(8) **Dissolved Sulfides.** Monitoring for dissolved sulfides shall occur when D.O. concentrations are less than 5 mg/L.

(9) **Acute Toxicity.** Acute bioassay tests shall be performed in accordance with Section V.A of this MRP.

(10) **Chronic toxicity.** Critical life stage toxicity tests shall be performed and reported in accordance with the Chronic Toxicity Requirements specified in Section V.B of this MRP.

(11) **Dioxin-TEQ.** Chlorinated dibenzodioxins and chlorinated dibenzofurans shall be analyzed using the latest version of USEPA Method 1613; the analysis shall be capable of achieving one half the USEPA method 1613 Minimum Levels. Alternative methods of analysis must be approved by the Executive Officer. In addition to reporting concentration results for each of the 17 congeners, the dioxin-TEQ shall be calculated and reported using 1998 USEPA Toxicity Equivalent Factors for dioxin and furan congeners.

(12) **Remaining priority pollutants.** The sample type and analytical method should be as described in the August 6, 2001, letter (Attachment G) or as amended and subsequently approved by the Executive Officer.

(13) **Standard observations.** As specified in the Self-Monitoring Program, Part A.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

The Discharger shall monitor acute and chronic toxicity for discharge at Discharge Points 001 and 002, with compliance determined at Monitoring Location EFF-001 and EFF-002, as follows.

A. Whole Effluent Acute Toxicity

1. Compliance with the acute toxicity effluent limitations for Discharge Points 001 and 002 of this Order shall be evaluated by measuring survival of test organisms exposed to 96-hour continuous flow-through bioassays, with compliance determined at Monitoring Location EFF-001.

2. Test organisms shall be rainbow trout (*Onchorhynchus mykiss*) unless specified otherwise in writing by the Executive Officer.

3. All bioassays shall be performed according to the most up-to-date protocols in 40 CFR 136, currently in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms,* 5th Edition.

4. If specific identifiable substances in the discharge can be demonstrated by the Discharger as being rapidly rendered harmless upon discharge to the receiving water, compliance with the acute toxicity limit may be determined after the test samples are adjusted to remove the influence of those substances. Written approval from the Executive Officer must be obtained to authorize such an adjustment.

5. Effluent used for fish bioassays must be dechlorinated prior to testing. Monitoring of the bioassay water shall include, on a daily basis, the following parameters: pH, dissolved oxygen, total ammonia, un-ionized ammonia (by calculation, if toxicity is observed), temperature, hardness, and alkalinity. These results shall be reported. If a violation of acute toxicity requirements occurs or if the control fish survival rate is less than 90 percent, the bioassay test shall be restarted with new batches of fish and shall continue back to back until compliance is demonstrated.

B. Whole Effluent Chronic Toxicity

1. Chronic Toxicity Monitoring Requirements

a. **Sampling.** The Discharger shall collect 24-hour composite samples of the effluent of Discharge Points 001 and 002, with compliance determined at Monitoring Location EFF-001 and EFF-002, for critical life stage toxicity testing as indicated below. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

b. **Test Species.** The test species shall be *Ceriodaphnia dubia.* The Discharger shall conduct a three species screening chronic toxicity test as described in Appendix E-1 after any significant change in the nature of the effluent or prior to permit reissuance. The most sensitive species shall be used for routine chronic toxicity monitoring. The Executive Officer may change to another test species if data suggest that another test species is more sensitive to the discharge.

c. **Sampling Frequency.**

(1) Routine Monitoring: once per month.

(2) Accelerated Monitoring: twice per month, or as otherwise specified by the Executive Officer.

(3) Conditions for Accelerated Monitoring. The Discharger shall conduct accelerated monitoring when either of the following conditions is exceeded:

- Three sample median value of 1 TUc, or
- Single sample maximum value of 2 TUc.

d. **Methodology.** Sample collection, handling, and preservation shall be in accordance with USEPA protocols. In addition, bioassays shall be conducted in compliance with the most recently promulgated test methods, as shown in Appendix E-1. These are *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms,* currently third edition (EPA-821-R-02-014), and *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* currently fourth Edition (EPA-821-R-02-013), with exceptions granted the Discharger by the Executive Officer and the Environmental Laboratory Accreditation Program (ELAP).

e. **Dilution Series.** The Discharger shall conduct tests with a control and five effluent concentrations (including 100% effluent) and using a dilution factor ≥ 0.5.

2. Chronic Toxicity Reporting Requirements

a. **Routine Reporting.** Toxicity test results for the current reporting period shall include, at a minimum, for each test:

(1) Sample date(s)

(2) Test initiation date

(3) Test species

(4) End point values for each dilution (e.g., number of young, growth rate, percent survival)

(5) NOEC value(s) in percent effluent

(6) IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25}, EC_{40}, and EC_{50}) as percent effluent

(7) TUc values (100/NOEC, $100/IC_{25}$, or $100/EC_{25}$)

(8) Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)

(9) NOEC and LOEC values for reference toxicant test(s)

(10) IC_{50} or EC_{50} value(s) for reference toxicant test(s)

(11) Available water quality measurements for each test (pH, D.O., temperature, conductivity, hardness, salinity, ammonia)

b. **Compliance Summary.** The results of the chronic toxicity testing shall be provided in the self-monitoring report and shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include items listed above under 2.a, specifically item numbers (1), (3), (5), (6) (IC_{25} or EC_{25}), (7), and (8).

VI. LAND DISCHARGE MONITORING REQUIREMENTS

Not Applicable.

VII. RECLAMATION MONITORING REQUIREMENTS

Not Applicable.

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER

A. South San Francisco Bay

The Discharger shall continue to participate in the Regional Monitoring Program for Trace Substances (RMP), which provides characterization of water, sediment and biota of the Estuary. The Discharger's participation and support of the RMP has been considered in establishing the receiving water monitoring requirements of this Order.

B. Renzel Marsh Pond

The Discharger shall monitor receiving waters in Renzel Marsh Pond and Matadero Creek in accordance with the following schedule:

Table E-5. Renzel Marsh Pond and Matadero Creek Monitoring Requirements

Parameter	Units	RSW-1B	RSW-2B	RSW-E1			RSW-MC
		Grab	Grab	Continuous	Grab	C-24	Grab
Flow Rate	MGD		---	1/Day	---	---	---
Enterococcus	cfu/100 mL	---	---	---	1/month	---	---
Dissolved Oxygen	mg/L	1/week (2)	1/week (2)	---	1/week	---	---
	% Saturation	1/week (2)	1/week (2)	---	1/week	---	1/month
Dissolved Sulfides (if DO<5.0 mg/L)	mg/L	---	---	---	1/week	---	1/month
pH(1), (2)	s.u.	1/week	1/week	---	1/week	---	1/month
Temperature(1), (2)	°C	1/week	1/week	---	1/week	---	1/month
Total Ammonia Nitrogen(1)	mg/L	1/week	1/week	---	1/week	---	1/month
Specific Conductance	umhos/cm	---	---	---	1/week	---	1/month
Salinity	ppt	---	---	---	1/month	---	1/month
Hardness	mg/L as $CaCO_3$	---	---	---	1/month	---	1/month
Turbidity	NTU	---	---	---	1/week	---	---
Arsenic (3)	µg/L	---	---	---	---	1/month	1/month
Cadmium (3)	µg/L	---	---	---	---	1/month	1/month
Chromium (3)	µg/L	---	---	---	---	1/month	1/month
Copper (3)	µg/L	---	---	---	---	1/month	1/month
Cyanide (3)	µg/L	---	---	---	1/month		1/month
Lead (3)	µg/L	---	---	---	---	1/month	1/month
Mercury (3)	µg/L	---	---	---	---	1/month	1/month
Nickel (3)	µg/L	---	---	---	---	1/month	1/month
Selenium (3)	µg/L	---	---	---	---	1/month	1/month
Silver (3)	µg/L	---	---	---	---	1/month	1/month
Zinc (3)	µg/L	---	---	---	---	1/month	1/month
PAHs	µg/L	---	---	---	1/year	---	---
Standard Observations (4)	µg/L	---	---	---	1/week	---	1/month
Remaining Priority Pollutants(5)	µg/L	---	---	---	1/2 years	---	1/5 years

Legends for Table E-5:

(1) Unit Abbreviations

MGD	= million gallons per day
MG	= million gallons
mg/L	= milligrams per liter
µg/L	= micrograms per liter
s.u.	= standard units
NTU	= Nephelometric turbidity units
kg/d	= kilograms per day
°C	= degrees Celsius
cfu/100 mL	= colony-forming units per 100 milliliters

(2) Sample Type Abbreviations

Cont	= measured continuously

Cont/D = measured continuously, and recorded and reported daily
Cont/H = measured continuously, and recorded and reported hourly
C-24 = 24-hour composite
Flow-through = continuously pumped sample during duration of toxicity test

(3) Sampling frequency
1/week = once per week
1/month = once per month
1/2 years = once every two years
1/5 years = once every five years

Footnotes for Table E-5:

(1) Monitoring shall be conducted in the afternoon, when pH and ammonia toxicity are at a maximum.

