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October 24, 2008

DELIVERED BY EMAIL

Ms. Diana Messina, Senior Engineer
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95670-6114

Subject: El Dorado Irrigation District Comments on Tentative Time Schedule Order and Waste Discharge Requirements (NPDES No. CA0078662) for the Deer Creek Wastewater Treatment Plant

Dear Ms. Messina:

On behalf of the El Dorado Irrigation District (District), Robertson-Bryan, Inc. (consultant to the District) is submitting the District's comments on the Tentative Time Schedule Order (TSO) and Waste Discharge Requirements (WDRs) issued for the Deer Creek Wastewater Treatment Plant (see Attachment A). District staff are pleased to have had the opportunity to review and provide comments on these Tentative Orders, and look forward to discussing their comments with you and your staff at the meeting scheduled for October 31, 2008, 9:30-11:30 am at your office.

If you have any questions regarding the enclosed comments, please contact Tim Sullivan at (530) 642-4177 or myself at (916) 714-1802.

Sincerely,

ROBERTSON-BRYAN, INC.

Michael D. Bryan, Ph.D.
Principal Scientist/Partner

Attachment A: Comments on Tentative Time Schedule Order and Waste Discharge Requirements for the El Dorado Irrigation District's Deer Creek Waste Water Treatment Plant, El Dorado County

cc: Tim Sullivan, P.E., Senior Engineer (District)
Elizabeth Wells, Co-Manager Wastewater/Recycled Water-Engineering (District)
Victoria Caulfield, Co-Manager Wastewater/Recycled Water-Operations (District)

COMMENTS
ON
TENTATIVE
TIME SCHEDULE ORDER AND WASTE DISCHARGE REQUIREMENTS
FOR
EL DORADO IRRIGATION DISTRICT
DEER CREEK WASTEWATER TREATMENT PLANT
EL DORADO COUNTY

October 24, 2008

I. TIME SCHEDULE ORDER

No comments.

II. WASTE DISCHARGE REQUIREMENTS

Limitations and Discharge Requirements

p. 2, G. Water Quality Based Effluent limitations. This finding states: “This Order contains requirements, expressed as a technology equivalence requirement, that are necessary to meet applicable water quality standards. The Regional Water Board has considered the factors listed in CWC Section 13241 in establishing these requirements. The rationale for these requirements, which consist of tertiary treatment or equivalent requirements, is discussed in the Fact Sheet.”

- First, effluent limitations are either technology-based or water quality-based. Neither federal nor State regulations prescribe a “technology equivalence requirement.” This section states that these requirements are “necessary to meet applicable water quality standards” and, as such, are water-quality based. Therefore, the District requests the following edit: “This Order contains requirements, expressed as a water quality-based ~~technology equivalence~~ requirement, that are necessary to meet applicable water quality standards.
- Second, this finding states: “The Regional Water Board has considered the factors listed in CWC Section 13241 in establishing these requirements.” There is inadequate discussion and findings relating to the section 13241 factors in the Order and the Fact Sheet and thus no evidentiary basis to support the statement that the factors have been considered is presented. As such, the Order does not adequately consider the 13241 factors when imposing limitations more stringent than federal standards. This same comment applies to finding “M” (p. 9) and to Attachment F (p. F-9).

Attachment A

p.7, S. Provisions and Requirements Implementing State Law. "The UV Disinfection System Operating Specifications" on p. 22 of the Order are requirements implementing state law and, thus, section VI.C.4.c should also be cited in this section.

p.8, III. Discharge Prohibitions, E. The District requests the following edit for clarification.

"E. Use of chlorine and/or chlorine containing substances within the treatment process ~~and~~ that result in discharge of chlorine or chlorine containing substances into the receiving water is prohibited."

p. 11, Interim Effluent Limitation for EC. The Order contains an interim effluent limitation for electrical conductivity (EC) of 500 μ mhos/cm as an annual average. Historical (1/31/2003 – 9/8/2008) average annual EC levels in the Deer Creek WWTP effluent have been as follows:

Year	Annual Average EC (μ mhos/cm)
2003	713
2004	653
2005	646
2006	562
2007	455
2008 (thru 9/8)	474

The average effluent EC since the ultraviolet (UV) disinfection process came online in August 2006 is 468 μ mhos/cm (through 9/9/08). This EC level is well below both the United Nations goal for agricultural uses of 700 μ mhos/cm and the DPH's recommended MCL of 900 μ mhos/cm. Yet, the Fact Sheet concludes that an interim effluent limitation for EC is needed. This need is stated as follows: "of additional concern is the salt contribution to Delta waters." This is not adequate reason to impose EC limitations at this facility.

