ALTERNATIVE NO. 3
APPLICABILITY OF ALUMINUM CRITERIA

PLACER COUNTY DEPARTMENT OF FACILITY SERVICES
PLACER COUNTY SEWER MAINTENANCE DISTRICT 1
WASTEWATER TREATMENT PLANT
PLACER COUNTY
Proposed Waste Discharge Requirements and Proposed Cease and Desist Order
NPDES No. CA0079316

At the May 2010 Central Valley Water Board meeting, the Board continued the subject item allowing the Discharger and other interested parties to submit compelling evidence regarding the applicability of the appropriate criteria for the establishment of final aluminum effluent limitations. The following tentative Alternative is based on the applicability of the USEPA National Ambient Water Quality Criteria (NAWQC), specifically the acute aluminum criteria of 750 ug/L and the Department of Public Health's Secondary Maximum Contaminant Level of 200 ug/L. This Alternative does not apply the NAWQC chronic aluminum criteria of 87 ug/L. Information supporting this tentative alternative includes a 14 June 2010 letter submitted by the Discharger and provided in the tentative permit package.

NPDES Permit

1. *Modify section II.M. of the Findings as follows:*

   M. Stringency of Requirements for Individual Pollutants. This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and percent removal requirements for 5-day biochemical oxygen demand (BOD_5), and total suspended solids (TSS). The WQBELs consist of restrictions on ~~aluminum~~, ammonia, arsenic, chlorine residual, chlorodibromomethane, copper, dichlorobromomethane, electrical conductivity, lead, mercury, nitrate plus nitrite, nitrite, and pH.

2. *Modify section IV.A.1.a, Table 6 of the Effluent Limitations as follows:*

Table 6. Final Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Non-Conventional Pollutants						
~~Aluminum, Total Recoverable~~	~~µg/L~~	~~68~~	~~--~~	~~151~~	~~--~~	~~--~~

3. Delete section VII.B. of the Compliance Determination language as follows:

~~**B. Aluminium Effluent Limitations (Section IV.A.1.a).** Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.~~

4. Modify the Monitoring and Reporting Program, Attachment E, Section IV.A.1, Table E-3 (Effluent Monitoring), and section VIII.A.1, Table E-6 (Receiving Water Monitoring) as follows:

I. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Locations EFF-001 and EFF-002

1. The Discharger shall monitor the treated effluent at Monitoring Locations EFF-001 and EFF-002 as follows when discharging from Discharge Point Nos. 001 and 002, respectively. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level.

Table E-3. Effluent Monitoring – EFF-001 and EFF-002

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Non-Conventional Pollutants				
~~Aluminum, Total Recoverable~~	~~µg/L~~	~~24-Hour Composite~~[2]	~~1/Month~~	~~3,12~~

~~12 Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.~~

A. Monitoring Locations RSW-001, RSW-002, RSW-003, and RSW-004

1. The Discharger shall monitor Rock Creek and Dry Creek at Monitoring Locations RSW-001, RSW-002, RSW-003, and RSW-004 as follows:

Table E-6. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Non-Conventional Pollutants				
~~Aluminum~~	~~ug/L~~	~~Grab~~	~~1/Month~~	~~1~~

5. *Modify the Fact Sheet, Attachment F, section IV.C.3.1 (Rationale for Effluent Limitations, section IV.C.4 (WQBEL Calculations), and section IV.D (Summary of Final Effluent Limitations) as follows:*

(Section IV.C)

1. Determining the Need for WQBELs

a. The Regional Water Board conducted the RPA in accordance with section 1.3 of the SIP. Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control.[1] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents, except for non-CTR constituents where the MCL is the applicable water quality objective and as otherwise described in sections IV.C.3.b and IV.C.3.c of this Fact Sheet. The RPA was based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.

b. Constituents with No Reasonable Potential. WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (see Attachment G); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation. Based on new data and the procedures established in Section 1.3 of the SIP for determining reasonable potential, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion for the following constituents:

ii. Aluminum. Order No. R5-2005-0074 established effluent limitations for aluminum based on the USEPA National Ambient Water Quality Criteria (NAWQC) for protection of freshwater aquatic life of 87 µg/L. The most stringent of these criteria, the chronic criterion of 87 ug/L, is based on studies conducted on waters with low pH (6.5 to 6.8 pH units) and hardness (<10 mg/L as $CaCO_3$). The upstream receiving water pH ranged from 6.3 – 9.5. The upstream receiving water hardness ranged from 20 mg/L (method detection level) to 98mg/L. The minimum observed effluent hardness was 141 mg/L. (The high hardness of the effluent is due to the addition of magnesium hydroxide in the primary clarifier effluent to provide alkalinity for nitrification, as reported in Table B-1 in Addendum B – Form 2A Part B, section B.3 of the Report of Waste Discharge). The effluent hardness increases the downstream hardness, therefore the downstream receiving

water hardness is supportive of the non-applicability of the NAWQC chronic criteria for aluminum. The maximum aluminum effluent concentration of 162 ug/L is less than the next most stringent Maximum Contaminant Level (MCL) for aluminum criteria established by the Department of Public Health for the protection of public health. Therefore, aluminum in the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.