(2) Monitoring shall be conducted within one hour of dawn, when DO values are at a minimum.

(3) Reported MLs shall be no greater than those reported in effluent testing.

(4) All applicable observations, including rainfall.

(5) The organic pollutants identified by the California Toxics Rule at 40 CFR 131.38. For RSW-E1, the Discharger may only sample for volatile and semi-volatile pollutants (USEPA methods 624/625 pollutants).

IX. PRETREATMENT AND BIOSOLIDS/ASH MONITORING REQUIREMENTS

The Discharger shall comply with the pretreatment requirements specified in Table E-5 for influent (at Monitoring Location INF-001), effluent (at Monitoring Location EFF-001 or EFF-002), and ash monitoring.

Table E-6. Pretreatment and Biosolids Monitoring Requirements

Constituents	Sampling Frequency			Sample Type[5]	
	Influent INF-001	Effluent[3] EFF-001/002	Ash[4]	INF-001 & EFF-001/002	Ash[5d]
VOC	2/year	2/year	---	multiple grabs[5a]	grabs
BNA	2/year	2/year	---	multiple grabs[5a]	grabs
Metals[1]	1/month	1/month	2/year	24-hour composite[5b]	grabs
Hexavalent Chromium[2]	1/month	1/month	2/year	multiple grabs[5a]	grabs
Mercury	1/month	1/month	2/year	24-hour composite[5b,5c]	grabs
Cyanide	1/month	1/month	2/year	multiple grabs[5a]	grabs

Legends for Table E-6:

VOC = volatile organic compounds
BNA = base/neutrals and acids extractable organic compounds
N/A = not applicable
1/month = once per month
2/year = twice per year

Footnotes for Table E-6:

(1) The parameters are arsenic, cadmium, copper, lead, nickel, silver, zinc, and selenium.

(2) The Discharger may elect to run total chromium instead of hexavalent chromium. Sample collection for total chromium measurements may also use 24-hour composite sampling.

(3) Effluent monitoring conducted in accordance with Table E-4 can be used to satisfy these pretreatment monitoring requirements.

(4) Sample types:

a. Multiple grabs samples for VOC, BNA, hexavalent chromium, and cyanide, must be made up of a minimum of four (4) discrete grab samples, collected equally spaced over the course of a 24-hour period, with each grab analyzed separately and the results mathematically flow-weighted or with grab samples combined (volumetrically flow-weighted) prior to analysis.

b. 24-hour composite sample may be made up discrete grab samples and may be combined (volumetrically flow-weighted) prior to analysis, or they should be mathematically flow-weighted. If automatic compositor is used, 24-hour composite samples must be obtained through flow-proportioned composite sampling.

c. Automatic compositors are allowed for mercury if either 1) the compositing equipment (hoses and containers) comply with ultraclean specifications, or 2) appropriate equipment blank samples demonstrate that the compositing equipment has not contaminated the sample. This direction is consistent with the Water Board's October 22, 1999, letter on this subject.

d. Biosolids collection should comply with those requirements for sludge monitoring specified in Attachment H, Appendix H-3 of this of the Order for sludge monitoring. The biosolids analyzed shall be a composite sample of the biosolids for final disposal. The Discharger shall also comply with biosolids monitoring requirements required by 40 CFR 503.

X. MODIFICATIONS TO PART A OF SELF-MONITORING PROGRAM (ATTACHMENT G)

Modify Section F.4 as follows:

Self-Monitoring Reports

[Add the following to the beginning of the first paragraph:]

For each calendar month, a self-monitoring report (SMR) shall be submitted to the Regional Water Board in accordance with the requirements listed in Self-Monitoring Program, Part A. The purpose of the report is to document treatment performance, effluent quality and compliance with waste discharge requirements prescribed by this Order, as demonstrated by the monitoring program data and the Discharger's operation practices.

[And add at the end of Section F.4 the following:]

g. If the Discharger wishes to invalidate any measurement, the letter of transmittal shall include identification of the measurement suspected to be invalid and notification of intent to submit, within 60 days, a formal request to invalidate the measurement. This formal request shall include the original measurement in question, the reason for invalidating the measurement, all relevant documentation that supports the invalidation (e.g., laboratory sheet, log entry, test results, etc.), and discussion of the corrective actions taken or planned (with a time schedule for completion) to prevent recurrence of the sampling or measurement problem.

h. Reporting Data in Electronic Format

The Discharger has the option to submit all monitoring results in an electronic reporting format approved by the Executive Officer. If the Discharger chooses to submit SMRs electronically, the following shall apply:

1) **Reporting Method:** The Discharger shall submit SMRs electronically via the process approved by the Executive Officer in a letter dated December 17, 1999, Official Implementation of Electronic Reporting System (ERS) and in the Progress Report letter dated December 17, 2000, or in a subsequently approved format that the Order has been modified to include.

2) **Monthly Reporting Requirements:** For each reporting month, an electronic SMR shall be submitted to the Regional Water Board in accordance with Section F.4 of SMP, Part A. However, until USEPA approves the electronic signature or other signature technologies, Dischargers that are using the ERS must submit a hard copy of the original transmittal letter, an ERS printout of the data sheet, a violation report, and a receipt of the electronic transmittal.

3) **Annual Reporting Requirements:** Dischargers who have submitted data using the ERS for at least one calendar year are exempt from submitting an annual report electronically, but a hard copy of the annual report shall be submitted according to Section F.5.b and F.5.c of SMP, Part A.

XI. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

The Discharger shall comply with SMP Part A (Attachment G), the federal Standard Provisions (Attachment D) and the Regional Water Board's Standard Provisions (Attachment G) related to monitoring, reporting, and recordkeeping.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit SMRs using the State Water Board's California Integrated Water Quality System (CIWQS) Program website (http://www.waterboards.ca.gov/ciwqs/index.html). Until such notification is given, the Discharger shall submit hard copy SMRs. The CIWQS website will provide additional directions for SMR submittal in the event there will be service interruption for electronic submittal.

2. The Discharger shall report in the SMR the results for all monitoring specified in this MRP under sections III through VIII. The Discharger shall submit monthly SMRs, including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. Monthly SMRs shall be due 30 days after the end of each calendar month. If the Discharger monitors any pollutant more frequently than required by this Order, the results of this monitoring shall be included in the calculations and reporting of the data submitted in the SMR. Annual SMRs shall be due by February 1 of each year, covering the

previous calendar year. The report shall contain the items described in the Regional Water Board's Standard Provisions and SMP Part A (Attachment G).

3. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-7. Monitoring Periods

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period
Continuous	Permit effective date	All
1/hour	Permit effective date	Every hour on the hour
1/day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.
5/week	Permit effective date	Sunday through Saturday
1/week	Permit effective date	Sunday through Saturday
1/month	Permit effective date	First day of calendar month through last day of calendar month
1/quarter	Permit effective date	Once during January 1 – March 31, April 1- June 30, July 1 – September 30, and October 1 – December 31
1/2 years	Permit effective date	Once during wet season (typically November 1 through April 30), once during dry season (typically May 1 through October 31), alternate between two sampling events.
1/5 years	Permit effective date	Once during permit term

4. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in Part 136. The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

      For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve for compliance determination.

e. Compliance Determination. Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined above, Attachment A, and Table E-1, priority pollutant MLs of this Order. For purposes of reporting and administrative enforcement by the Regional and State Water Boards, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

f. When determining compliance with an AMEL (or average weekly effluent limit) for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

(1) The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

(2) The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

5. The Discharger shall submit SMRs in accordance with the following requirements:

The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.

The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall (1) clearly identify violations of the WDRs, (2) discuss corrective actions taken or planned, and (3) specify the time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

SMRs must be submitted to the Regional Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
ATTN: NPDES Permit Division

C. Discharge Monitoring Reports (DMRs)

1. As described in Section XI.B.1 above, at any time during the term of this Order, the State or Regional Water Board may notify the Discharger to electronically submit SMRs that will satisfy federal requirements for submittal of DMRs. Until such notification is given, the Discharger shall submit DMRs in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharge shall submit the original DMR and one copy of the DMR to one of the addresses listed below:

Standard Mail	FedEx/UPS/Other Private Carriers
State Water Resources Control Board Division of Water Quality c/o DMR Processing Center PO Box 100 Sacramento, CA 95812-1000	State Water Resources Control Board Division of Water Quality c/o DMR Processing Center 1001 I Street, 15th Floor Sacramento, CA 95814

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated will not be accepted unless they follow the exact same format of EPA Form 3320-1.

D. Other Reports

In the first monthly SMR following the respective due dates, the Discharger shall report the results of any special studies, monitoring, and reporting required by Section VI.C.2 (Special Studies, Technical Reports, and Additional Monitoring Requirements) of this Order. The Discharger shall include a report of progress towards meeting compliance schedules established by Section VI.C.7 of this Order.

APPENDIX E-1

CHRONIC TOXICITY
DEFINITION OF TERMS AND SCREENING PHASE REQUIREMENTS

I. Definition of Terms

A. No observed effect level (NOEL) for compliance determination is equal to IC_{25} or EC_{25}. If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

B. Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25 percent of the test organisms.