The Order makes additional statements related to the regulation of salinity in discharges:

1. Citing the State Water Board, in Water Quality Order 2005-005 (for the City of Manteca), "*Although the ultimate solution to southern Delta salinity problems have not yet been determined, previous actions establish that the State Board intended for permit limitations to play a limited role with respect to achieving compliance with the EC water quality objectives in the southern Delta.*" The State Water Board goes on to say, "*Construction and operation of reverse osmosis facilities to treat discharges...prior to implementation of other measures to reduce the salt load in the southern Delta, would not be a reasonable approach.*" [p. F-27, emphasis added]
2. "The Antidegradation Policy (Resolution No. 68-16) requires that the Discharger implement best practicable treatment or control (BPTC) of its discharge. For salinity, the Regional Water Board is considering limiting effluent salinity of

Attachment A

municipal wastewater treatment plants to an increment of 500 $\mu\text{mhos/cm}$ over the electrical conductivity of the municipal water supply as representing BPTC.” [p. F-46]

Implementation of a 500 $\mu\text{mhos/cm}$ interim EC limitation in the Order would be inconsistent with both the above State and Regional Water Board policies, past State practices, and federal guidance for issuing NPDES permits for three reasons.

First, both the average effluent and receiving water EC levels are substantially lower than the lowest numeric criterion that might be used to interpret the narrative objective (i.e., the United Nations agricultural goal of 700 $\mu\text{mhos/cm}$). In fact, the effluent EC averages approximately 235 $\mu\text{mhos/cm}$ lower than the State’s lowest goal level for POTWs. Clearly there is no water quality problem from the effluent contribution to the receiving water (Deer Creek) or the receiving water contributing its flow to the Delta.

Second, the Order states that the Regional Water Board is considering limiting effluent EC to 500 $\mu\text{mhos/cm}$ over the water supply as representing BPTC. The interim EC limitation of 500 $\mu\text{mhos/cm}$ is equal to the allowable *increment* and does not account for any contribution from the water supply, which means that the Order is requiring the District to go beyond the State’s view of BPTC to control EC. The Deer Creek WWTP already provides BPTC with respect to EC, as evidenced by the effluent EC being only 36 $\mu\text{mhos/cm}$ greater than the average EC of the receiving water of 430 $\mu\text{mhos/cm}$ (as stated on page F-27) and the incremental increase in EC, over water supply, being substantially less than the Board’s goal of 500 $\mu\text{mhos/cm}$.

Third, the proposed interim effluent limitation is not properly based on the Regional Board’s own Salinity Guidance (*Memorandum Subject: Management Guidance for Salinity in Waste Discharge Requirements. Central Valley Regional Water Quality Control Board, April 26, 2007.*) As stated in Attachment A of the Salinity Guidance (General Approach to Writing the WDRs) (page 10) and restated here: “*Based on the effluent, receiving water, and water supply data that is available, does it look like there is a possible water quality problem?... If available data indicates that there is unlikely to be a water quality problem, document that conclusion, and don’t make the discharger do a lot more.*” Far from increasing its salinity loading and raising antidegradation concerns, the District has recently reduced its salinity loading substantially through plant upgrades (including UV disinfection) that have reduced the salt levels in the final effluent. Continued operation of these new facilities will continue to hold EC levels at their new lower levels. An interim limitation that functions as an EC “cap” is not necessary in this circumstance.

Because the effluent EC is less than the Regional Water Board’s water quality goals/objectives and the Deer Creek WWTP is already implementing BPTC for EC, and to be consistent with the facts presented in the Order, the Regional Board’s Salinity Guidance, and the State’s policies, the District requests that the interim EC limitation and salinity evaluation and minimization plan requirements be removed from the Order. The District requests the following specific edits be made to the Fact Sheet, p. 28.

