

**Regional Water Quality Control Board
Central Valley Region
Board Meeting – 7-8 August 2014**

**Response to Written Comments for the City of Dixon
Wastewater Treatment Facility
Tentative Waste Discharge Requirements**

At a public hearing scheduled for 7 and 8 August 2014, the Regional Water Quality Control Board, Central Valley Region (“Central Valley Water Board”) will consider adoption of Waste Discharge Requirements (“WDRs”) and a Cease and Desist Order (“CDO”) that will regulate discharges from the City of Dixon’s Wastewater Treatment Facility. This document contains responses to written comments received from interested parties regarding the tentative WDRs and CDO. Written comments from interested parties were required by public notice to be received by the Central Valley Water Board by close of business on 9 June 2014 to receive full consideration. Comments were received from the City of Dixon, the Central Valley Clean Water Association, and the Solano County Taxpayers Association.

Written comments from the above interested parties are summarized below, followed by the responses of Central Valley Water Board staff. Based on the comments, Central Valley Water Board staff made some changes to the tentative WDRs. Central Valley Water Board staff also made some changes to correct typographical errors and to improve clarity.

CITY OF DIXON COMMENTS

On 9 June 2014, the City of Dixon (the “City”) submitted written comments regarding the tentative WDRs. The City’s comments identified some issues and requested certain editorial changes to the tentative WDRs. Some of the requested changes were made as appropriate.

City of Dixon Comment No. 1: The City proposed a boron groundwater objective concentration range of 1.7 to 1.8 mg/L based on information that indicated that sunflowers were the most sensitive crop grown in the area. The City also requested that the final effluent limit for boron be increased to 1.4 mg/L to account for an increase of the influent boron concentration in 2013. The City believes that the increase may be a result of residents using boron containing detergents to improve the cleaning efficiency of hard water due to the loss of water softeners.

RESPONSE: The City continued to work with CVSALTS during the public comment period to develop a numerical groundwater objective for boron. On 27 May 2014, the City requested clarification from CVSALTS regarding the need for additional studies and CVSALTS had not yet responded to the clarification request by the time comments were due. On 16 June 2013, Central Valley Regional Board staff received a letter from CVSALTS stating that “it would be reasonably conservative to set the agricultural water quality objective at 1.65 mg/L... to ensure that all agricultural beneficial uses are adequately protected.” Therefore, this value was included in the proposed WDRs as a numerical groundwater objective. The letter also stated that “no further information is needed... to finalize the City of Dixon’s Site Specific Boron Objective Study.” Therefore, the requirement to submit additional information to CVSALTS was removed from the proposed WDRs. Based on the boron numerical agricultural water quality objective of 1.65 mg/L, a final boron effluent limit of 1.4 mg/L is expected to be protective of groundwater quality, assuming that evapoconcentration of the new WWTF does not exceed 20 percent as designed. Therefore, the final boron effluent limit was changed to 1.4 mg/L. Currently, the City can comply with this effluent limit. However, it is possible

that the City will need to implement additional source control in the future if water conservation and/or use of boron-based cleaning products increases in the future. The City has expressed an interest in starting community outreach and education as a method of source control.

City of Dixon Comment No. 2: The City requested that the final total nitrogen effluent limit of 10 mg/L be changed to a nitrate-nitrogen limit of 10 mg/L and a total Kjeldahl nitrogen (TKN) limit of 3 mg/L. The City believes that these limits will ensure that groundwater quality will not exceed the 10 mg/L primary MCL for nitrate nitrogen because the little TKN remaining after treatment will not mineralize and some of the nitrate nitrogen will denitrify as effluent percolates from the disposal ponds.

RESPONSE: The City provided supporting evidence showing that a portion of the total nitrogen remaining after the oxidation ditch treatment process is not likely to ever become nitrified. Based on the information provided, these changes were made to the proposed WDRs. The proposed TKN limit accounts for the portion of total nitrogen that is not biodegradable.

City of Dixon Comment No. 3: The City requested that the interim effluent limits in the tentative WDRs be set as the same limitations in Cease and Desist Order R5-2008-0136 because compliance with the proposed interim limits is not possible during construction.

RESPONSE: Chloride is the only constituent for which there is an effluent limit in both the 2008 CDO and the proposed WDRs. The chloride effluent limit is 340 mg/L in the 2008 CDO and 200 mg/L in the proposed WDRs. From 2010 through 2013, the highest annual average chloride effluent concentration was 169 mg/L, which indicates that the chloride concentration could increase by 18 percent and remain in compliance with the proposed interim effluent limits during WWTF construction. Support for increasing the interim effluent limits was not provided in the comments, and the Report of Waste Discharge does not indicate that wastewater effluent quality will be substantially affected during construction of the new WWTF. Therefore, no changes were made.