C. Inhibition concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a nonlethal, nonquantal biological measurement, such as growth. For example, an IC_{25} is the estimated concentration of toxicant that would cause a 25 percent reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as USEPA's Bootstrap Procedure.

D. No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

II. Chronic Toxicity Screening Phase Requirements

A. The Discharger shall perform screening phase monitoring:

1. Subsequent to any significant change in the nature of the effluent discharged through changes in sources or treatment, except those changes resulting from reductions in pollutant concentrations attributable to source control efforts, or

2. Prior to permit reissuance. Screening phase monitoring data shall be included in the NPDES permit application for reissuance. The information shall be as recent as possible, but may be based on screening phase monitoring conducted within 5 years before the permit expiration date.

B. Design of the screening phase shall, at a minimum, consist of the following elements:

1. Use of test species specified in Appendix E-2, attached, and use of the protocols referenced in those tables, or as approved by the Executive Officer.

2. Two stages:
   a. Stage 1 shall consist of a minimum of one battery of tests conducted concurrently. Selection of the type of test species and minimum number of tests shall be based on Appendix E-2 (attached).

b. Stage 2 shall consist of a minimum of two test batteries conducted at a monthly frequency using the three most sensitive species based on the Stage 1 test results and as approved by the Executive Officer.

3. Appropriate controls.

4. Concurrent reference toxicant tests.

5. Dilution series with a control and five effluent concentrations (including 100% effluent) and using a dilution factor ≥ 0.5.

C. The Discharger shall submit a screening phase proposal acceptable to the Executive Officer. The proposal shall address each of the elements listed above. If within 30 days, the Executive Officer does not comment, the Discharge shall commence with screening phase monitoring.

APPENDIX E-2

SUMMARY OF TOXICITY TEST SPECIES REQUIREMENTS

Table AE-1. Critical Life Stage Toxicity Tests for Estuarine Waters

Species	(Scientific Name)	Effect	Test Duration	Reference
Alga	(Skeletonema costatum) (Thalassiosira pseudonana)	Growth rate	4 days	1
Red alga	(Champia parvula)	Number of cystocarps	7–9 days	3
Giant kelp	(Macrocystis pyrifera)	Percent germination; germ tube length	48 hours	2
Abalone	(Haliotis rufescens)	Abnormal shell development	48 hours	2
Oyster Mussel	(Crassostrea gigas) (Mytilus edulis)	Abnormal shell development; percent survival	48 hours	2
Echinoderms - Urchins Sand dollar	(Strongylocentrotus purpuratus, S. franciscanus) (Dendraster excentricus)	Percent fertilization	1 hour	2
Shrimp	(Mysidopsis bahia)	Percent survival; growth	7 days	3
Shrimp	(Holmesimysis costata)	Percent survival; growth	7 days	2
Topsmelt	(Atherinops affinis)	Percent survival; growth	7 days	2
Silversides	(Menidia beryllina)	Larval growth rate; percent survival	7 days	3

Toxicity Test References:

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for Conducting Static 96-Hour Toxicity Tests with Microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.
2. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to West Coast Marine and Estuarine Organisms. EPA/600/R-95/136. August 1995.
3. Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Marine and Estuarine Organisms. EPA/600/4-90/003. July 1994.

Table AE-2. Critical Life Stage Toxicity Tests for Fresh Waters

Species	(Scientific Name)	Effect	Test Duration	Reference
Fathead minnow	(Pimephales promelas)	Survival; growth rate	7 days	4
Water flea	(Ceriodaphnia dubia)	Survival; number of young	7 days	4
Alga	(Selenastrum capricornutum)	Final cell density	4 days	4

Toxicity Test Reference:

4. Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, fourth Edition Chronic manual (EPA-821-R-02-013, October 2002).

Table AE-3. Toxicity Test Requirements for Stage One Screening Phase

Requirements	Receiving Water Characteristics		
	Discharges to Coast	Discharges to San Francisco Bay[2]	
	Ocean	Marine/Estuarine	Freshwater
Taxonomic diversity	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type: Freshwater[1] Marine/Estuarine	 0 4	 1 or 2 3 or 4	 3 0
Total number of tests	4	5	3

1. The freshwater species may be substituted with marine species if:

   a. The salinity of the effluent is above 1 part per thousand (ppt) greater than 95 percent of the time, or

   b. The ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

2. a. Marine/Estuarine refers to receiving water salinities greater than 1 ppt at least 95 percent of the time during a normal water year.

   b. Fresh refers to receiving water with salinities less than 1 ppt at least 95 percent of the time during a normal water year.

ATTACHMENT F – FACT SHEET

Table of Contents

I. Permit Information F-3
II. Facility Description F-4
A. Description of Wastewater and Biosolids Treatment or Controls F-4
1. Wastewater Treatment Processes F-4
2. Satellite Collection Systems F-5
3. Reclamation F-6
4. Storm Water Discharges F-6
B. Discharge Point and Receiving Water F-6
C. Summary of Previous Requirements and Self-Monitoring Data F-7
D. Compliance Summary F-8
E. Planned Changes F-9
III. Applicable Plans, Policies, and Regulations F-9
A. Legal Authorities F-9
B. California Environmental Quality Act (CEQA) F-9
C. State and Federal Regulations, Policies, and Plans F-9
D. Impaired Water Bodies on CWA 303(d) List F-11
IV. Rationale For Effluent Limitations and Discharge Specifications F-12
A. Discharge Prohibitions F-12
B. Exceptions to Basin Plan Prohibitions F-13
C. Effluent Limitations for Conventional and Non-Conventional Pollutants F-16
1. Scope and Authority for Technology-Based Effluent Limitations F-16
2. Applicable Effluent Limitations F-17
D. WQBELs F-19
1. Scope and Authority F-20
2. Applicable Beneficial Uses and WQC F-20
3. Determining the Need for WQBELs F-23
4. WQBEL Calculations F-27
5. Whole Effluent Acute Toxicity F-38
6. Whole Effluent Chronic Toxicity F-38
E. Interim Effluent Limitations F-40
1. Feasibility Evaluation and Interim Effluent Limits F-40
2. Compliance Schedule Requirements F-40
F. Land Discharge Specifications F-41
V. Rationale for Receiving Water Limitations F-41
A. Surface Water F-41
B. Groundwater F-41
VI. RationalE for Monitoring and Reporting Requirements F-41
A. Influent Monitoring F-42
B. Effluent Monitoring F-42
C. Whole Effluent Toxicity Testing Requirements F-43
D. Receiving Water Monitoring F-43
E. Pretreatment and Biosolids Monitoring Requirements F-43
VII. Rationale for Provisions F-43
A. Standard Provisions (Provision VI.A) F-43
B. Monitoring and Reporting Requirements (Provision VI.B) F-44

C. Special Provisions (Provision VI.C) F-44
1. Reopener Provisions F-44
2. Special Studies and Additional Monitoring Requirements F-44
3. Best Management Practices and Pollution Minimization Program F-45
4. Construction, Operation, and Maintenance Specifications F-45
5. Special Provisions for Municipal Facilities (POTWs Only) F-45
6. Other Special Provisions F-46
VIII. Public Participation F-47
A. Notification of Interested Parties F-47
B. Written Comments F-48
C. Public Hearing F-48
D. Waste Discharge Requirements Petitions F-48
E. Information and Copying F-48
F. Register of Interested Persons F-49
G. Additional Information F-49

List of Tables

Table F-1. Facility Information F-3
Table F-2. Outfall Location F-6
Table F-3. Previous Effluent Limitations and Monitoring Data for Conventional and Non-Conventional Pollutants F-7
Table F-4. Previous Effluent Limitations and Monitoring Data for Toxic Pollutants F-8
Table F-5. Compliance with Previous Order Provisions F-8
Table F-6. Beneficial Uses of South San Francisco Bay and Renzel Marsh F-10
Table F-7. Secondary Treatment Requirements F-16
Table F-8. Summary of Effluent Limitations for Conventional and Non-Conventional Pollutants F-17
Table F-9. SSTs for Cu, Ni, Zn, Cr(VI), and Pb for Lower South San Francisco Bay F-22
Table F-10. Summary of RPA Results F-24
Table F-11. Effluent Limit Calculations F-37

ATTACHMENT F – FACT SHEET

As described in Section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility.

Table F-1. Facility Information

WDID	2 438011001
CIWQS Place ID	247457
Discharger	City of Palo Alto
Name of Facility	Palo Alto Regional Water Quality Control Plant (Plant) and City of Palo Alto's sewage collection system
Facility Address	2501 Embarcadero Way Palo Alto CA 94303 Santa Clara County
Facility Contact, Title, Phone	Phil Bobel, Environmental Compliance Division Manager, (650) 329-2598
Authorized Person to Sign and Submit Reports	Frank Benest, City Manager, (650) 329-2563
Mailing Address	Same as Facility Address
Billing Address	Same as Facility Address
Type of Facility	Publicly Owned Treatment Works (POTW)
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	Yes
Reclamation Requirements	Yes, under Order No. 93-160
Mercury Discharge Requirements	Yes, under Order No. R2-2007-0077
Facility Permitted Flow	39 million gallons per day (MGD) (average dry weather flow design capacity with full tertiary treatment)
Facility Design Flow	39 MGD (average dry weather flow design capacity with full tertiary treatment) 80 MGD (peak wet weather flow design capacity with full secondary treatment)
Watershed	Santa Clara Hydrologic Unit
Receiving Waters	South San Francisco Bay and Matadero Creek
Receiving Water Type	Marine/Estuarine
Service Areas	Cities of Los Altos, Los Altos Hills, Palo Alto, and Mountain View; East Palo Sanitary District; and the unincorporated area of the Stanford University Campus
Service Area Population	228,500

A. The City of Palo Alto owns and operates the Palo Alto Regional Water Quality Control Plant (RWQCP, Plant) and the City of Palo Alto's sewage collection system (collectively the facility). The facility provides tertiary treatment of wastewater collected from its service areas and discharges the majority of treated effluent to South San Francisco Bay via an unnamed channel.

