

Donner Summit Public Utility District Corrective Action Plan and Implementation Schedule for Aluminum

December 2009

Prepared for
Donner Summit Public Utility District

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1.0 INTRODUCTION

On April 24, 2009 the California Regional Water Quality Control Board, Central Valley Region (Regional Water Board) adopted Waste Discharge Requirements for the Donner Summit Public Utility District Wastewater Treatment Plant (Order No. R5-2009-0034, NPDES No. CA0081621) (Order) and Cease and Desist Order No. R5-2009-0035 (CDO). The Order contains final effluent limitations on aluminum based on protection of freshwater aquatic life. Compliance with these final effluent limitations is not immediately achievable. Therefore, interim effluent limitations for aluminum, and a schedule for achieving compliance, are included in the Order. Compliance with the final effluent limitations for aluminum is required by expiration of the Order (April 1, 2014).

The Order, in Special Provision VI.C.7.a.ii, specifies that the Donner Summit Public Utility District (District) is required to submit to the Regional Water Board within six months of the effective date of the Order (December 13, 2009) a corrective action plan and implementation schedule to assure compliance with final effluent limitations for aluminum by April 1, 2014. This document has been prepared to fulfill the correction action plan and implementation schedule requirement of the Order.

2.0 EFFLUENT DATA AND LIMITATIONS

The Order contains an interim effluent limitation for aluminum effective until April 1, 2014. Compliance with final effluent limitations will be required from this date, and thereafter. A comparison of effluent monitoring data with interim and final effluent limitations is presented in Table 1.

Table 1
Donner Summit PUD Effluent Data for Aluminum ($\mu\text{g/L}$)

Sample Date	Total Recoverable Effluent Concentration	Interim Effluent Limitation	Final Effluent Limitations	
		(Daily Maximum)	Average Monthly	Maximum Daily
November 2003	620			
February 2004	1,310*			
December 2005	38.4	1,930**	71**	143**
December 2006	127			
January 2008	952			
June 2009	<0.1			

*Datum suspect as effluent and receiving water results were reported at the same concentration on the same day.

**Compliance with effluent limitations can be demonstrated using either total recoverable or acid-soluble aluminum.

Based on the limited available historical WWTP effluent data presented in Table 1, the WWTP should be capable of complying with the interim effluent aluminum limitation of 1,930 $\mu\text{g/L}$. However, all but two historical effluent aluminum concentrations exceed final limitations.

The Donner Summit PUD 2008 Consumer Confidence Report contains a single aluminum drinking water result of 829 µg/L collected in 2004. This result is below the drinking water Maximum Contaminant Level (MCL) for aluminum of 1,000 µg/L. However, this one drinking water result is significantly higher than the final average monthly aluminum effluent limitation of 71 µg/L. In other words, the drinking water supply, itself, does not appear to comply with the final effluent limitations on aluminum. Although there is only one drinking water supply result available at this time, it appears that the drinking water supply is a, if not the, major source of aluminum in the service area, as a result of either aluminum in the raw surface water supply, or aluminum added (e.g., alum) as a coagulate during drinking water treatment.

3.0 CORRECTIVE ACTION PLAN

Initial strategies for complying with final effluent aluminum limitations are summarized below. These strategies will be more thoroughly evaluated and developed during the District's development and implementation of the aluminum pollution prevention plan, which will be developed according to the requirements of Special Provision VI.C.7.a.iii of the Order. Initial corrective actions are described below and included in the Donner Summit Public Utility District Pollution Prevention Plan Work Plan and Time Schedule for Aluminum that was submitted to the Regional Water Board on November 12, 2009.

3.1 MONITORING PROGRAM

Historical aluminum data are limited, and in some cases questionable. Thus, it is important to develop and initiate a monitoring program for the purpose of building a reliable database that can be used to quantify aluminum concentrations at various locations in the District's water and wastewater systems. The monitoring program will include monitoring of the water supply, WWTP influent, and WWTP effluent. During the development of the monitoring program, the need for acid-soluble versus total recoverable aluminum data will be evaluated. Historically, effluent aluminum samples have been analyzed as total recoverable aluminum. However, the Order, in section VII.B, allows compliance with effluent limitations for aluminum to be demonstrated using either total or acid-soluble aluminum. The acid-soluble fraction is known to be most toxic to freshwater aquatic life. The collection of monthly effluent acid-soluble aluminum data during periods of surface water discharge will provide data adequate to better quantify reductions in effluent aluminum necessary to comply with final effluent limitations.

3.2 WATER AND WASTEWATER TREATMENT PROCESSES

Given the apparent high aluminum concentration in the potable water supply, relative to the final effluent limitations on aluminum, an evaluation of chemicals used in the treatment of drinking water and wastewater may be appropriate. However, coagulant additions are necessary during the treatment of drinking water as well as wastewater. The District is currently studying various wastewater treatment improvement alternatives, including membrane bioreactor treatment, which will remove particulate aluminum. This treatment improvement alternatives study is expected to be completed by February 1, 2010.

3.3 WATER EFFECT RATIO STUDY

Because the final aluminum effluent limitation is significantly lower than water supply and WWTP effluent aluminum concentrations and the District WWTP effluent consistently passes 3-tier bioassays, the most practical and cost effective approach for achieving consistent compliance with final aluminum effluent limitations may be via implementation of a water effect ratio study to determine the appropriate site-specific water quality objective (and therefore, effluent limitations) for aluminum. Historic data include a maximum total recoverable aluminum concentration in the South Yuba River is reported to be 1,310 µg/L. If aluminum concentrations of this magnitude occur regularly in the South Yuba River, it is unlikely that aluminum-sensitive aquatic life lives in this river local, and it is unlikely that the default/generic aluminum effluent limitations of 71 µg/L and 143 µg/L are appropriate for the District's discharge. Following the determination of an appropriate site-specific water quality objective for aluminum that is protective of freshwater aquatic life, the District will formally request that the Order be reopened and amended to include effluent limitations for aluminum based on the water effect ratio study derived site-specific water quality objective.

4.0 TIME SCHEDULE

An estimated time schedule for implementing the actions described in this plan is presented in Table 2. The proposed schedule is based on the District achieving compliance with current or revised final effluent limitations for aluminum by April 1, 2014. Progress on the actions described in this plan will be provided in pollution prevention progress reports submitted to the Regional Water Board December 1 annually.

Table 2
Donner Summit PUD Corrective Action Plan Time Schedule for Aluminum

Task	Approximate Completion Date
Implement Monitoring Program	Ongoing
Complete treatment improvement alternatives study	February 2010
Initiate Water Effect Ratio Study	October 2010
Complete Water Effect Ratio Study	July 2011
Re-open and Modify Order based on Water Effect Ratio Study results	September 2011
Pollution Prevention Plan Progress Reporting	December 1, annually
Final Compliance	April 1, 2014