CITY of YUBA CITY

Utilities Department

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December 14, 2009

Ms. Diana Messina
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, Ste. 200
Rancho Cordova, CA 95670

RE: City of Yuba City Order # R5-2007-0134 (NPDES # CA0079260) – Comments on Tentative Order

Ms. Messina:

The City of Yuba City appreciates the effort and diligence of the Regional Board in proposing the tentative order for Yuba City's NPDES Permit. After review, the City offers the following comments on the tentative order.

Attachment A lists the comments on the tentative order.
Attachment B is the calculation spreadsheet of the Aluminum log-normal distribution.

If you should have any questions I can be reached at (530) 822-4639

Sincerely,

William P. Lewis

William P. Lewis
Utilities Director

Tentative Order Comments

Anti-backsliding

The discussion of anti-backsliding for several constituents in the Fact Sheet refers to CWA section 303(d)(4) as authority for relaxing effluent limits. This citation to section 303(d)(4) is not appropriate. Section 303(d)(4) speaks only to "waters identified under paragraph [303(d)](1)(A) . . .." In other words, section 303(d)(4)(A) and (B) only apply to waters that were previously identified as impaired and placed on the 303(d) list.

The receiving waters of the Feather River have never been listed as "impaired" for any of the constituents at issue (molybdenum, iron, manganese, lead and EC), therefore references to section 303(d)(4) as pertinent to these constituents is inappropriate and should be deleted.

References to section 303(d)(4) that should be removed from the Fact Sheet are: page F-75, item b (molybdenum); page F-76, items c (iron) and d (manganese); pages F-77, item g (lead); and page F-77-78, item h (EC). The specific language that should be stricken in each section is:

> ~~"Clean Water Act section 303(d)(4) also allows relaxation of effluent limits where the receiving water is in attainment with the standard and as long as the revised limit is in compliance with the antidegradation policy.~~"

In several instances, effluent limitations have been set well below calculated Water-Quality-Based Effluent Limitations (WQBELs) and instead have been based on past performance. The Permit and the Fact Sheet simply recite the "anti-degradation policy" as its justification for setting these "performance-based" limits.

Limits based on "performance" are, in essence, "technology-based" effluent limitations. They establish discharge limits based on the ability of the facility's operators and treatment technology to meet those levels, rather than on the receiving water quality that has been determined to be necessary to protect beneficial uses. Neither the Clean Water Act nor the State's Porter-Cologne Water Quality Control Act authorize "technology based' limits more stringent than those achievable by secondary treatment without appropriate findings. See *Southern California Edison Co. v. State Water Resources Control Board,* (1981) 116 Cal.App.3d 751, 761. In that case, the Court recognized that the appropriate standard is whether the effluent limitation is necessary to protect beneficial uses, not what is the best performance that treatment technology can achieve. As the Court said, "Notwithstanding the regional board's authority, therefore, to issue a permit prescribing [these] limits . . ., in order for the regional board to issue [these] limitations it must first enunciate its reasoning; which must in turn be supported by the evidence. *Id.* at 759.

Similarly, in its order on Yuba City's appeal of the 2003 permit, the State Board disapproved limits that were more stringent than WQBELs simply based on past performance. The State Board cautioned, "We note that there are situations where a

more stringent, performance-based effluent limitation may be required pursuant to our anti-degradation policy, but if that is the case, *the findings must clearly explain the basis for establishing the more stringent effluent limitations.*" Order WQO 2004-0013 at page 16 (emphasis added).

In addition, setting stringent effluent limits solely based on "past performance" is not good public policy. It provides a disincentive to achieve exemplary performance because it penalizes those facilities that have invested in technology and training and, as a result, have achieved consistent performance in the past. Under the statistical analysis of a "performance-based limit" (i.e., "mean plus three standard deviations"), consistent data means a small "standard deviation" and therefore an effluent limit much closer to the "mean" or average of all the data. Thus, a relatively small stress to the system may result in a violation of the effluent limitation, even though it does not result in an exceedance of the water quality necessary to protect beneficial uses. Unnecessary "performance based" limits simply place in greater jeopardy exactly those facilities that should serve as examples to others.