A small fraction of the discharge is diverted to Matadero Creek via Renzel Marsh Pond, and Matadero Creek flows to South San Francisco Bay. Ownership and operation of the Plant and the collection system, including satellite collection systems, are further described in Fact Sheet Section II, Facility Description.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. The discharge of treated wastewater from the Plant to South San Francisco Bay and Matadero Creek, both of which are waters of the United States, has been regulated by Order No. R2-2003-0078 (previous Order) and NPDES Permit No. CA0037834, which became effective on November 1, 2003, and expired on September 30, 2008.

C. The Discharger filed a Report of Waste Discharge (ROWD) and submitted an application for reissuance of its Waste Discharge Requirements (WDRs) and NPDES permit dated March 27, 2008, and a supplemental on May 1, 2008. The application was deemed complete, and the previous Order has been administratively extended.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment or Controls

1. Wastewater Treatment Processes

The Discharger owns and operates the Plant, which provides tertiary treatment of domestic, commercial, and industrial wastewater collected from its service areas as indicated in Table F-1. The Discharger's current service area population is approximately 228,500.

Wastewater treatment processes at the Plant include screening and grit removal, primary sedimentation, fixed film roughing filters for carbonaceous biochemical oxygen demand (CBOD) reduction, activated sludge for nitrification, secondary clarification, filtration, disinfection (chloramination), and dechlorination (sodium bisulfite). Frequent filter backwashing to clean the filter media is a routine part of filter operation. Filter backwash water is managed as described below under Filtration Process. The Plant is designed to route primary treated wastewater in excess of the fixed film reactors' design capacity (40 MGD) around the reactors during extreme wet weather flow events, and to recombine it with reactor effluent prior to activated sludge treatment. Similarly, activated sludge effluent in excess of the dual media filtration design capacity (40 MGD) can be routed around these filters during wet weather events, and be recombined with filter effluent prior to disinfection.

Preliminary Treatment. Preliminary treatment consists of screens followed by grit removal.

Primary Treatment. Following preliminary treatment, wastewater is pumped into rectangular primary clarifiers for the removal of floatable and settled material.

Biological Treatment. All wastewater receives biological treatment in a two step process, which utilizes fixed film growth reactors to reduce concentrations of CBOD, followed by activated sludge treatment. Primary treated effluent flows up to 40 MGD are treated in the

fixed film reactors, and flows in excess of 40 MGD are routed around the reactors and blended with reactor effluent prior to activated sludge treatment. Removal of ammonia (nitrification) is achieved in the activated sludge aeration basins. Mixed liquor from the aeration basins flows to secondary clarifiers for solids removal via settling. The majority of settled solids are returned (return activated sludge) to the aeration basins, and waste activated sludge is treated as described below, under Solids Management.

Filtration Process. Following biological treatment, the wastewater undergoes tertiary treatment via filtration. There are ten parallel filters. Filter backwash water is either returned to the primary sedimentation basins or to the sludge thickener facility. The design capacity of the dual media filters is 40 MGD, and any flows in excess of this figure are routed around the filters and recombined with filter effluent prior to disinfection.

Disinfection. Chlorine and ammonia are metered into the filter effluent, to produce chloramines for disinfection, which is accomplished in the chlorine contact pipes and basins. Disinfectant contact time varies with flow, but is typically 30 to 45 minutes. As the effluent leaves the contact basins, its chlorinamine residual is measured and an appropriate amount of sodium bisulfite is added to neutralize the disinfectant residual. Dechlorinated effluent is discharged to South San Francisco Bay via a manmade channel or to Matadero Creek via Renzel Marsh Pond. A portion of the chlorinated effluent is diverted for further treatment for reclamation use, as described below.

Solids Management. Solids from primary sedimentation tanks, aeration tanks, dual media filter backwash, and reclamation filter backwash are sent to the sludge thickening facilities; gravity thickened; and dewatered by belt presses. Thickened and dewatered solids are incinerated in one of two identical multiple hearth incinerators, and the ash is hauled offsite to a hazardous waste landfill. Belt press filtrate, scrubber water and other flows from the incinerator building totaling approximately 1 MGD are returned to the Plant headworks.

2. City of Palo Alto Collection System

The City of Palo Alto's collection system is a 100% separate sanitary sewer. It consists of approximately 207 miles of pipes ranging from 4 inches to 72 inches in diameter, and one small lift station.

3. Satellite Collection Systems

The Plant serves multiple cities and wastewater districts as indicated in Table F-1 above. In addition to the City of Palo Alto's collection system, wastewater is conveyed to the Plant by several satellite collection systems serving Mountain View, Los Altos, Los Altos Hills, the East Palo Alto Sanitation District, and Stanford University. The Cities of Mountain View and Los Altos entered into a Joint Sewer Agreement with the City of Palo Alto in 1968, with the remaining communities serving as sub-partners in other agreements.

Each satellite collection system is responsible for an ongoing program of maintenance and capital improvements for sewer lines and pump stations within its respective jurisdiction in order to ensure adequate capacity and reliability of the collection system. The responsibilities include managing overflows, controlling inflow and infiltration (I&I) and implementing

collection system maintenance. Each satellite collection system must ensure that its wastewater does not adversely impact the Discharger's treatment plant.

4. Reclamation

Approximately 0.25 MGD of chloraminated, tertiary effluent undergoes additional filtration and chlorination for on- and off-site use for irrigation, construction dust suppression, and the City of Palo Alto Duck Pond.

5. Storm Water Discharges

All storm water from within the Plant is directed to the headworks of the Plant; therefore, this Order regulates the discharges of storm water that originate on the grounds of the Plant, and coverage under the Statewide permit for discharges of storm water associated with industrial activities (NPDES General Permit No. CAS000001) is not required.

B. Discharge Point and Receiving Water

The location of the discharge points and the receiving waters are shown in Table F-2 below.

Table F-2. Outfall Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Tertiary treated municipal wastewater	37° 27′ 30″ N	122° 06′ 37″ W	South San Francisco Bay
002	Tertiary treated municipal wastewater	37° 26′ 30″ N	122° 06′ 45″ W	Matadero Creek

South San Francisco Bay is a unique and sensitive portion of the San Francisco Bay Estuary, in part due to the freshwater inflow being lower there than in the greater portion of San Francisco Bay. Tributaries to South San Francisco Bay are small in number and size. It is characterized by higher, more uniform salinities and is generally shallow, except for a deep central channel. Surrounding South San Francisco Bay is an extensive network of tidal mudflats, tidal sloughs, coastal salt marshes, diked salt marshes, brackish water marshes, salt ponds, and freshwater marshes.

The discharge to Matadero Creek is via Renzel Marsh Pond, a 15-acre freshwater pond and constructed wetlands that the Discharger created in 1992 as an environmental enhancement project. The goal of the restoration project was to bring saltwater to a portion of an area leased to ship-to-shore radio operators, known as the "ITT property." The ITT property was known to contain salt marsh harvest mouse habitat, but the habitat was deteriorating because the pickleweed was cut off from saltwater inflow. Negotiations with the California Coastal Conservancy, the Regional Water Board, Fish and Game, and the U.S. Fish and Wildlife Service resulted in the need to also bring fresh water to the area so that the fresh and salt water would balance as both flowed on to Matadero Creek. The agencies determined that this combination of fresh and saltwater was needed to prevent local salinity changes in the Matadero Creek portion of the Palo Alto Flooding Basin. It was therefore decided that treated wastewater should be used to construct a freshwater pond on the southwestern side of the ITT property. This area had been

dry prior to the project. A basin was excavated to provide a resting habitat for migratory and local birds. This bird resting pond was designed and constructed to avoid pickleweed saltwater habitat areas. No human uses were envisioned or allowed because bird nesting was anticipated adjacent to the pond. No fish or other wildlife was placed in the pond because fish habitat was not envisioned. Treated wastewater is the only flow to the pond. The height of the constructed berm around the pond prevents any storm water flow into it. The pond flows continuously by gravity through a pipe to Matadero Creek at a point in the Palo Alto Flooding Basin that is maintained at minus two feet below mean sea level. Therefore, this portion of Matadero Creek always contains a mixture of salt and fresh water at this level.