~~“Based on the relatively low reported salinity, the discharge currently does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity in its direct receiving water or in downstream Delta waters, nor does it have reasonable potential to cause an exceedance of the 700 umhos/cm EC water quality goal, based on Ayers and Westcot (1985) . However, since the Discharger discharges to Deer Creek, a tributary of the Cosumnes River and eventually the Sacramento—San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Thus, effluent limitations for EC are not included in this Order at this time.~~

~~Because conversion to UV disinfection from sodium-based chlorination and dechlorination at the Facility occurred in August 2006, sufficient representative monitoring data is not available to calculate a final effluent limitation for salinity. This Order includes an interim performance-based annual average effluent limitation of 500 umhos/cm for EC which is applicable until the Regional Water Board completes development of a new salinity policy for the Central Valley or until sufficient monitoring data has been collected to establish a final effluent limitation, whichever is sooner. This interim performance-based effluent limitation is derived using the maximum observed rolling annual average effluent concentration observed from the Facility of 473 umhos/cm, rounded up, which occurred during the period ending on 9 September 2008, and maintaining the discharge of salinity at existing levels.~~

~~As discussed above, the Discharger replaced sodium-based chlorination and dechlorination with UV disinfection, which resulted in a significant decrease in the effluent EC concentrations. In order to ensure that the Discharger will continue to evaluate opportunities to control the discharge of salinity, this Order includes a requirement to develop and implement a salinity evaluation and minimization plan.”~~

p. 20, item 2.a.iii. Numeric Monitoring Trigger and MRP. The District finds a trigger of > 1 TUc (based on an NOEC) to be overly sensitive, based on past experiences at both of the District’s wastewater treatment plants, whereby the statistical trigger can be exceeded yet the potential for an effect to aquatic life in the receiving water is unlikely or uncertain (i.e., the practical biological effect). Thus, the District will likely be faced with a regulatory requirement to determine the cause of bioassay results that do not have a strong basis in indicating significant adverse impacts to aquatic life at the discharge location. In addition, the investigative options available (e.g., toxicity identification evaluations (TIEs)) have typically resulted in inconclusive results if apparent toxicity is very low (<2 TUc) (pers. comm. S. Ogle, Pacific Ecorisk; S. Nurse, Sierra Foothill Labs; City of Davis TRE results to date). TIEs are further limited when: 1) small adverse effects (i.e., 10–15% reduction) are detected in bioassays with <2 TUc; 2) such effects may not occur in all bioassay tests; and 3) the effect is not persistent over time.

The District believes the whole effluent toxicity (WET) testing can be an effective screening tool for further investigation of potential adverse receiving water toxicity impacts from effluent discharge. However, demonstration of toxicity in laboratory testing is not synonymous with toxicity in the receiving water at the discharge location with variable temperature, flow, suspended solids, organic matter, ultraviolet light irradiance, and the presence of reactive minerals (i.e., iron and manganese oxides). In short, there are many real world site-specific characteristics that define and determine the quality of the aquatic life habitat. Thus, equating toxicity in WET testing with demonstrated adverse impacts in the receiving water is overly restrictive and there is room for the Regional Water Board to acknowledge the inherent challenges that arise when investigating WET toxicity.

The District believes that IC25 is a more dependable approximation of the no effect level and a better indication of the ability to see an effect in the toxicity test. This perspective is supported by USEPA. USEPA has consistently recommended the use of point estimates (e.g., IC₂₅) rather than hypothesis tests to analyze whole effluent toxicity data since the issuance of the *Technical Support Document for Water Quality-based Toxics Control* in 1991. (TSD, EPA/505/2-90/001, page 6). The EPA's test methods manuals have consistently recommended the use of a point estimate method rather than the hypothesis method for the NPDES program. **“NOTE: For the NPDES Permit Program, the point estimation techniques are the preferred statistical methods in calculating end points for effluent toxicity tests.”** [original emphasis] (USEPA 2002, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. 821-R-02-013). Furthermore, when using the point estimate approach, the test methods manual advises that: *“Thus the assessment of a “safe” concentration must be made from a biological standpoint rather than with a statistical test. In this instance, the biologist must determine some amount of adverse effect that is deemed to be “safe”, in the sense that from a practical biological viewpoint it will not affect the normal propagation of fish and other aquatic life in receiving waters.”*(USEPA 2002).

Based on the above, the District request that the numeric monitoring trigger be modified as follows:

Numeric Monitoring Trigger. The numeric toxicity monitoring trigger is $> 1 \text{ TUc}$ (where $\text{TUc} = 100/\text{NOEC}$ and $100/\text{IC}_{25}$).

As such, accelerated monitoring and TREs would be initiated if bioassay results show $> 1 \text{ TUc}$ for both $100/\text{NOEC}$ and $100/\text{IC}_{25}$.