c. Constituents with Reasonable Potential. The Regional Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ~~aluminum~~, ammonia, arsenic, chlorine residual, chlorodibromomethane, copper, dichlorobromomethane, electrical conductivity, lead, mercury, nitrate plus nitrite, nitrite, pathogens, and pH. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

~~**i. Aluminum**~~

~~**(a) WQO.** USEPA developed NAWQC for protection of freshwater aquatic life for aluminum. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively, for waters with a pH of 6.5 to 9.0. USEPA recommends that the ambient criteria are protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria. The most stringent of these criteria, the chronic criterion of 87 ug/L, is based on studies conducted on waters with low pH (6.5 to 6.8 pH units) and hardness (<10 mg/L as $CaCO_3$). The upstream receiving water pH ranged from 6.3 – 9.5. The upstream receiving water hardness ranged from 20 mg/L to 98 mg/L. The minimum observed effluent hardness was 141 mg/L. The high hardness of the effluent is due to the addition of magnesium hydroxide in the primary clarifier effluent to provide alkalinity for nitrification, as reported in Table B-1 in Addendum B – Form 2A Part B, section B.3 of the Report of Waste Discharge. Although the effluent hardness may currently increase the downstream hardness, future modifications of the treatment process may result in changes in magnesium hydroxide use. These changes may reduce the effluent hardness and, consequently, the downstream receiving water hardness to levels supportive of the applicability of the NAWQC chronic criteria for aluminum. Therefore, the low pH values and low hardness observed in the receiving water is supportive of the applicability of the NAWQC chronic criteria for aluminum, according to USEPA's development document.~~

~~**(b) RPA Results.** The MEC for aluminum was 162 µg/L. Background receiving water data for aluminum is not available. Therefore, aluminum in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective.~~

~~**(c) WQBELs.** This Order contains a final AMEL and MDEL for aluminum as shown in Table F-9 of this Fact Sheet based on protection of the Basin Plan's narrative toxicity objective.~~

~~**(d) Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 162 µg/L is greater than applicable WQBELs. Based on the sample results for the effluent, the limitations appear to put the Discharger in immediate non-compliance. New or modified control measures may be necessary in order to comply with the effluent limitations, and the new or modified control measures cannot be designed, installed and put into operation within 30 calendar days. Furthermore, the effluent limitations for aluminum are a new regulatory requirement within this permit, which becomes applicable to the waste discharge with the adoption of this Order, which was adopted after 1 July 2000. Therefore, a compliance time schedule for compliance with the aluminum effluent limitations is established in Cease and Desist Order (CDO) No. R5-2010-**XXXX** in accordance with CWC section 13300, that requires preparation and implementation of a pollution prevention plan in compliance with CWC section 13263.3.~~

4. WQBEL Calculations

a. This Order includes WQBELs for ~~aluminum,~~ ammonia, arsenic, chlorine residual, chlorodibromomethane, copper, dichlorobromomethane, electrical conductivity, lead, mercury, nitrate plus nitrite, nitrite, pH, and total coliform organisms. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below. See Attachment H for the WQBEL calculations.

(Section IV.D)

D. Final Effluent Limitations

Table F-9. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations					Basis[1]
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Non-Conventional Pollutants							
~~Aluminum, Total Recoverable~~	~~µg/L~~	~~68~~	~~–~~	~~151~~	~~–~~	~~–~~	~~NAWQC~~

2. Averaging Periods for Effluent Limitations

40 CFR 122.45 (d) requires average weekly and average monthly discharge limitations for publicly owned treatment works (POTWs) unless impracticable.