C. Summary of Previous Requirements and Self-Monitoring Data

Effluent limitations contained in the previous Order for discharges to South San Francisco Bay and Matadero Creek and representative monitoring data from the term of the previous Order are presented in the following tables.

Table F-3. Previous Effluent Limitations and Monitoring Data for Conventional and Non-Conventional Pollutants

Parameter	(units)	Effluent Limitations			Monitoring Data (1/2003-1/2008)		
		Monthly Average	Weekly Average	Daily Maximum	Highest Monthly Average	Highest Weekly Average	Highest Daily Discharge
$CBOD_5$[1]	mg/L	10	---	20	3.4	---	5.0
TSS	mg/L	10	---	20	2.0	---	5.7
pH	standard units	6.5 – 8.5			Minimum – 6.5 Maximum – 7.7		
Oil and Grease	mg/L	5	---	10	<0.8	---	<0.8
Enterococci bacteria	colonies/ 100 mL	35[2]	---	276[3]	2[2]	---	53[3]
Total Chlorine Residual	mg/L	---	---	0.0 [4]	---	---	0
Settleable Matter	mL/L-hr.	0.1	---	0.2	---	---	<0.1
Turbidity	NTU	---	---	10	---	---	8.8
Acute Toxicity	% survival	[4]			Minimum 11-sample median – 100% Minimum 11-sample 90th percentile – 100%		
Ammonia-N	mg/L	3	---	8	1.94	---	4.4

Footnotes for Table F-3:

"<" Analyte not detected in effluent; value given is the MDL as reported by the analytical laboratory.

(1) The Discharger monitored and reported this parameter as BOD.

(2) As a 30-day geometric mean.

(3) As a single sample maximum.

(4) Requirement defined as below the limit of detection in standard test methods defined in the latest USEPA approved edition of *Standard Methods for the Examination of Water and Wastewater.*

(5) The limits are an 11-sample median value of not less than 90 percent survival and an 11-sample 90th percentile value of not less than 70 percent survival.

Table F-4. Previous Effluent Limitations and Monitoring Data for Toxic Pollutants

Parameter	Units	Final Limits		Interim Limits		Monitoring Data (From 1/2003 to 1/2008)
		Daily Maximum	Monthly Average	Daily Maximum	Monthly Average	Highest Daily Concentration
Copper	µg/L	17.4	11.8	---	---	12.8
Mercury	µg/L	---	---	---	0.023	0.012
Nickel	µg/L	32.2	25.6	---	---	4.5
Cyanide	µg/L	---	---	32	---	7.3
4,4'-DDE	µg/L	---	---	0.05	---	<0.003
Chlorodibromomethane	µg/L	---	---	86	---	56
Dieldrin	µg/L	---	---	0.01	---	<0.002
Heptachlor Epoxide	µg/L	---	---	0.01	---	<0.002
Benzo(b)Fluoranthene	µg/L	---	---	10.0	---	<0.0095
Indeno(1,2,3-cd)Pyrene	µg/L	---	---	0.05	---	<0.0095

"<" Analyte not detected in effluent; value given is the minimum detection limit (MDL) as reported by the analytical laboratory.

D. Compliance Summary

1. **Compliance with Previous Numeric Effluent Limits.** There were no exceedances of numeric effluent limits during the term of the previous Order. There were four exceedances of the single sample chronic toxicity monitoring trigger of 2.0 TUc, and three exceedances of the three sample median chronic toxicity trigger of 1.0 TUc, as reported in Discharger monitoring summary data from November 2003 through January 2008.

2. **Compliance with Previous Provisions.** A list of special activities required by the previous Order and the status of those requirements are shown in Table F-5, below.

Table F-5. Compliance with Previous Order Provisions

Provision Number	Requirement	Status of Completion
E.2	Chlorodibromomethane Compliance Schedule	Compliance Attainability Evaluation submitted August 2005, Workplan submitted December 21, 2006, and final annual report submitted February 28, 2008
E.3	Cyanide Compliance Schedule and Cyanide SSO Study	Progress reports have been submitted annually by January 31
E.4	Mercury Special Study – Advanced Mercury Source Control Study	Study Workplan submitted November 2003, annual reports submitted February 2004 – 2006, and final report submitted December 2007
E.7	Pollution Prevention and Minimization Program (PMP)	Reports have been submitted annually by February 28
E.9	Copper-Nickel Action Plans	Reports have been submitted annually by February 28
E.14	Operations and Maintenance Manual/ Operating Procedures	Reports have been submitted annually by February 28
E.15	Contingency Plan Update	Reports have been submitted annually by June 30
E.16	Reliability Report Updates	Updates submitted as needed.
E.17	303(d)-listed Pollutants Site-Specific Objective and TMDL Status Review	Letter was submitted January 28, 2008, confirming participation in BACWA

E. Planned Changes

The Discharger is in initial stages of planning to replace chloramine disinfection with a UV disinfection system. The improvement project is estimated to be completed and operational by November 2010. In addition, the Mountain View pipeline project is expected to be completed in April 2009, increasing reclaimed water utilization by up to 3 MGD.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

This Order's requirements are based on the requirements and authorities described in this Section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the federal Clean Water Act (CWA) and implementing regulations adopted by the USEPA and chapter 5.5, division 7 of the California Water Code (CWC or Water Code, commencing with section 13370). It shall serve as an NPDES permit for point source discharges from this facility to surface waters. This Order also serves as WDRs pursuant to article 4, chapter 4, division 7 of the CWC (commencing with section 13260).

B. California Environmental Quality Act (CEQA)

Under CWC section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** *The Water Quality Control Plan for the San Francisco Bay Basin* (the Basin Plan) is the Regional Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives (WQOs) for waters of the state, including surface waters and groundwater. It also includes programs of implementation to achieve WQOs. The Basin Plan was adopted by the Regional Water Board and approved by the State Water Board, USEPA, and the Office of Administrative Law (OAL), as required. Requirements of this Order implement the Basin Plan.

   Table F-6 identifies existing and potential beneficial uses assigned to South San Francisco Bay and Matadero Creek.

   State Water Board Resolution No. 88-63 establishes state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply (MUN). Because of the tidal and marine influence on the unnamed channel receiving water for the majority of the discharge, total dissolved solids (TDS) levels in the channel exceed 3,000 milligrams per liter (mg/L). TDS levels in Matadero Creek are also expected to exceed 3,000 mg/L. Both the unnamed channel and Matadero Creek, therefore, meet an exception to Resolution No. 88-63, and the MUN designation does not apply to the receiving waters.

   Although South San Francisco Bay is listed to support shellfish harvesting, according to the Discharger's submittal dated July 9, 2008, there is no shellfish harvesting in the vicinity of

the discharge outfall 001. The wetlands near the outfall are largely inaccessible and unsuitable for shellfish harvesting. The outfall is surrounded by the Palo Alto Baylands Nature Preserve; public shellfish harvesting for consumption is not allowed under any circumstances on the extensive shoreline of the preserve. The practice would be disruptive to the ecosystem, and would therefore be contradictory to the concept of a nature preserve. Furthermore, representatives from the California Department of Fish and Game have stated that no shellfish harvesting occurs in the San Francisco Bay south of Foster City (City of San Jose, *Alternative Effluent Bacteriological Standards Pilot Study*, 2003). In addition, a Senior Ranger with the Palo Alto Baylands Nature Preserve stated in a June 12, 2008, phone conversation with the Discharger that the only shellfish harvesting occurring in the area is that performed by Stanford University and USGS staff for specific scientific surveys (July 9, 2008, City of Palo Alto Evaluation of Bacteria Effluent Limits).

Table F-6. Beneficial Uses of South San Francisco Bay and Matadero Creek

Discharge Point	Receiving Water Name	Existing and Potential Beneficial Uses
001	South San Francisco Bay	Industrial Service Supply (IND) Ocean, Commercial and Sport Fishing (COMM) Shellfish Harvesting (SHELL) Estuarine Habitat (EST) Fish Migration (MIGR) Preservation of Rare and Endangered Species (RARE) Fish Spawning (SPWN) Wildlife Habitat (WILD) Contact Recreation (REC1) Non-contact Water Recreation (REC2) Navigation (NAV)
002	Matadero Creek	Cold Freshwater Habitat (COLD) Fish Migration (MIGR) Fish Spawning (SPWN) Warm Freshwater Habitat (WARM) Wildlife Habitat (WILD) Water Contact Recreation (REC1) Non-Contact Water Recreation (REC2)

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on December 22, 1992, and amended it on May 4, 1995, and November 9, 1999. About forty criteria in the NTR applied in California. On May 18, 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and, in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on February 13, 2001. These rules contain water quality criteria (WQC) for priority toxic pollutants, which are applicable to South San Francisco Bay.

3. **State Implementation Policy (SIP).** On March 2, 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the USEPA through the NTR and to the priority pollutant objectives established by the Regional Water Board in the Basin Plan. The SIP became effective on May 18, 2000, with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Water Board adopted amendments to the SIP on February 24, 2005, that became effective on July 13, 2005. The SIP establishes implementation provisions for priority

pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

4. **Alaska Rule.** On March 30, 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards (WQS) become effective for CWA purposes [65 Fed. Reg. 24641 (April 27, 2000), codified at 40 CFR 131.21]. Under the revised regulation (also known as the Alaska Rule), new and revised standards submitted to USEPA after May 30, 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by May 30, 2000, may be used for CWA purposes, whether or not approved by USEPA.

