McKee and Wolf also include EC criteria for irrigation water of less than 1,000 umhos/cm for suitability under most conditions. Irrigation is a beneficial use of the receiving stream, which will be degraded by the proposed EC limitation.
- McKee and Wolf also include salinity criteria, listed as TDS, for numerous industrial uses where the recommended levels are far below those limited in the proposed Permit. The proposed Permit did not evaluate the impact on the industrial beneficial use of the receiving stream.

**RESPONSE:** CSPA’s comment that the EC limit has been revised is not accurate. The current permit includes an annual average effluent limitation of 2,100 µmhos/cm. As discussed in the proposed Order, there is no reasonable potential for the discharge to cause or contribute to the applicable water quality objectives for EC. Therefore, water quality-based effluent limits are not required. However, due to concerns with salinity in the Sacramento-San Joaquin Delta, the proposed Order continues the annual average performance-based effluent limitation for EC of 2,100 µmhos/cm. The existing Order also requires the Discharger develop and implement a Salinity Plan to reduce the discharge of salinity and includes a Salinity Reduction Goal to reduce effluent EC to a maximum of the water supply EC plus an increment of 500 µmhos/cm. The proposed Order does not change these pollution prevention and best management practice requirements.

In regard to CSPA’s comment that the EC limits are not protective of aquatic life, agricultural, and industrial beneficial uses, Central Valley Water Board staff does not concur. The Basin Plan includes water quality objectives for salinity parameters based on the Bay-Delta Plan<sup>2</sup>. The Bay-Delta Plan includes water quality objectives for EC and chloride for West Canal at Mouth of Clifton Court Forebay (i.e., entrance to the State Water Project) that are applicable to the discharge. The Bay-Delta Plan includes the EC water quality objective to protect the agricultural beneficial use and the chloride water quality objective is protective of municipal and industrial beneficial uses. The discharge does not demonstrate reasonable potential to cause or contribute to an exceedance of these water quality objectives in the receiving water.

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<sup>2</sup> *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary*, State Water Resources Control Board (2006)

Therefore, the proposed permit is adequately protective of the agricultural and municipal and domestic water supply beneficial uses.

There are no site-specific water quality objectives for salinity parameters for the protection of aquatic life in the vicinity of the discharge. Therefore, the appropriate water quality objective to protect the aquatic life beneficial use is the Basin Plan's narrative toxicity objective. USEPA includes national recommended water quality criteria for chloride for protection of freshwater aquatic life, but there are no USEPA recommended water quality criteria for EC and TDS for aquatic life. As demonstrated in the proposed Order, under reasonable worst-case conditions, the discharge only increases the chloride concentration in the Old River by a maximum of 1 mg/L. The discharge does not have reasonable potential to cause or contribute to an exceedance of the USEPA national recommended water quality criteria for chloride in the receiving water. This demonstrates the proposed permit is adequately protective of the aquatic life beneficial use.

### **CSPA Comment No. 2. The Central Valley Water Board did not conduct mixing zone analysis for EC**

The Central Valley Water Board used a steady state analysis to derive the limitations for EC. This methodology utilizes assimilative capacity in the receiving stream; granting a mixing zone. The Central Valley Water Board's Basin Plan, page IV-16.00, requires the Regional Board use EPA's *Technical Support Document for Water Quality Based Toxics Control (TSD)* in assessing mixing zones. The TSD, page 70, defines a first stage of mixing, close to the point of discharge, where complete mixing is determined by the momentum and buoyancy of the discharge. The second stage is defined by the TSD where the initial momentum and buoyancy of the discharge are diminished and waste is mixed by ambient turbulence. The TSD goes on to state that in large rivers this second stage mixing may extend for miles. The TSD, Section 4.4, requires that if complete mix does not occur in a short distance mixing zone monitoring and modeling must be undertaken. The Central Valley Water Board did not conduct a mixing zone analysis for EC and did not comply with the requirements of the Basin Plan or the required TSD.

**RESPONSE:** Central Valley Water Board does not concur. As discussed in response to Comment No. 1, above, the discharge does not demonstrate reasonable potential for any salinity constituent, so water quality-based effluent limits are not required and were not calculated in the proposed Order. Therefore, a mixing zone was not used to calculate effluent limits for EC. As discussed, above, the EC limits are based on the performance of the Facility and have been carried forward from the current permit.

In conducting the reasonable potential analysis for salinity parameters, Central Valley Water Board staff used the procedures recommended by USEPA in the USEPA NPDES Permit Writers' Course. Although mixing of the effluent with the receiving water is considered using USEPA's RPA procedures, an approved mixing

zone is not necessary. Use of these procedures does not require allowance of a mixing zone and were appropriately applied in the proposed Order, because rapid mixing occurs in the receiving water and the salinity parameters are not priority pollutants.

The Facility discharges to Old River via an outfall diffuser that ensures rapid mixing in the receiving water. The diffuser is 105 feet long with 36 ports (2 inch diameter ports, spaced 3 feet on center). CSPA's statement that a mixing zone study was not conducted is inaccurate. The Discharger conducted a mixing zone study and an accompanying dye study to verify the estimated mixing and dilution. The dye study demonstrated the effluent plume rapidly mixes with the receiving water. Under reasonable worst-case conditions, during a slack tide when there was no flow velocity in the receiving water, the mixing zone study demonstrated a minimum 25:1 dilution within 5 feet of the diffuser. This demonstrates rapid mixing occurs in the receiving water. Therefore, the discharge conditions are appropriate for applying USEPA's reasonable potential analysis procedures.