Effluent limits should be set at the level reasonably necessary to protect beneficial uses, considering reasonably likely future burdens on assimilative capacity. They should not be set significantly below the levels determined to be protective of water quality and beneficial uses without sufficient justification. Simply citing to the "anti-degradation policy" without considering whether the stringent limits are necessary to maintain the receiving waters and are consistent with the maximum benefit to the people of the State is inconsistent with the law and with sound public policy.

Aluminum

The City of Yuba City has never had a final adopted effluent limit for aluminum.

The Tentative Order (TO) references the 353 µg/L interim limit for aluminum calculated for Order No. R5-2007-134. The interim limit for aluminum was calculated assuming the effluent concentrations followed a normal distribution. Generally, concentrations of constituents in wastewater and receiving waters follow a log-normal distribution. In fact, the SIP steady state procedure for calculating effluent limits (Section 1.4) is based on the concentrations following a log-normal distribution[1]. Because an incorrect distribution will not properly account for the variability in the data, using an incorrect distribution to calculate effluent limits could greatly underestimate the reasonably expected effluent concentrations. The limit was improperly calculated by choosing a normal distribution to calculate the aluminum interim limit and should be reevaluated in the TO.

The log-normal distribution for the effluent aluminum concentrations calculated utilizing data from November 2003 through June 2006 is presented in Figure 1. This is the same data set used to calculate limits in Order #R5-2007-0134. Plotting the sorted concentrations by the standard deviate allows a regression to determine the distribution of the data. Plotted as log concentrations, a linear plot implies a log-normal distribution. As listed on Figure 1, the r^2 for the regression is 0.9869 indicating the log-normal distribution accounts for 99% of the variability. Using the regression listed on the plot,

[1] Located in Appendix E of the Technical Support Document.

the 99.9 percentile effluent aluminum concentration is expected to be 566 µg/L, a concentration which is substantially greater than the interim limit in Order No. R5-2007-134. The City is concerned that the current performance of the treatment plant could reasonably exceed the incorrectly calculated interim limit of 353 µg/L.

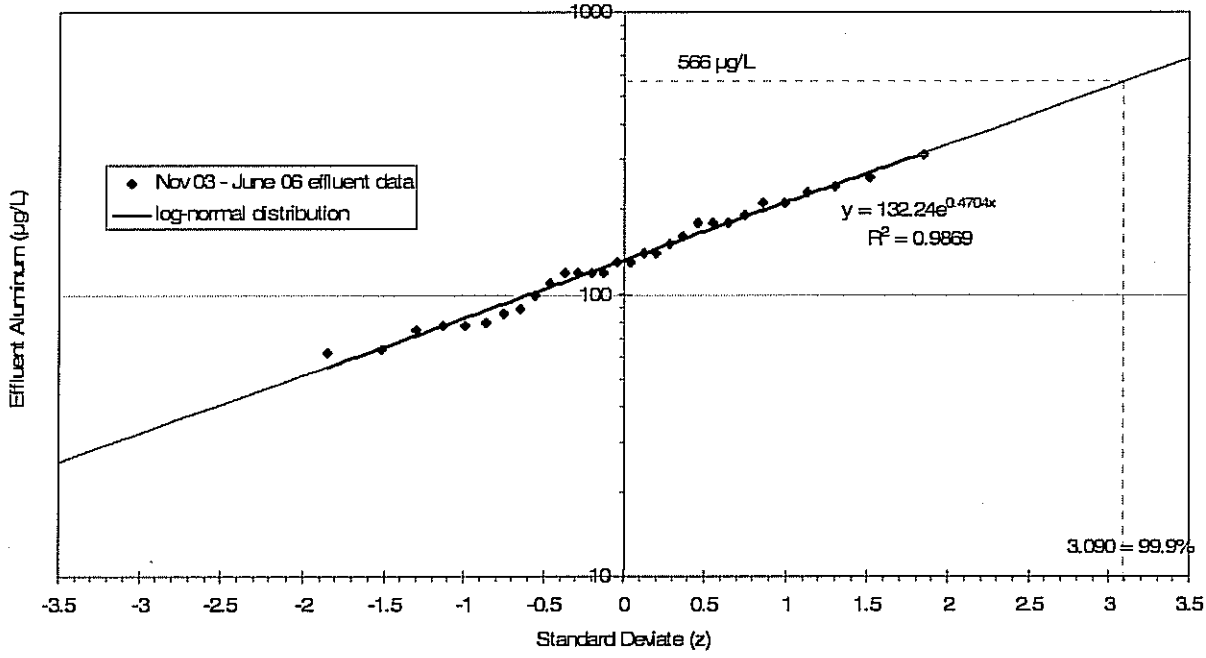

Figure 1: Effluent Aluminum Data Plotted as a Log-Normal Distribution (calculation provided in Attachment B).