EPA's *Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)* (821-B-00-004) (USEPA 2000) provides guidance on hypothesis testing when sublethal endpoints are measured and no dilution credit is allowed due to low flow in receiving water. Thus, the District requests the following

clarification be added in the MRP, if the monitoring trigger remains based on a hypothesis test (i.e., NOEC rather than a point estimate):

5. Methods – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002. The alpha level for chronic WET bioassays may be 0.01 provided that, should the percent minimum significant difference (PMSD) not exceed the recommended PMSD for test sensitivity in the Test Method, the results should be reported using the standard alpha of 0.05.”

p. 22, C, i. The District requests the following edit for clarity.

“i. The Discharger shall provide continuous, reliable monitoring of flow, UV transmittance, UV ~~dose~~^{power}, and turbidity.”

p. 23, iii. The District requests the following edit for clarity.

“iii. The UV transmittance (at 254 nanometers) in the wastewater ~~entering~~^{exiting} the UV disinfection system shall not fall below 55 percent of maximum at any time.”

p. 28, Compliance Determination - Chronic Whole Effluent Toxicity Effluent Limitation.

The District requests that the following compliance language be added to the Order to address compliance with the chronic whole effluent toxicity limitation. This language is the same as that adopted on October 24, 2008 in the City of Stockton permit.

“Compliance with the accelerated monitoring and TRE/TIE provisions of Provision VI.C.2.a shall constitute compliance with effluent limitation IV.A.1.a.iv and IV.A.1.b.iv for chronic whole effluent toxicity.”

Monitoring and Reporting Program

p. E-1, I. B. General Monitoring Provisions. The District requests the following edit:

“Analyses that cannot be transported to, and measured by, a certified laboratory within the maximum allowable holding time (e.g., measurement of pH within ~~1530~~ minutes per Standard Methods) can be performed in a noncertified laboratory providing a Quality Assurance-Quality Control Program is instituted by the laboratory.”

p. E-1, Item C. This sub-section should be modified as follows as the first sentence is already stated in item B of this section. As written, it conflicts with item B of this section, because it does not clarify that a non-certified laboratory may be used provided it has a QA/QC program.

~~“C. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services. Laboratories that perform sample analyses shall be identified in all monitoring reports.~~

Attachment A

p. E-4, New Footnote. The District requests the following additional footnote be added to Table E-3.

“¹⁰ Continuous monitoring equipment may be temporarily taken offline for routine maintenance, calibration, cleaning or repairs. Times that meters are offline for maintenance, calibration, cleaning or repairs shall be noted in monthly self monitoring reports. If, for any reason, a meter is taken offline for a day or more, a minimum of one measurement/day shall be made for the parameter by other means and reported.”

p. E-9, B. Municipal Water Supply, 1. Monitoring Location SPL-001. The District requests that the obligation for DCWWTP personnel to establish a municipal water supply monitoring station and collected EC and TDS data be removed from this Order. Board staff can simply request such data from the District’s water supply personnel, when needed. Alternatively, the monitoring requirement can be simplified to indicate that EC and TDS data already being collected by the District be provided to Board staff quarterly.

p. E-10, Table E-8. The District requests that row 5 “UV Power Setting” be deleted from this table because the UV lamps installed at the DCWWTP are not adjustable. They are either on or off.

p. E-14, Table E-10. Based on previous comments, the District requests that the first row – reporting requirements for “Salinity Reduction Goal” be deleted from this Order.

p. E-16-17, Annual Pretreatment Report. The overall report addressing items “a.” through “h.” is due by 28 February, annually. However, the permits states that a report on the compliance status of each industrial user be submitted within 21 days of the end of the year, annually (i.e., January 21st). Because the latter is a component of the larger pretreatment program annual report, the District requests that all components of the report requested (i.e., item “a.” through “h.”, p. E-1 through E-18) be included in a single annual report to be submitted by 28 February.

Fact Sheet

p. F-13, Chlorination Language. The District requests the following edit for clarification.