5. **Antidegradation Policy.** 40 CFR 131.12 requires that the state WQS include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing water quality be maintained unless degradation is justified based on specific findings. The Regional Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. The permitted discharge must be consistent with the antidegradation provision of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

6. **Anti-Backsliding Requirements.** 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous Order, with some exceptions in which limitations may be relaxed.

D. Impaired Water Bodies on CWA 303(d) List

In November 2006, the USEPA approved a revised list of impaired water bodies prepared by the State [the 303(d) list] pursuant to CWA section 303(d), which requires identification of specific water bodies where it is expected that water quality standards (WQS) will not be met after implementation of technology-based effluent limitations on point sources. Matadero Creek is not identified as an impaired waterbody; however, South San Francisco Bay is listed as an impaired waterbody for chlordane, DDT, dieldrin, dioxin compounds, exotic species, furan compounds, mercury, PCBs, and dioxin-like PCBs. The SIP requires final effluent limitations for all 303(d)-listed pollutants to be consistent with total maximum daily loads (TMDLs) and associated waste load allocations (WLAs).

The Regional Water Board plans to adopt TMDLs for pollutants on the 303(d) list in South San Francisco Bay within the next ten years (a TMDL for mercury was adopted on February 12, 2008).

TMDLs will establish WLAs for point sources and load allocations (LAs) for non-point sources, and will be established to achieve the WQS for impaired waterbodies. The discharge of mercury from the Plant is regulated by the Regional Water Board Order No. R2-2007-0077, which implements the adopted mercury TMDL and contains monitoring and reporting requirements.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in 40 CFR: section 122.44(a) requires that permits include applicable technology-based limitations and standards; and section 122.44(d) requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative WQC to protect the beneficial uses of the receiving water. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established.

Several specific factors affecting the development of limitations and requirements in this Order are discussed below:

A. Discharge Prohibitions

1. **Discharge Prohibitions III.A (No discharge other than that described in this Order):** This prohibition is the same as in the previous Order and is based on CWC section 13260, which requires filing a Report of Waste Discharge (ROWD) before discharges can occur. Discharges not described in the ROWD, and subsequently in this Order, are prohibited.

2. **Discharge Prohibition III.B (No bypass except under the conditions at 40 CFR 122.41(m)(4)(i)(A)(B)-(C)):** This prohibition is based on 40 CFR 122.41(m)(4) (see Federal Standard Provisions, section G, Attachment D) and is retained from the previous Order. This provision grants bypass around fixed film reactors or dual media filters during wet weather when the primary effluent flow exceeds the fixed film reactors' capacity of 40 MGD or when the activated sludge treatment units' effluent flow exceeds the filter capacity of 40 MGD prior to discharge at Discharge Points 001 and 002 provided that (1) the discharge complies with the effluent and receiving water limitations contained in this Order, and (2) the Discharger operates the facility as designed and in accordance with the Operation & Maintenance Manual developed for the Plant. This means that the Discharger is to optimize storage and use of equalization units and fully utilize the advanced treatment units. Bypassing these units does not prevent the Plant from providing full secondary treatment.

3. **Discharge Prohibition III.C (The average dry weather effluent flow shall not exceed 39 MGD):** Exceedance of the treatment plant's average dry weather effluent flow design capacity may result in lowering the reliability of achieving compliance with water quality requirements. Upon Plant expansion in 1988, a reliability/stress test certified the dry weather treatment capacity to be 39 MGD. This prohibition is meant to ensure effective wastewater treatment by limiting flows to the Plant's design treatment capability. The average dry weather effluent flow is determined as the average effluent flow between the months of June and October.

4. **Discharge Prohibition III.D (No sanitary sewer overflows to waters of the United States).** Discharge Prohibition No. 15 from Basin Plan Table 4-1 and the CWA prohibit the discharge of wastewater to surface waters except as authorized under an NPDES permit. POTWs must achieve secondary treatment, at a minimum, and any more stringent limitations that are necessary to achieve WQS [33 U.S.C. § 1311 (b)(1)(B and C)]. Therefore, a sanitary

sewer overflow that results in the discharge of raw sewage, or sewage not meeting secondary treatment requirements, is prohibited under the CWA and the Basin Plan.

B. Exceptions to Basin Plan Prohibitions

Discharge prohibition 1 in Table 4-1 of the Basin Plan states that it shall be prohibited to discharge:

> *1. Any wastewater which has particular characteristics of concern to beneficial uses at any point at which the wastewater does not receive a minimum initial dilution of at least 10:1, or into any nontidal water, dead-end slough, similar confined waters, or any immediate tributaries thereof.*

Basin Plan section 4.2 provides for exceptions to this prohibition in the following circumstances:

- An inordinate burden would be placed on the discharger relative to beneficial uses protected and an equivalent level of environmental protection can be achieved by alternate means, such as an alternative discharge site, a higher level of treatment, and/or improved treatment reliability; or
- A discharge is approved as part of a reclamation project; or
- It can be demonstrated that net environmental benefits will be derived as a result of the discharge; or
- A discharge is approved as part of a groundwater clean-up project.

The treated wastewater discharges from the San Jose/Santa Clara, Palo Alto, and Sunnyvale wastewater treatment plants are discharged to confined waters and do not receive a minimum initial dilution of 10:1. In 1973, these dischargers formed the South Bay Dischargers Authority to jointly consider relocating their outfalls to a location north of the Dumbarton Bridge, but instead, based on studies they conducted between 1981 through 1986, they concluded that their discharges provided a net environmental benefit.

At the same time, the Regional Water Board amended the Basin Plan to establish several new WQOs. Due to the unique hydrodynamic environment of the South Bay, however, the 1986 Basin Plan exempted the South Bay from the new WQOs, instead calling for the development of site-specific objectives (SSOs).

In 1988, the Regional Water Board reissued the Sunnyvale and Palo Alto permits (Order No. 88-176 and Order No. 88-175), concurring that these discharges provided a net environmental benefit. It therefore granted exceptions to the Basin Plan discharge prohibition provided that the dischargers would conduct studies addressing salt marsh conversion, development of SSOs and effluent limitations for metals, ammonia removal, and avian botulism control. However, the Regional Water Board concluded that discharges from the San Jose/Santa Clara wastewater treatment plant did not provide a net environmental benefit. Nevertheless, the Regional Water Board found that the discharge could provide a net environmental benefit under specific

circumstances, and reissued the NPDES permit (Order No. 89-012) for the San Jose/Santa Clara facility.

Interested parties objected to all three permits and petitioned the State Water Board for review. The State Water Board responded in 1990 through Order No. WQ 90-5. It concluded that all three dischargers had failed to demonstrate a net environmental benefit. Specifically, nutrient loading in South San Francisco Bay was a problem, avian botulism was harming wildlife and estuarine habitat, and metals discharges were potentially contributing to San Francisco Bay impairment.

Through Order No. WQ 90-5, the State Water Board acknowledged that relocation of the discharges north of the Dumbarton Bridge was not economically or environmentally sound. The State Water Board "strongly encouraged" the Regional Water Board and the South Bay Dischargers Authority to pursue wastewater reclamation projects as a means to reduce discharges to San Francisco Bay, and it also concluded that exceptions to the Basin Plan discharge prohibitions could be granted on the basis of "equivalent protection" (i.e., protection equivalent to relocating the discharges to a location north of the Dumbarton Bridge), provided that certain conditions were met. It stated that exceptions could be granted if (a) the discharge permits were to include numeric WQBELs for toxic pollutants, (b) the dischargers (San Jose and Sunnyvale) were to continue efforts to control avian botulism; and (c) the dischargers (San Jose in particular) were to properly protect threatened and endangered species. (Attachment I provides a chronological description of the actions taken by the State and Regional Water Boards and the City of Palo Alto related to the requirements of Order No. 90-5. The summary also clarifies the origin of some provisions that appear in this Order.)

The following is a summary of the Discharger's past and on-going efforts in complying with State Water Board Order No. 90-5:

(1) **Heavy Metals Discharge.** Concentrations of heavy metals in the Plant effluent have met all applicable water quality-based effluent limits. With the exception of ambient mercury levels, there is no reasonable potential to exceed WQOs for these metals based on Plant discharge and ambient concentrations.

The Discharger's advanced treatment unit (dual media filtration), pretreatment program, and pollution prevention program result in effluent metals concentrations that are lower than any of the applicable WQOs. Advanced treatment began in 1980, while the pretreatment and pollution prevention programs commenced in 1981 and 1990, respectively. The success of these programs is illustrated by the Discharger's effluent loading of copper to San Francisco Bay, which has decreased from approximately 13,000 pounds in 1979 to 590 pounds in 2008. The Discharger is also a key contributor of financial and staff resources to regional pollution prevention programs that result in decreased pollutant loadings to San Francisco Bay. The discharge of oxygen depleting pollutants has also declined substantially since the Discharger constructed an additional secondary treatment stage (fixed film reactors) and achieved full nitrification in 1980.