However, for toxic pollutants and pollutant parameters in water quality permitting, USEPA recommends the use of a maximum daily effluent limitation in lieu of average weekly effluent limitations for two reasons. "*First, the basis for the 7-day average for POTWs derives from the secondary treatment requirements. This basis is not related to the need for assuring achievement of water quality standards. Second, a 7-day average, which could comprise up to seven or more daily samples, could average out peak toxic concentrations and therefore the discharge's potential for causing acute toxic effects would be missed.*" (TSD, pg. 96) This Order utilizes MDELs in lieu of average weekly effluent limitations for ~~aluminum,~~ ammonia, chlorodibromomethane, copper, dichlorobromomethane, and lead as recommended by the TSD for the achievement of water quality standards and for the protection of the beneficial uses of the receiving stream. Furthermore, for BOD_5, TSS, pH, chlorine residual, and total coliform organisms, weekly average effluent limitations have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order No. R5-2005-0074, with the exception of effluent limitations for aluminum, alachlor, atrazine, bis (2-ethylhexyl) phthalate, chloroform, manganese, methyl tertiary butyl ether, oil and grease, persistent chlorinated hydrocarbon pesticides, phthalate acid esters, polychlorinated biphenyls, settleable solids, silver, TCDD-equivalents, tributyltin, and zinc. Effluent limitations for these parameters have not been retained from Order No. R5-2005-0074. Based on updated monitoring data and information that was not available at the time Order No. R5-2005-0074 was issued, these parameters do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Removal of the WQBELs in the previous permit is in accordance with CWA sections 303(d)(4) and 402(o), which allow for the removal of WQBELs for attainment waters where antidegradation requirements are satisfied. Removal of the WQBELs is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

4. Satisfaction of Antidegradation Requirements, Sub-bullet a.i

i. Rock Creek was designated as a Tier 1 receiving water for aluminum, bis (2-ethylhexyl) phthalate, and iron because these constituents were detected in the receiving water above water quality criteria. The SIP requires effluent limitations for pollutants when background concentrations

exceed the applicable water quality criteria and the pollutant is detected in the effluent. Effluent limitations are <u>not</u> included in this Order for aluminum. <u>The removal of the final effluent limitation from the previous permit does not result in significantly lower water quality, and will continue to protect beneficial uses to the benefit of the people of the State.</u> As discussed in section IV.C.3.b.iii of this Fact Sheet, bis (2-ethylhexyl) phthalate has not been detected in the effluent since the Discharger implemented "clean" sampling techniques and effluent limitations are not included in this Order. Effluent monitoring data for iron is not available at this time, and effluent limitations are not included in this Order. The proposed increase in discharge will not significantly lower water quality for these pollutants in Rock Creek or Dry Creek relative to the current conditions and will not impact Tier 1 designations.

6. *Modify the Fact Sheet, Attachment F, section VI.B.2.d (Rationale for Effluent Monitoring and Reporting Requirements) as follows:*

   d. In order to determine compliance with effluent limitations for ~~aluminum,~~ copper, lead, mercury, and dichlorobromomethane, Order No. R5-2005-0074 established quarterly effluent monitoring requirements. Consistent with the monitoring requirements for other toxic pollutants in this Order and in recently adopted permits in the Central Valley Region, this Order revises the monitoring frequency from quarterly to monthly for these parameters. In a letter dated 22 February 2010, the Discharger requested that the monitoring frequency for these parameters be reduced to quarterly. However, because these parameters continue to exhibit reasonable potential to cause or contribute to exceedances of water quality objectives, monthly monitoring is considered appropriate and necessary for characterization of the effluent and determining compliance with applicable effluent limitations.

7. *Modify Attachment G as follows:*

Summary of Reasonable Potential Analysis

Constituent	Units	MEC	B	C	CMC	CCC	MCL	Reasonable Potential
Aluminum, Total Recoverable	µg/L	162	NA	87	750[1]	87[2]	200	~~Yes~~ <u>No</u>

<u>Cease and Desist Order</u>

1. *Modify Findings 5 as follows:*

   5. On **<DATE>**, the Central Valley Water Board adopted Order No. R5-2010-XXXX rescinding Order No. R5-2005-0074 and prescribing renewed WDRs for the Facility.

Order No. R5-2010-XXXX section IV.A.1.a contains Final Effluent Limitations for Discharge Point Nos. 001 and 002 which read, in part, as follows:

"Table 6. Final Effluent Limitations

Parameter	***Units***	***Effluent Limitations***				
		Average Monthly	***Average Weekly***	***Maximum Daily***	***Instantaneous Minimum***	***Instantaneous Maximum***
Non-Conventional Pollutants						
~~*Aluminum, Total Recoverable*~~	~~*µg/L*~~	~~*68*~~	~~--~~	~~*151*~~	~~--~~	~~--~~

2. Modify Findings 8, 9, 13 and 15 as follows:

8. The Central Valley Water Board finds that the Discharger is not able to consistently comply with the effluent limitations for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrite. The schedules for completing the actions necessary to achieve full compliance exceed the adoption date of this Order. Additional time is necessary to provide the necessary treatment to comply with the requirements of Order No. R5-2010-XXXX. New time schedules are necessary in a CDO for all the constituents listed above. These limitations were new requirements that became applicable to the Order after the effective date of adoption of the WDRs, and after 1 July 2000, for which new or modified control measures are necessary in order to comply with the limitation, and the new or modified control measures cannot be designed, installed, and put into operation within 30 calendar days.

9. Immediate compliance with the effluent limitations for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrite is not possible or practicable. The Clean Water Act and the California Water Code authorize time schedules for achieving compliance.