### **31 October 2010 Comments**

#### **CSPA Comment No. 3. The proposed permit fails to contain an adequate effluent limitation for EC in violation of federal regulations.**

CSPA's October 2010 comments regarding the effluent limitations for EC are the same as its April 2012 comments regarding EC.

**RESPONSE:** See response to CSPA Comment Nos. 1 and 2, above.

#### **CSPA Comment No. 4. The proposed permit allows for segments of the receiving stream to exceed water quality objectives for temperature and turbidity contrary to the Basin Plan**

The proposed Permit has been modified to include the following:

**D. Temperature Receiving Water Limitations.** Compliance with the receiving surface water limitations for temperature required in section V.A.15.b shall be determined based on the difference in temperature measured at RSW-001 and RSW-002.

**E. Turbidity Receiving Water Limitations.** Compliance with the receiving surface water limitations for turbidity required in section V.A.17 shall be determined based on the difference in turbidity measured at RSW-001 and RSW-002.

The proposed Permit, Monitoring and Reporting Program page E-2, identifies points RSW-001 and 002 as: 500 feet north of the point of discharge to Old River and 200 ft

south of the point of discharge to Old River, respectively. The distance between the two points is 700 feet.

Receiving water monitoring points are located by the Discharger, typically based on convenience and access. There is no correlation to the receiving water monitoring locations and water quality.

The receiving water limitations in the proposed Permit are based on water quality objectives included in the Basin Plan. By allowing compliance strictly measured at the end points; allows exceedance of the water quality objectives between points RSW-001 and RSW-002.

The Basin Plan does not include any allowance for exceedances near wastewater outfalls or writing off 700 feet of receiving stream. A mixing zone has not been discussed or address by the Central Valley Water Board in allowing exceedance of temperature and turbidity objectives near the wastewater outfall for this discharge. Federal Regulations, 40 CFR 122.44 (d)(i), requires that; "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." The Central Valley Water Board has not provided any legal citation, mixing zone analysis or technical justification that allows for a zone of compliance extending for 700 feet. In accordance with the Basin Plan Water Quality Objectives and 40 CFR 122.44 all surface waters must meet water quality objectives.

**RESPONSE:** Central Valley Water Board staff does not concur. The proposed change to the permit simply clarifies the method of compliance determination for the temperature and turbidity receiving water limits, which must be determined considering upstream and downstream receiving water quality. The proposed clarifications do not change the receiving water limits, do not violate the Basin Plan, or allow mixing zones for temperature and turbidity. Mixing zones are only used for development of water quality-based effluent limits. The discharge does not have reasonable potential to cause or contribute to an instream exceedance of the Basin Plan water quality objectives for temperature or turbidity in the receiving water. Therefore, water quality-based effluent limits are not required and a mixing zone has not been applied.

The existing permit includes receiving water limits for temperature and turbidity based on the Basin Plan objectives. The proposed amendment provides clarity for the Discharger and Central Valley Water Board Compliance and Enforcement staff for implementation of the receiving water limits. It does not allow the Discharger to violate the Basin Plan objectives for temperature and turbidity.

**CSPA Comment No. 5. The proposed permit contains an inadequate Antidegradation analysis.**

The Central Valley Water Board must apply the antidegradation policy whenever it takes an action that will lower water quality (State Antidegradation Guidance, pp. 3, 5, 18, and Region IX Guidance, p. 1). Application of the policy does not depend on whether the action will actually impair beneficial uses (State Antidegradation Guidance, p. 6). Actions that trigger use of the antidegradation policy include issuance, re-issuance, and modification of NPDES and Section 404 permits and waste discharge requirements, waiver of waste discharge requirements, issuance of variances, relocation of discharges, issuance of cleanup and abatement orders, increases in discharges due to industrial production and/or municipal growth and/or other sources, exceptions from otherwise applicable water quality objectives, etc. (State Antidegradation Guidance, pp. 7-10, Region IX Guidance, pp. 2-3). Both the state and federal policies apply to point and nonpoint source pollution (State Antidegradation Guidance p. 6, Region IX Guidance, p. 4).

The proposed Permit allows for an EC limitation that exceeds water quality standards and objectives and allows for degraded beneficial uses. The compliance determinations for temperature and turbidity receiving Water Limitations has been altered to allow a 770-foot reach of the receiving stream where the water quality objectives will not be applied. These conditions allow for degraded water quality and do not provide for protection of the applicable beneficial uses of the receiving stream. There has been no antidegradation analysis undertaken to determine if best practicable treatment and control of the discharge has been provided. There is no assessment showing that degradation of water quality is in the best interest of the people of California. The discharge exceeds water quality objectives, which is contrary to the Antidegradation Policy, Resolution 68-16.

**RESPONSE:** Central Valley Water Board staff does not concur. The proposed changes do not allow an increase in the discharge of pollutants to the receiving water. As discussed in Response to CSPA Comment #1, the proposed amendment does not change the effluent limit for EC. Furthermore, as discussed in Response to CSPA Comment #4, the proposed clarifying language for determining compliance with the temperature and turbidity receiving water limits does not authorize an increase in the discharge for temperature or turbidity. Consequently, the discharge is in compliance with the Antidegradation Policy.