The City requests the aluminum discussion in the Fact Sheet (F-36 to F-38) be revised to correct the improperly calculated aluminum interim limit. Suggested revisions to the aluminum section in the Fact Sheet include (F-38):

> Based on the above information, using the chronic criterion recommended in the NAWQC (87 µg/L), is not appropriate for the receiving water. Therefore, an Average Monthly Effluent Limitations (AMEL) and Maximum Daily Effluent Limitations (MDEL) for aluminum of 432 µg/L and 750 µg/L, respectively, were calculated using the acute criterion recommended in USEPA's NAWQC for the protection of freshwater aquatic life (see Attachment F, Table F-9 for WQBEL calculations). This Order also includes an annual average effluent limitation of 200 µg/L, based on the Secondary MCL, for protection of the MUN beneficial uses. However, as discussed further in Section IV.D.3. of this Fact Sheet, limits should only be as high as is justified under the state and federal antidegradation policies. Order No R5-2005-0134 contains an interim performance-based MDEL for aluminum of 353 µg/L. **The interim performance-based MDEL for aluminum was calculated assuming the effluent concentrations follow a normal distribution. The Central Valley Water Board has found the original assumption of normal distributed data was incorrect, and that the data are more appropriately represented by a log-normal distribution. As the**

interim limit in Order No R5-2005-0134 was incorrectly calculated, the data have been reevaluated using the log-normal distribution to determine the 99.9 percentile effluent aluminum concentration should be 566 µg/L. The performance based limit is less than the ~~AMEL and~~ MDEL calculated using the acute criterion and can be met by the Discharger; therefore, this order establishes the performance-based MDEL of ~~353~~ **566** µg/L, **water quality based AMEL of 432 µg/L, and water quality based annual average effluent limitation of 200 µg/L** as the final aluminum effluent limitations. These effluent limits are applicable to Discharge Point Nos. 001 and 002.

Additionally, the section regarding antibacksliding for aluminum effluent limitations (F-79) should be modified as follows:

~~The effluent limits for aluminum are not less stringent than the effluent limits that were currently effective at the time this amended order was adopted.~~ The **interim** effluent limits in effect in Order R5-2007-0134 were **intended to be** ~~the~~ performance-based effluent limits~~, which have been carried forward to the amended order.~~; **however, those interim effluent limits were improperly calculated. The federal regulations at 40 CFR section 122.44(l)(2)(i)(B)(2) allow relaxation of limitations if technical mistakes were made in the permit issuance. This order contains the properly calculated performance-based limits.** Therefore, this change in effluent limits for aluminum is not considered backsliding.

Finally, the effluent limitations would require updating in Tables 6 and F-31 as shown below.

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Aluminum, Total Recoverable	µg/L	432	200(1)	566	--	--

1 – Applied as annual average based on the calendar year.

Editorial Changes

1. The following underlined bold text should be added to Footnotes of Tables F-2, F-24 and F-31:

Survival of aquatic organisms is 96-hour bioassays of undiluted waste **and buffered for pH** shall be no less than:
Minimum for any one bioassay ---------- 70%
Median for three or more consecutive bioassays ---------- 90%

2. Aluminum and lead have been removed from the following section (F-90). Diazinon does not have an interim limit and should be removed as well.

F. Interim Effluent Limitations

1. ~~**Diazinon and**~~ **gamma-BHC.** The SIP, section 2.2.1, requires that if a compliance schedule is granted for a CTR or NTR constituent, the Regional Water Board shall establish interim requirements and dates for their achievement in the NPDES permit. The interim limitations must be based on current treatment plant performance or existing permit limitations, whichever is more stringent. The State Water Board has held that the SIP may be used as guidance for non-CTR constituents. Therefore, the SIP requirement for interim effluent limitations has been applied to both CTR and non-CTR constituents in this Order.