CENTRAL VALLEY CLEAN WATER ASSOCIATION COMMENTS

On 9 June 2014, the Central Valley Clean Water Association (CVCWA) submitted written comments regarding the tentative WDRs. The CVCWA's comments identified some issues and requested certain editorial changes to the tentative WDRs. Some of the changes were made as requested and some were not.

CVCWA Comment No. 1: *Discharge Prohibition A.5 states that the “[d]ischarge of toxic substances into the wastewater treatment system such that biological treatment mechanisms are disrupted is prohibited.” CVCWA does not believe it appropriate to express this requirement as a discharge prohibition that applies directly to the City’s actions, but rather the City should be required to prohibit such discharges into the wastewater treatment system. Discharge prohibition A.5 should be re-written as a provision in Section G, and state that the “Discharger shall not allow toxic substances to be discharged into the wastewater treatment system such that biological treatment mechanisms are disrupted is prohibited.”*

RESPONSE: Staff agrees. Discharge Prohibition A.5 was edited as requested but was

not moved to the Provisions section.

CVCWA Comment No. 2: *The inclusion of Discharge Specification D.1 is duplicative and unnecessary. This specification establishes a requirement to comply with the groundwater limitations contained in the Tentative Order at E.1. However, the groundwater limitations are an independent requirement thus it is unnecessary to include a separate discharger specification requiring compliance therewith. Further, CVCWA is concerned with the inclusion of reference to “mass” as part of the discharge specifications for complying with groundwater limitations. The groundwater limitations are concentration-based requirements that are consistent with adopted water quality objectives. Such objectives, or criteria interpreting narrative objectives, are concentration-based objectives and therefore it is inappropriate to include reference to “mass” with respect to compliance with groundwater limitations.*

RESPONSE: Staff partially agrees. Discharge Specification D.1 was edited to remove the reference to “mass” as part of the specification, but it is neither duplicative nor unnecessary. Violations of the groundwater limitations may occur when waste disposal is properly or improperly managed. Discharge Specification D.1 requires the City to properly manage their waste disposal in a way that will not cause a violation of the groundwater limitations.

CVCWA Comment No. 3: *...[Discharge Specification D.2] states “[t]he discharge shall not cause degradation of any water supply.” But the Tentative Order contains no findings or information to explain the intent and purpose of this requirement, or how compliance with such a requirement will be measured... CVCWA recommends that discharge specification D.2 be removed...*

RESPONSE: Staff agrees. Discharge Specification D.2 was removed as requested.

CVCWA Comment No. 4: *The Tentative Order includes groundwater limitations for TDS, chloride, and sodium. All three are salt constituents and it is unnecessary to include groundwater limitations for all three. Further, the Tentative Order includes effluent limits for chloride [but not for] TDS and sodium. Accordingly, CVCWA recommends that the groundwater limitations for TDS and sodium be removed.*

RESPONSE: TDS, chloride, and sodium are each present in the City's wastewater, and the Basin Plan prescribes water quality objectives for each. As discussed in Findings 45 through 47, the City of Dixon worked extensively with CVSALTS to develop numeric values to interpret the Basin Plan's narrative water quality objectives for agricultural beneficial uses of groundwater. Findings 48 through 52 discuss the determination of site-specific water quality objectives to implement the Basin Plan's numeric and narrative objectives for the constituents of concern in the City's effluent and the degree to which the existing discharge has caused degradation of groundwater quality.

Findings 64 through 66 appropriately evaluate the threat of degradation posed by each of these salinity constituents separately based on the character of the wastewater, background groundwater quality, the site-specific water quality objectives, and site-specific discharge conditions. The groundwater limitations for these constituents were appropriately set at site-specific concentrations consistent with the Antidegradation Policy or the Controllable Factors Policy (whichever applies). It should also be noted that these policies would apply whether or not they are expressed as numeric groundwater

limits in the WDRs. It is both proper and in the Discharger's best interest to have these limits expressed numerically to prevent misunderstandings regarding the intent of the WDRs.

The proposed WDRs have an effluent limit for chloride, but no effluent limits for TDS or sodium because the discharge has caused degradation for chloride, but not for TDS or sodium. Staff analyzed all of the available information and determined that effluent limits for those constituents are not necessary to ensure compliance with the groundwater limits.

The requested revision was not made, but clarifying text was added to Finding 64.

