2. Interim Effluent Limitations – Discharge Point No. 001

The Discharger shall maintain compliance with the following interim effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program.

a. Effective immediately and ending on 10 May 2021 for ammonia and 8 May 2023 for BOD_5 and TSS, the Discharger shall maintain compliance with the interim effluent limitations specified in Table 7. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameters during the time period indicated in this provision:

Table 7. Interim Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
Biochemical Oxygen Demand, 5-day @ 20°C	mg/L	30	45	60	--	--
	lbs/day[1]	45,286	67,929	90,572	--	--
Total Suspended Solids	mg/L	30	45	60	--	--
	lbs/day[1]	45,286	67,929	90,572	--	--
Non-Conventional Pollutant						
Ammonia Nitrogen, Total (as N)	mg/L	39~~33~~	45~~43~~	54~~47~~	--	--
	lbs/day[1]	49,400	52,920	67,929	--	--

1. Based on a design flow of 181 MGD.

b. Total Residual Chlorine[1]. Effective immediately and ending on 30 November 2020, the effluent total residual chlorine shall not exceed:

i. 0.011 mg/L, as a monthly average; and
ii. 0.018 mg/L, as a daily average.

c. Total Coliform Organisms[2]. Effective immediately and ending on 8 May 2023, the total coliform organisms shall not exceed:

i. 23 most probable number (MPN) per 100 mL, as a weekly median; and
ii. 500 MPN/100 mL, in any two consecutive days as a daily maximum.

[1] The final effluent limitations for total residual chlorine become effective1 December 2020.

[2] The final effluent limitations for total coliform organisms become effective when the Discharger complies with Special Provisions section VI.C.7. or 9 May 2023, whichever is sooner.

This Order contains pollutant restrictions that are more stringent than applicable federal requirements and standards. Specifically, this Order includes effluent limitations for BOD_5 and TSS that are more stringent than applicable federal standards, but that are nonetheless necessary to meet numeric objectives or protect beneficial uses. The rationale for including these limitations is explained in section IV.C.3 of this Fact Sheet.

6. Performance-based Effluent Limitations.

Performance-based effluent limitations have been used in this Order to establish interim effluent limitations and final effluent limitations where the calculated WQBEL (w/dilution credit) results in effluent limitations that exceed facility performance. Table F-19, below, displays the information used in developing the performance-based effluent limitations and the procedures for calculating performance-based effluent limitations are discussed below.

In developing the performance-based effluent 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. However, if the maximum effluent concentration (MEC) exceeds the mean plus 3.3 standard deviation, then the MEC is the used for the interim limitation. When there are less than 10 sampling data points available, the EPA *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).

At the time this Order was originally adopted in December 2010, the interim ammonia limitations were calculated based on Facility performance using effluent ammonia data from June 2005 – April 2010. However, effluent ammonia concentrations have been steadily increasing. In December 2013, the Discharger violated the average monthly interim limit and investigated the reason for the excursion. It was determined that influent flows had been steadily decreasing due to water conservation, which was resulting in increasing influent ammonia concentrations. The current Facility does not remove ammonia, so increased influent concentrations will result in increased effluent concentrations. The Discharger has implemented all feasible controls to limit the discharge of ammonia.

Pursuant to Water Code section 10608, the Governor has called for a 20 percent reduction in urban water use statewide by 2020 and urban water agencies are required to meet their urban water use target by 2020. In addition, pursuant to Water Code section 10608.16, subdivision (a), the State shall achieve a 20 percent reduction in urban per capita water use in California on or before December 31, 2020. Therefore, the interim ammonia limitations have been recalculated to take into account the effects of decreasing influent flow due to water conservation. Taking this water conservation into consideration, along with current trends for ammonia concentration increases as a function of lower influent flows, a future annual average ammonia concentration of 30.3 mg/L (as N) was predicted. For ammonia, average monthly, average weekly, and maximum daily performance-based interim limits have been established. The maximum daily limit was projected using the 99.91 percentile as discussed above. Based on a daily monitoring frequency, the average monthly and average weekly interim limits have been projected using the 97.22 percentile and 99.36 percentile, respectively, representing once-in-three-years frequency consistent with the maximum daily projection. Using the statistics from an effluent ammonia dataset from January 2005 – January 2014, and the future predicted annual average ammonia concentration of 30.3 mg/L (as N), the interim ammonia limits were established as 39 mg/L (as N) for the monthly average, 43 mg/L (as N) for the weekly average, and 47 mg/L (as N) for maximum daily limit. Since, the increasing ammonia concentrations were due to water conservation, the influent mass loading of ammonia did not increase. Therefore, the corresponding interim mass limits for ammonia were not increased.