   The interim limitations for ~~diazinon and~~ gamma-BHC in this Order are based on the current treatment plant performance. In developing the interim limitation, 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% 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*). Therefore, the interim limitations in this Order are established as the mean plus 3.3 standard deviations of the available data.

   When there are less than 10 sampling data points available, the *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, interim limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily maximum interim limitation (TSD, Table 5-2).

   The Regional Water Board finds that the Discharger can undertake source control and treatment plant measures to maintain compliance with the interim limitations included in this Order. Interim limitations are established when compliance with effluent limitations cannot be achieved by the existing discharge. Discharge of constituents in concentrations in excess of the final effluent limitations, but in compliance with the interim effluent limitations, can significantly degrade water quality and adversely affect the beneficial uses of the receiving stream on a long-term basis. The interim limitations, however, establish an enforceable ceiling concentration until compliance with the effluent limitation can be achieved.

   The following table summarizes the calculations of the interim effluent limitations for diazinon and gamma-BHC.

Table F-31. Interim Effluent Limitation Calculation Summary

Parameter	MEC	Mean	Std. Dev.	# of Samples	Interim Limitation
~~Diazinon~~	~~0.47~~	~~0.088~~	~~0.103~~	~~45~~	~~0.47~~
gamma-BHC	0.053	0.006	0.013	27	0.05

Note: All values are in µg/L.

Attachment B

date time	conc			
11/7/2003	130	130	1/1/2003	353
12/9/2003	260	260	1/1/2010	353
1/6/2004	190	190		
2/3/2004	230	230		
3/3/2004	310	310		
8/31/2004	140	140		
9/14/2004	120	120		
10/1/2004	150	150		
11/2/2004	120	120		
12/7/2004	180	180		
1/10/2005	240	240		
2/16/2005	180	180		
3/10/2005	210	210		
4/7/2005	86	86		
5/10/2005	80	80		
6/2/2005	89	89		
7/5/2005	64	64		
7/6/2005	78	78		
8/2/2005	160	160		
9/7/05	120	120		
10/4/05	110	110		
10/25/05	210	210		
11/1/05	120	120		
12/8/05	140	140		
1/25/06	130	130		
2/22/06	78	78		
3/15/2006	75	75		
4/20/2006	180	180		
5/11/2006	62	62		
6/7/2006	100	100		

		30	
0.032258	-1.848596		62
0.064516	-1.517929		64
0.096774	-1.300153		75
0.129032	-1.130978		78
0.16129	-0.989169		78
0.193548	-0.864694		80
0.225806	-0.752729		86
0.258065	-0.649324		89
0.290323	-0.552443		100
0.322581	-0.460495		110
0.354839	-0.372289		120
0.387097	-0.286894		120
0.419355	-0.203544		120
0.451613	-0.121587		120
0.483871	-0.040441		130
0.516129	0.040441		130
0.548387	0.121587		140
0.580645	0.203544		140
0.612903	0.286894		150
0.645161	0.372289		160
0.677419	0.460495		180
0.709677	0.552443		180
0.741935	0.649324		180
0.774194	0.752729		190
0.806452	0.864694		210
0.83871	0.989169		210
0.870968	1.130978		230
0.903226	1.300153		240
0.935484	1.517929		260
0.967742	1.848596		310

			0.999	3.090232
			-3.5	25.48827
			-3.25	28.66905
			-3	32.24679
0	565.8131		-2.75	36.271
3.090232	565.8131		-2.5	40.7974
3.090232	0.01		-2.25	45.88868
			-2	51.61532
			-1.75	58.0566
			-1.5	65.30173
			-1.25	73.451
			-1	82.61725
			-0.75	92.92739
			-0.5	104.5242
			-0.25	117.5682
			0	132.24
			0.25	148.7428
			0.5	167.305
			0.75	188.1837
			1	211.6679
			1.25	238.0828
			1.5	267.7941
			1.75	301.2132
			2	338.8029
			2.25	381.0835
			2.5	428.6404
			2.75	482.1322
			3	542.2995
			3.25	609.9753
			3.5	686.0966