CVCWA Comment No. 5: *CVCWA... is concerned that compliance with groundwater limits would be determined on a well-by-well basis. In other words... if the City showed a temporal increase in three of its groundwater monitoring wells, this would be considered to be three separate violations of the groundwater limitations, rather than just one. This is not appropriate as the monitoring well network is designed to collectively determine compliance with groundwater limitations. To address this issue, CVCWA recommends that [the groundwater limitations] ... be revised [to provide that] ... a temporal increase for the same constituent in more than one compliance well ... be considered as non-compliance with a single groundwater limit for all wells combined.*

RESPONSE: While Board staff understand the commenter's interest in making sure that the Order clearly define each action that would be considered a violation, the commenter's hypothetical enforcement scenario envisions an unusually aggressive interpretation of the proposed language. The language in question states that the Board will assess compliance with the Groundwater Limitations by analyzing trends in "each individual compliance well." This language was included to make it clear that the Board isn't going to be averaging concentrations amongst the network of compliance wells; an increasing trend in any of the compliance wells located downgradient of the large discharge area will indicate that the Discharger has violated a groundwater limitation. This is appropriate because unexpected increasing trends *should* be noted as a violation, which would then prompt the Discharger to take appropriate action(s) to address the compliance issue. A well-by-well determination of compliance is likewise appropriate because the factors that cause a violation of the groundwater limit in one well might be different from those that cause a violation in one or more other wells.

In staff's opinion, it would be an overreaction to change the language or to add additional explanatory language. When language in a permit is susceptible to a reasonable interpretation, it is typically unnecessary to add additional language just to foreclose other potentially unreasonable interpretations. Furthermore, when multiple well sampling events conducted on the same day indicate that the Discharger is violating the same groundwater limit, those violations are aggregated and only one groundwater violation is entered into the CIWQS database. This would seem to account for the violations in the same manner suggested by the commenter.

SOLANO COUNTY TAXPAYERS ASSOCIATION COMMENTS

Prior to public notice of the tentative WDRs, the Dixon Chapter of the Solano County Taxpayer Association (SCTA) submitted a letter on 18 April 2014 regarding the City of Dixon's proposed wastewater treatment facility. On 9 June 2014, the SCTA submitted written comments regarding

the tentative WDRs, which are summarized and addressed below.

SCTA Comment No. 1: SCTA believes that the City has not chosen a cost effective project to comply with the requirements of the 2008 CDO and that cheaper alternatives are available.

RESPONSE: The City completed a Facilities Plan for the State Water Resources Control Board's State Revolving Fund loan application process. The Facilities Plan included an engineering feasibility study of twelve alternatives for improving the existing WWTF to provide for current and future needs. The City considered a no action alternative, redesigning the current treatment and disposal ponds to reduce evapoconcentration, upgrading the treatment system to an activated sludge design consisting of oxidation ditches and clarifiers, actively removing salts using technology such as reverse osmosis, and reducing salinity concentrations by means of dilution. The City determined that decommissioning the 122 acres of treatment ponds and constructing an activated sludge treatment system was the most cost effective alternative for current and future wastewater treatment needs. The City's Report of Waste Discharge, which was submitted to comply with the 2008 CDO, proposed a project that the City determined to be the best project overall considering the objectives of economic feasibility, compliance with the Basin Plan, and long-term growth objectives.

It is possible that less costly project alternatives are available to comply with the 2008 CDO and the Basin Plan. However, Water Code section 13360 stipulates that the Water Boards cannot specify the method of compliance with waste discharge requirements. Therefore, the Board has no direct role in selection of WWTF improvements except to ensure that what is proposed is capable of complying with the Basin Plan.

SCTA Comment No. 2: SCTA believes that the proposed wastewater treatment facility will inappropriately use dilution to ensure compliance the Basin Plan, and they have identified a technology that they believe is less costly and that will remove constituents of concern.

RESPONSE: This comment incorrectly states that the proposed WWTF would rely on dilution (i.e., the addition of water) to reduce constituent concentrations. In actuality, the City proposes to continue implementing source control programs already in place and reduce evapoconcentration of the wastewater as a means to minimize groundwater degradation. Because of its excessively large "footprint" of unlined treatment and disposal ponds (over 400 acres in 2009), the City's current WWTF results in percolate salinity that is 80% greater than the influent wastewater before treatment. Such high wastewater evapoconcentration rates are uncommon, even in the dry Central Valley, and they are an unnecessary waste of one valuable resource (aquifer recharge water) while they contribute to the decline of groundwater quality.