The Discharger will maintain its current performance and monitoring program for both effluent and receiving water to ensure that no degradation will occur.

(2) **Avian botulism control**. The Cities of San Jose/Santa Clara and Sunnyvale maintain an avian botulism control program and will continue to do avian botulism surveys as required by their reissued permits.

(3) **Wetland Mitigation and Endangered Species Protection.** The Cities of San Jose/Santa Clara met all Order No. 90-5 requirements by 2003 by providing $650,000 to the Peninsula Open Space Trust to assist in Bair Island restoration. In addition, those Cities have completed several endangered species surveys as required by their permits.

To qualify for an exception to the Basin Plan's discharge prohibition, the Discharger must meet at least one of the conditions specified above. The Discharger meets several of the conditions specified above. The Regional Water Board finds that moving the Discharger's outfall to deep water would constitute an inordinate burden relative to beneficial uses protected. The Discharger provides advanced secondary treatment, a higher level of treatment than normally required of most municipal wastewater treatment plants, which provides an equivalent level of environmental protection. Furthermore, although not required by Order 90-5 or its previous permits, the Discharger has been implementing the Renzel Marsh Pond project to enhance salt marsh harvest mouse habitat. As described in a finding under II.B.2, above, the discharge to Matadero Creek via Renzel Marsh Pond started in 1992 and is an environmental project that aims to enhance marsh harvest mouse habitat. The pond and constructed wetlands also provide a resting habitat for migratory and local birds.

The exception to the Basin Plan prohibition is also justified since the Discharger maintains an aggressive reclamation program with multiple components:

- Recycled water is provided to the Palo Alto Golf Course and Palo Alto's Greer Park for irrigation, to trucks for uses such as construction site dust suppression, and to the Palo Alto duck pond. In 2008, these uses diverted 129 million gallons from discharge to San Francisco Bay.

- In April 2009, the Discharger will complete a new recycled water pipeline (the Mountain View pipeline) that will serve the North of Bayshore area of Mountain View. The Mountain View pipeline will provide up to 3 MGD of recycled water for irrigation use, and potentially for dual plumbing and industrial cooling uses.

- Coincident with construction of the Mountain View pipeline, the Discharger is upgrading its recycled water treatment facilities by adding new chlorine contact basins, increasing storage capacity, and installing new recycled water pumping facilities.

- In addition to the existing uses and the new Mountain View pipeline, the Discharger has completed a Market Survey Report and a Facility Plan for a potential new Palo Alto pipeline that would primarily serve the Stanford Research Park business area and a number of City parks. The Discharger is completing environmental review for the Palo Alto pipeline, and is maintaining an aggressive schedule for obtaining the necessary approvals in order to take advantage of funding opportunities made available by the American Recovery and Reinvestment Act of 2009.

- The Discharger adopted a City of Palo Alto recycled water ordinance in 2008 that mandates the use of recycled water for irrigation when available, and requires new and remodeled facilities to plan for recycled water use for irrigation and, under specific circumstances, to install dual plumbing within buildings that will allow for future recycled water use for toilet and urinal flushing.

- The Discharger's reclamation program also includes its discharge of treated wastewater to the Renzel Marsh Pond as described in a finding under Section II.B above. The ITT property/Renzel Marsh Pond project is both an endangered species protection effort and a component of the Discharger's reclamation program.

In addition, this permit requires the Discharger to continue its reclamation programs (Provision VI.C.6.c).

Because the Discharger has met all the historical requirements of both the State and Regional Water Boards for obtaining an exception to the Basin Plan prohibition, and continues to meet these requirements as discussed above, the Regional Water Board continues to grant an exception to Basin Plan discharge prohibition 1 (Table 4-1).

C. Effluent Limitations for Conventional and Non-Conventional Pollutants

1. Scope and Authority for Technology-Based Effluent Limitations

CWA section 301(b) and 40 CFR 122.44 require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable WQS. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Secondary Treatment Standards at 40 CFR 133. These Secondary Treatment Regulations include the following minimum requirements for POTWs.

Table F-7. Secondary Treatment Requirements

Parameters	30-Day Average	7-Day Average
BOD_5 [1]	30 mg/L	45 mg/L
$CBOD_5$ [1][2]	25 mg/L	40 mg/L
TSS [1]	30 mg/L	45 mg/L
pH	6.0 – 9.0	

Footnotes for Table F-7:

(1) The 30-day average percent removal, by concentration, shall not be less than 85 percent.

(2) At the option of the permitting authority, these effluent limitations for $CBOD_5$ may be substituted for limitations for BOD_5.

San Francisco Bay south of the Dumbarton Bridge is a unique water body, with a limited capacity to assimilate wastewater. Due to limited circulation, wastewater discharges to this area may take several months to reach the ocean. In addition, the unique wetlands and ambient conditions of South San Francisco Bay sometimes result in natural dissolved oxygen levels that are lower than the Basin Plan's receiving water limit of a minimum of 5.0 mg/L. The limited assimilative capacity of South San Francisco Bay necessitates effluent BOD and TSS limitations that are more restrictive than those required for secondary treatment.

The Discharger constructed advanced waste treatment facilities in the late 1970's and has consistently met limits on conventional pollutants that are more stringent than the secondary treatment standards.

2. Applicable Effluent Limitations

This Order retains the following effluent limitations for conventional and non-conventional pollutants, applicable to Discharge Points 001 and 002 from the previous Order.

Table F-8. Summary of Effluent Limitations for Conventional and Non-Conventional Pollutants

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
$CBOD_5$	mg/L	10	---	20	---	---
TSS	mg/L	10	---	20	---	---
$CBOD_5$ and TSS	%	85	---	---	---	---
Oil and Grease	mg/L	5	---	10	---	---
pH	s.u.	---	---	---	6.5	8.5
Total Chlorine Residual	mg/L	---	---	---	---	0.0[1]
Turbidity	NTU	---	---	---	---	10
Enterococcus Bacteria	Colonies/ 100 mL	35[2]	---	---	---	---

Footnotes for Table F-8:

(1) Requirement defined as below the limit of detection in standard test methods defined in the latest USEPA approved edition of Standard Methods for the Examination of Water and Wastewater. The Discharger may elect to use a continuous on-line monitoring system for measuring flow, chlorine, and sodium bisulfite dosage (including a safety factor) and concentration to prove that chlorine residual exceedances are false positives. Convincing evidence must be provided to Regional Water Board staff to conclude these false positive exceedances are not violations of this permit.

(2) Expressed as a 30-day geometric mean.

This Order does not retain the previous Order's technology-based effluent limitations for settleable matter because Basin Plan Table 4-2 no longer requires them for POTWs. The level of secondary treatment assures removal of settleable solids to acceptably low levels. This Order also does not retain the previous Order's performance-based effluent limitations for total ammonia because total ammonia is now treated as a toxic pollutant. See section IV.D.4.d.(6) for further discussion of the new WQBELs for ammonia.

a. **$CBOD_5$ and TSS.** Effluent limitations for $CBOD_5$ and TSS, including the 85 percent removal requirement are unchanged from the previous Order and are technologically feasible standards for the advanced wastewater treatment technologies used at the Plant. 40 CFR 122.45(d) specifies that discharge limitations for POTWs shall be stated as average weekly limitations and average monthly limitations, unless impracticable. Expressing effluent limitations for $CBOD_5$ and TSS as maximum daily limitations instead of average weekly limitations results in more stringent limits, as effluent

variability is not averaged out over a period of a week. Self-monitoring data show the Discharger has been able to consistently comply with these $CBOD_5$ and TSS effluent limits.

b. **Oil and Grease.** The effluent limitations for oil and grease are technology-based and are unchanged from the previous Order. These limitations are based on Basin Plan Table 4-2 for shallow water dischargers. Self-monitoring data show the Discharger has been able to consistently comply with these oil and grease effluent limits.

c. **pH.** The effluent limitations for pH are water quality-based and are unchanged from the previous Order. These limitations are based on Basin Plan Table 4-2 for shallow water dischargers. Self-monitoring data show the Discharger has been able to consistently comply with these pH effluent limits.

d. **Total chlorine residual.** The effluent limitation for total chlorine residual is water-quality-based and is based on Basin Plan Table 4-2 and is unchanged from the previous Order. The Discharger may use a continuous on-line monitoring system to measure flow, chlorine, and sodium bisulfite concentration and dosage to prove that chlorine residual exceedances are false positives. If convincing evidence is provided, Regional Water Board staff may conclude that these false positives of chlorine residual exceedances are not violations of the limitation.