Where a dataset includes data reported below the laboratory detection limits (non-detects) the statistics, described above, becomes uncertain. In these situations, the regression on order statistics (ROS) technique was used to develop summary statistics and probability distribution functions. The ROS method was chosen because numerous studies have found that substituting one-half the reporting limit "results in substantial bias unless the proportion of missing data is small, 10 percent or less"[1]. This technique is often used with water quality data and is a useful tool for evaluating data sets with at least 40% detected data[2]. Furthermore, the ROS method was chosen because imputation methods, such as ROS, depend less on assumptions of distributional shape than the maximum likelihood estimation (MLE) method[3]. The ROS technique develops probability plotting positions for each detected and non-detect data point based on the ordering of all data. A least squares line is fit by regressing the log transformed concentrations to the detected probability plotting positions. Fill-in concentrations are assigned to the non-detect data points for calculation of summary statistics based on the detected data probability plotting positions and the ordered statistics regression line equation. The

[1] Dennis R. Helsel, "More Than Obvious: Better Methods for Interpreting Nondetect Data," *Environmental Science and Technology* (15 October 2005): 419A

[2] Robert H. Shumway, Rahman S. Azari, and Masoud Kayhanian, "Statistical Approaches to Estimating Mean Water Quality Concentrations with Detection Limits," *Environmental Science and Technology* 36, no. 15 (2002): 3345-3353.

[3] Dennis R. Helsel, "More Than Obvious: Better Methods for Interpreting Nondetect Data," *Environmental Science and Technology* (15 October 2005): 420A

summary statistics are calculated from the detected data points and the fill-in values for non-detect data. An estimated mean and standard deviation are used to calculate the 99.9th percentile performance-based effluent limitation, as described above.

Table F-19. Performance-based Effluent Limitations Statistics

Parameter	Units	MEC	# of Samples	% Detected	Mean	Std. Dev.	Performance-based Effluent Limitation
Ammonia[1,2]	mg/L	45	1124~~513~~	100	27.2~~24.2~~	4.11~~3.70~~	39, 43,47~~45~~
Copper	µg/L	6.34	114	100	4.16	0.803	6.8
Cyanide[3]	µg/L	10	176	58.5	4.85	1.89	11.1
Aluminum[3]	µg/L	35.2	61	93.4	17.6	5.39	35.4
Carbon Tetrachloride[4]	µg/L	1.7	101	5.9	--	--	5.3
Chlorodibromomethane[4]	µg/L	0.7	101	16.8	--	--	2.2
Chlorodibromomethane (after nitrification)	µg/L	8.3	12	100	2.9	1.9	12[8]
Dichlorobromomethane	µg/L	3.4	101	91.1	1.10	0.583	3.4
Dichlorobromomethane (after nitrification)	µg/L	25	12	100	14.6	5.3	35[8]
Bis(2-ethylhexyl) phthalate[5]	µg/L	8.1	115	99.1	0.854	0.506	12.5
Methylene Chloride[1,3]	µg/L	5.4	101	91.1	1.18	0.901	5.4
Tetrachloroethylene[4]	µg/L	1.4	101	13.9	--	--	4.4
Pentachlorophenol[4]	µg/L	5.7	115	0.9	--	--	17.7
Dibenzo(ah)antharacene[4]	µg/L	0.51	145	0.7	--	--	1.6
Manganese[1,5,6]	µg/L	270	51	100	4.28	0.25	270
Methyl Tertiary Butyl Ether[4] (MTBE)	µg/L	5.8	128	2.3	--	--	18.0

Note: Data set are based on data collected between 12 June 2005 and 10 October 2009 unless noted.

1 ~~Performance-based effluent limitation set to MEC.~~Average monthly, average weekly, and maximum daily interim limits established for ammonia and calculated as described in Technical Memorandum from Airy Krich-Brinton to Robert Seyfried dated 9 May 2014 "Ammonia Interim Limits Re-Calculation for Regional San"..

2 Data set ranges from ~~15 June~~January 2005 to ~~28 April 2010~~January 2014.

3 Regression on order statistics (ROS) method used.

4 Performance-based effluent limit estimated as 3.11 times the MEC because the amount of detected data is less than 20%

5 Mean and standard deviation are expressed as natural logarithms because the log-normal distribution is the best fit for the dataset.

6 Data set ranges from 19 April 2009 to 8 June 2011.

7 Data set ranges from 5 June 2005 to 6 October 2009.

8 For chlorodibromomethane and dichlorobromomethane the performance-based effluent limitations increase after nitrification facilities are operating. The performance-based effluent limitations were calculated based on estimated maximum effluent concentrations from pilot study data results plus a process scale-up factor of 40% to take into consideration uncertainties and variability. The potential need for further adjustment based on full scale implementation is not known at this time,

E. Interim Effluent Limitations

1. Compliance Schedules for ammonia and Title 22 (or Equivalent) Requirements. The permit limitations for ammonia, BOD_5, TSS, and total coliform