   The Discharger indicated in the *Infeasibility Report for the Sewer Maintenance District 1 Wastewater Treatment Plant* (Infeasibility Report) submitted 4 May 2010 that additional time is required to comply with the final effluent limitations for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrate. The Regional Water Board is providing no later than 1 September 2015 for the Discharger to comply with these requirements.

13. Because CDO No. R5-200500075 provided the Discharger with almost five years to comply with effluent limitations for ~~aluminum,~~ nitrate plus nitrite, and nitrite, the exception from mandatory minimum penalties pursuant to CWC section 13385(j)(3) does not apply for these parameters. Pursuant to CWC section 13263.3(d)(1)(D), a pollution prevention plan was required. In CDO No. R5-2005-0075 for ~~aluminum,~~ nitrate plus nitrite, and nitrite in order to effectively reduce the effluent concentrations by source control measures. This Order requires the Discharger to update and implement the existing pollution prevention plans for these constituents.

15. The compliance time schedule in this Order includes interim effluent limitations for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and ~~-~~nitrite. In developing the interim limitations for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrite, where there are 10 sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9 percent of the data points will lie within 3.3 standard deviations of the mean (*Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row, 3rd Edition, January 1986*). Where actual sampling shows an exceedance of the proposed mean plus 3.3-standard deviation interim limit, the maximum detected concentration has been established as the interim limitation. In developing the interim limitations, when there are less than 10 sampling data points available, the USEPA *Technical Support Document for Water Quality- based Toxics Control* ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of 10 data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a maximum daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Therefore, when there are less than 10 sampling points for a constituent, an interim limitation is based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2). The following table summarizes the calculations of the interim performance-based effluent limitations for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrite:

Interim Effluent Limitation Calculation Summary

Parameter	Units	MEC	Mean	Std. Dev.	# of Samples	Interim Maximum Daily Effluent Limitation
~~Aluminum, Total Recoverable~~	~~µg/L~~	~~162~~	~~55~~	~~40~~	~~25~~	~~188~~

3. Modify Provisions 1 and 2 as follows:

IT IS HEREBY ORDERED THAT Cease and Desist Order No. R5-2005-0075 is rescinded, and, pursuant to CWC Section 13301:

1. The Discharger shall comply with the following time schedule to ensure compliance with the final effluent limitations in Order Nos. R5-2005-0074 and R5-2010-XXXX for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrite:

Task	**Date Due**
i. Submit Method of Compliance Workplan/Schedule	Within **6 months** after adoption of this Order
ii. Update and implement Pollution Prevention Plan[1] as specified in CWC Section 13263.3 for ~~aluminum,~~ nitrate plus nitrite, and nitrite	Within **90 days** after adoption of this Order

iii. Submit and implement Pollution Prevention Plan (PPP)[2] pursuant to CWC section 13263.3 for chlorodibromomethane and dichlorobromomethane	Within **6 months** after adoption of this Order
iv. Award Final Design and Environmental Consultant Contracts	1 May 2011
v. Complete Final Design of Improvements and Complete CEQA Documentation	31 July 2011
vi. Obtain Bids and Project Funding and Award Construction Contract	31 December 2011
vii. Complete Construction of Improvements	31 December 2014
viii. Complete Startup and Performance Testing	31 August 2015
ix. Report of Compliance or Non-Compliance with Interim Milestones	14 days following the due date for Tasks iv through viii
x. Progress Reports[3]	**30 June, annually**, after approval of work plan until final compliance
xi. Full compliance with ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrite effluent limitations	**1 September 2015**

[1] The pollution prevention plan shall be updated and implemented for aluminum, nitrate plus nitrite, and nitrite, as appropriate, and shall meet the requirements specified in CWC section 13263.3.

[2] The pollution prevention plan shall be updated and implemented for chlorodibromomethane and dichlorobromomethane, as appropriate, and shall meet the requirements specified in CWC section 13263.3.

[3] The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including studies, construction progress, evaluation of measures implemented, and recommendations for additional measures as necessary to achieve full compliance by the final date.

2. The following interim effluent limitations for ~~aluminum,~~ chlorodibromomethane, dichlorobromomethane, nitrate plus nitrite, and nitrite shall be effective immediately, and shall remain in effect through **31 August 2015**, or when the Discharger is able to come into compliance with the final effluent limitations, whichever is sooner.

Parameter	Units	Maximum Daily Effluent Limitation
~~Aluminum, Total Recoverable~~	~~µg/L~~	~~188~~
Chlorodibromomethane	µg/L	3.0
Dichlorobromomethane	µg/L	17
Nitrate Plus Nitrite (as N)	mg/L	49
Nitrite Nitrogen, Total (as N)	mg/L	9.7