The City's Facilities Plan evaluated some alternative projects that would utilize dilution as the means to comply with the Basin Plan, such as blending Solano Irrigation District water with the effluent or mixing captured storm water from existing storm water retention basins with the influent. However, the City decided that the proposed WWTF, with its advantage of minimizing evaporation, was the most logical design to provide current environmental benefit and sufficient treatment to support the City's future population and economic growth. While the actual removal and destruction of waste constituents can be more environmentally beneficial in some circumstances, it is not a requirement to comply with the Basin Plan, which establishes water quality objectives that are concentration based. No changes were made to

address this comment.

SCTA Comment No. 3: SCTA believes that project alternatives should be discussed in the WDRs.

RESPONSE: Staff disagrees. The purpose of the WDRs is to describe and regulate the discharge of waste so that water quality is protected as required by the Water Code and Basin Plan. The engineering feasibility evaluation of project alternatives was a prudent process undertaken by the City so that City leaders could make an informed decision on behalf of the community. It was, in effect, part of the due diligence process conducted by the City of Dixon. It is, however, not relevant to the WDRs because it has no bearing on the setting of effluent and groundwater limits or prescribing protective discharge requirements.

Comment No. 4: SCTA believes that data have been ignored when determining the final effluent limitations and there has been no change to the final effluent limits that were established in the 2008 CDO.

RESPONSE: All available information was carefully considered in development of the proposed WDRs. The proposed effluent limits are not the same as those in the 2008 CDO, and the derivation of the proposed limits is detailed in the findings of the proposed WDRs. The proposed WDRs establish effluent limits to protect groundwater quality and/or ensure that best practicable treatment or control is being implemented. As discussed in Findings 64 and 65, effluent limits for BOD, nitrogen, and chloride are performance based limits of the proposed wastewater treatment system after consideration of groundwater quality and/or controllable factors, while the effluent limit for boron is based on the protection of a site specific water quality objective. Effluent limits for TDS and sodium were determined not to be necessary because the discharge has caused groundwater degradation for chloride, but not for TDS or sodium. In comparison, the 2008 CDO established effluent limits for chloride and sodium based on the most stringent water quality objective due to known groundwater quality data at the time of adoption.

The effluent limits in the proposed WDRs are based on studies and source control efforts conducted by the City since the adoption of the 2008 CDO. The City's studies of wastewater and groundwater quality, actions to reduce salinity, and extensive work with CVSALTS have provided the basis for a numeric interpretation of the Basin Plan's narrative water quality objectives. This work has also lead to the development of effluent and groundwater limits that are protective of the Basin Plan's water quality objectives.

The following table shows that the final effluent limits established in CDO R5-2008-0136 have been reconsidered in the proposed WDRs.

Constituent	Final Effluent Limit (mg/L)	
	CDO R5-2008-0136	Proposed WDRs
Chloride	106 ¹	150 ³

Sodium	143 ¹	none ⁴
Total Kjeldahl Nitrogen	none ²	3 ³
Nitrate-nitrogen	none ²	10 ³
BOD monthly average	none ²	30 ³
BOD monthly maximum	none ²	50 ³
Boron	none ²	1.4 ⁵

¹ Effluent limit based on most stringent water quality objective due to known groundwater quality data at the time of adoption.

² Effluent limit not established in CDO R5-2008-0136 or WDRs 94-187

³ Performance based effluent limit after consideration of groundwater quality and/or controllable factors.

⁴ Sodium effluent limit not established because no groundwater degradation from discharge.

⁵ Effluent limit based on the protection of a site specific water quality objective.

SCTA Comment No. 5: SCTA believes that the requirement to remove accumulated sludge for closure of the existing wastewater treatment ponds is unnecessary. SCTA states that the volume of sludge is naturally being reduced in-situ because the previous city engineer estimated sludge accumulation to be at four feet deep while the City’s consultant estimated that sludge is approximately two feet deep. SCTA also states that groundwater quality monitoring data do not indicate that metals or other toxic substances are a threat to groundwater.

RESPONSE: Staff disagrees. It is true that if left in place the sludge will naturally degrade, however, it will also pose a high threat to groundwater quality if not removed. Domestic wastewater sludge is known to be high in nitrogen, contain pathogens, and accumulate heavy metals. The City acknowledges that there is not any record of sludge ever being removed. While the oldest sludge may have stabilized, new sludge is being added every day. Additionally, if the sludge was left in place after the ponds are decommissioned it will no longer be in a condition of constant saturation. The sludge would experience cycles of saturation and desaturation dependent on the climate, which will affect the stability of the sludge, cause odor and insect nuisances, and promote leaching of accumulated metals, nitrogen, and pathogens.

The City’s RWD proposes to remove the sludge as wastewater treatment ponds are taken out of service and recognizes that the sludge needs to be removed as part of their deferred maintenance. Therefore, no changes were made.