“No. R5-2002-0210, which discontinued the effluent limitations for chlorine residual and contained a prohibition of the use of chlorine and/or chlorine containing substances within the treatment process ~~and that result in~~ discharge of chlorine and/or chlorine containing substances into the receiving water. This prohibition has been retained in this Order.”

p. F-20, Ammonia. Deer Creek is an effluent dominated water body, and the highest concentrations of ammonia would be expected when there is little to no dilution flow provided by Deer Creek. As such, ammonia effluent limitations protective of critical conditions in the receiving water should be based on effluent pH and temperature data

(e.g., R5-2008-0055 and R5-2008-0006). The values calculated in the Tentative Order are in fact based on effluent data, but are erroneously referred to as downstream Deer Creek data. The Discharger requests the following correction:

Since Deer Creek is an effluent dominated waterbody, acute and chronic toxicity criteria were calculated using effluent pH and temperature. The maximum permitted effluent pH is 8.5, as the site-specific Basin Plan objective for pH in the Deer Creek is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

Effluent ~~Downstream Deer Creek~~ temperature and pH data from the Discharger's monthly monitoring reports from January 2005 through December 2007 were used to develop the chronic criteria. Using effluent ~~downstream receiving water~~ data, the 30-day CCC was calculated for each day when temperature and pH were measured. The resulting lowest 99.9% 30-day CCC is 1.65 mg/L (as N). The 4-day average concentration is derived in accordance with the USEPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 1.65 mg/L (as N), the 4-day average concentration that should not be exceeded is 4.13 mg/L (as N).

p. F-31, Table F-5, WQBEL Calculations for Ammonia. USEPA's Ambient Water Quality Criteria for ammonia recommends acute, 4-day chronic, and 30-day chronic criteria. To clarify that all three criteria were considered when deriving the ammonia effluent limitations, the District requests the following additions to Table F-5:

Table F-5. WQBEL Calculations for Ammonia

	Acute	4-Day Chronic	30-Day Chronic
Criteria (mg/L) ¹	2.14	<u>4.13</u>	1.65
Dilution Credit	No Dilution	<u>No Dilution</u>	No Dilution
ECA	2.14	<u>4.13</u>	1.65
ECA Multiplier	0.32	<u>0.53</u>	0.78
LTA ²	0.68	<u>2.18</u>	1.29
AMEL Multiplier (95 th %)	1.55	<u>3</u>	3
AMEL (mg/L)	1.1	<u>3</u>	3
MDEL Multiplier (99 th %)	3.11	<u>3</u>	3
MDEL (mg/L)	2.1	<u>3</u>	3
¹ USEPA Ambient Water Quality Criteria. ² LTA developed based on Acute and Chronic ECA Multipliers calculated at 99th percentile level per sections 5.4.1 and 5.5.4 of TSD. ³ Limitations based on acute LTA ($LTA_{acute} \leq LTA_{4\text{-day chronic}} < LTA_{30\text{-day chronic}}$).			

p. F-33, Chronic Aquatic Toxicity. The summary of quarterly whole effluent chronic toxicity results only indicates results when the endpoint was greater than 1 TUc. However, the text and table do not indicate this nor discuss the total number of bioassay results. Thus, the District requests the following corrections and clarifications:

b. **Chronic Aquatic Toxicity.** The Discharger performed twelve quarterly whole effluent chronic toxicity tests with 5 different test endpoints for a total of 60 bioassay results for the period January 2005 through December 2007. Of those chronic toxicity test results, the following table summarizes the bioassay results of quarterly whole effluent chronic toxicity testing when the endpoint was greater than 1 TUc performed by the Discharge from January 2005 through December 2007.

Table F-8. Summary of Chronic Aquatic Toxicity Results Greater Than 1 TUc.

Date	Species	Test Endpoint	Result (TUc)
23 October 2007	<i>Pimephales promelas</i>	Survival	8
23 October 2007	<i>Pimephales promelas</i>	Growth	8
23 October 2007	<i>Ceriodaphnia Dubia</i>	Reproduction	8
20 November 2007	<i>Pimephales promelas</i>	Survival	1.3
20 November 2007	<i>Pimephales promelas</i>	Growth	1.3
20 November 2007	<i>Ceriodaphnia Dubia</i>	Reproduction	8
15 January 2008	<i>Pimephales promelas</i>	Survival	2
15 January 2008	<i>Pimephales promelas</i>	Growth	2

p. F-47, d. Salinity. The District requests the following edits, based on previous comments herein.

~~“d. **Salinity.** Because conversion to UV disinfection from sodium-based chlorination and dechlorination at the Facility occurred in August 2006, sufficient representative monitoring data is not available to calculate a final effluent limitation for salinity. This Order requires weekly effluent monitoring of for electrical conductivity. If the Regional Water Board completes development of a new salinity policy for the Central Valley or if sufficient monitoring data is collected to characterize salinity in the effluent, this Order may be reopened to include final effluent limitations for salinity.”~~