The Discharger will need to report the maximum residual chlorine concentration observed following dechlorination on a daily basis unless the Discharger requests to use the chlorine residual reporting strategy as allowed in the Regional Water Board's October 19, 2004, letter and the Discharger complies with the conditions listed in the letter as detailed below. The Discharger may evaluate compliance with this effluent limit by recording discrete readings from continuous monitoring equipment every hour on the hour or by collecting grab samples every hour, for a total of 24 readings or samples per day, if the following conditions are met: (1) The Discharger shall retain continuous monitoring readings for at least three years; (2) The Discharger shall acknowledge in writing that Regional Water Board reserves the right to use all other continuous monitoring data for discretionary enforcement; (3) The Discharger must provide in writing the brand name(s), model number(s), and serial number(s) of the equipment used to continuously monitor dechlorinated final effluent chlorine residual. If the identified equipment is replaced, the Discharger shall provide the Regional Water Board in writing, within 72 hours of the successful startup of the new equipment, the new equipment's brand name, model number, and serial number. The written notification identified in items 1 through 3 shall be in the form of a letter addressed to the Regional Water Board's Executive Officer with a certification statement as listed in the October 19, 2004, Regional Water Board letter re: Chlorine Compliance Strategy for Dischargers Using Continuous Monitoring Devices.

Effluent data show the Discharger can comply with this effluent limit. Self-monitoring data show the Discharger has been able to consistently comply with the total chlorine residual effluent limit.

e. **Turbidity.** The effluent limitation for turbidity is unchanged from the previous Order and is representative of adequate and reliable tertiary level wastewater treatment. This

limitation is a technologically feasible standard for the advanced wastewater treatment technologies in use at the Plant. Self-monitoring data show the Discharger has been able to consistently comply with this turbidity effluent limit.

f. **Enterococcus bacteria.** The effluent limitation for enterococcus bacteria is unchanged from the previous Order except the single sample maximum limit of 276 colonies per 100 mL is not retained to be consistent with recently adopted NPDES permits and USEPA criteria. Basin Plan Table 3-2 cites the 30-day geometric mean enterococcus bacteria limit, which is based on the USEPA criteria at 40 CFR 131.41 for coastal recreational waters, including costal estuaries, in California. These water quality criteria became effective on December 16, 2004 [69 Fed. Register 67218 (November 16, 2006)].

Although USEPA also established single sample maximum criteria for enterococci bacteria, this Order implements only the geometric mean criterion of 35 colonies per 100 milliliters as an effluent limitation. When these water quality criteria were promulgated, USEPA expected that the single sample maximum values would be used for making beach notification and beach closure decisions. "Other than in the beach notification and closure decision context, the geometric mean is the more relevant value for assuring that appropriate actions are taken to protect and improve water quality because it is a more reliable measure, being less subject to random variation ...." [69 Fed Reg. 67224 (November 16, 2004)]

The removal of the daily maximum bacteria limit is consistent with the exception to the Clean Water Act's backsliding provisions, expressed at CWA 402(o)(2)(B)(ii) for technical mistakes.

The Discharger has previously conducted a study demonstrating that effluent limitations for enterococcus bacteria are protective of beneficial uses of the receiving water. The Discharger's submittal dated July 9, 2008, indicates that shellfish harvesting does not occur in the vicinity of the discharge. The nearest historic shellfish harvesting area is at the Foster City shellfish beds. In addition, according to a January 1998 South Bayside Sewage Authority's (SBSA's) study, titled *Chlorination Reduction Evaluation and Recommendations for Modified Effluent Coliform Limitations,* shoreline fecal coliform concentrations were unrelated to SBSA's effluent concentrations. Fecal coliform monitoring conducted by City of San Mateo during SBSA's study showed no relationship between either the City of San Mateo's sewage discharges or SBSA's effluent fecal coliform concentrations and shoreline fecal coliform concentrations near Foster City, where the large presence of birds may be the greatest source of coliform bacteria. Because there is no relationship between SBSA's discharge and waters with known shellfish harvesting, and the Discharger's outfall is much farther south of SBSA's discharge outfall, it is not necessary to establish fecal coliform effluent limits for this discharge to protect shellfish harvesting in South San Francisco Bay.

D. WQBELs

WQBELs have been derived to implement WQOs that protect beneficial uses. Both the beneficial uses and the WQOs have been approved pursuant to federal law. The procedures for calculating individual WQBELs are based on the SIP, which was approved by the USEPA prior to May 1, 2001, or Basin Plan provisions approved by the USEPA on May 29, 2000. Most

beneficial uses and WQOs contained in the Basin Plan were approved under state law and submitted to and approved by the USEPA prior to May 30, 2000. Any WQOs and beneficial uses submitted to the USEPA prior to May 30, 2000, but not approved by the USEPA before that date, are nonetheless "applicable water quality standards for purposes of the [Clean Water] Act" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than the applicable WQS for purposes of the CWA.

1. Scope and Authority

a. 40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a WQS, including numeric and narrative objectives within a standard. As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for all pollutants "which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard." Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric WQC, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in section 122.44(d)(1)(vi).

The process for determining "reasonable potential" and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable WQOs/WQC that are contained in other state plans and policies, and applicable WQC contained in the CTR and NTR.

b. NPDES regulations and the SIP provide the basis to establish maximum daily effluent limitations (MDELs).

(1) **NPDES Regulations.** NPDES regulations at 40 CFR 122.45(d) state: "For continuous discharges all permit effluent limitations, standards, and prohibitions, including those necessary to achieve water quality standards, shall *unless impracticable* be stated as maximum daily and average monthly discharge limitations for all discharges other than publicly owned treatment works."

(2) **SIP.** The SIP (Section 1.4) requires WQBELs to be expressed as MDELs and average monthly effluent limitations (AMELs).

c. MDELs are used in this Order to protect against acute water quality effects. The MDELs are necessary for preventing fish kills or mortality to aquatic organisms.

2. Applicable Beneficial Uses and WQC

The WQC applicable to the receiving waters for this discharge are from the Basin Plan; the CTR, established by USEPA at 40 CFR 131.38; and the NTR, established by USEPA at

40 CFR 131.36. Some pollutants have WQC established by more than one of these three sources.

a. **Basin Plan.** The Basin Plan specifies numeric WQOs for 10 priority toxic pollutants, for all marine and freshwaters *except for* South San Francisco Bay, south of Dumbarton Bridge. For this portion of South Bay, the CTR WQC apply, except SSOs have been adopted for copper and nickel for marine and estuarine waters of South San Francisco Bay, south of Dumbarton Bridge. SSOs for cyanide have been adopted for all segments of San Francisco Bay.

b. **CTR.** The CTR specifies numeric aquatic life criteria for 23 priority toxic pollutants and numeric human health criteria for 57 priority toxic pollutants. These criteria apply to all inland surface waters and enclosed bays and estuaries of the San Francisco Bay Region, including South San Francisco Bay south of the Dumbarton Bridge.

c. **NTR.** The NTR establishes numeric aquatic life criteria for selenium and numeric human health criteria for 33 toxic organic pollutants for waters of San Francisco Bay upstream to, and including Suisun Bay and the Delta. These NTR WQC are applicable to South San Francisco Bay.

d. **Narrative Objectives for Water Quality-Based Toxics Controls.** Where numeric objectives have not been established or updated in the Basin Plan, NPDES regulations at 40 CFR 122.44(d) require that WQBELs be established based on USEPA criteria, supplemented where necessary by other relevant information, to attain and maintain narrative WQOs to fully protect designated beneficial uses.

   To determine the need for and establish WQBELs, when necessary, the Regional Water Board staff has followed the requirements of applicable NPDES regulations, including 40 CFR 122 and 131, as well as guidance and requirements established by the Basin Plan; USEPA's Technical Support *Document for Water Quality-Based Toxics Control* (the TSD, EPA/505/2-90-001, 1991); and the SIP.

e. **Basin Plan Receiving Water Salinity Policy.** The Basin Plan and CTR state that the salinity characteristics (i.e., freshwater versus saltwater) of the receiving water shall be considered in determining the applicable WQOs. Freshwater criteria shall apply to discharges to waters with salinities equal to or less than 1 ppt at least 95 percent of the time. Saltwater criteria shall apply to discharges to waters with salinities equal to or greater than 10 ppt at least 95 percent of the time in a normal water year. For discharges to waters with salinities in between these two categories, or tidally influenced fresh waters that support estuarine beneficial uses, the WQOs shall be the lower of the salt- or freshwater criteria (the freshwater criteria for some metals are calculated based on ambient hardness) for each substance.

   The receiving water for the majority of this discharge is an unnamed channel that ultimately flows into South San Francisco Bay. Salinity data are not available for this channel; however, salinity as determined in the previous Order using data from February 1997 through March 2002 collected at monitoring station SB10 (Coyote Creek Station, the closest RMP station to the outfall) indicates a marine environment (>95 percent of the salinity data fell between 1 and 10 ppt). The remaining discharge is to to Matadero Creek.

Matadero Creek is tidally influenced and, because of inflows both from South San Francisco Bay and Matadero Creek, is therefore considered an estuarine receiving water. Therefore, the lower of the marine and freshwater WQOs from the Basin Plan, NTR, and CTR apply to this discharge.

f. **Receiving Water Hardness.** Hardness monitoring has not been conducted for Matadero Creek. A hardness value of 100 mg/L as $CaCO_3$ was used for the previous Order reasonable potential analysis as a conservative hardness value. In determining the WQOs for this Order, Regional Water Board staff again used this hardness value. This Order requires the Discharger to collect hardness data at the Matadero Creek station. A representative hardness value will be established for next permit reissuance.

g. **Site-Specific Translators.** 40 CFR 122.45(c) requires that effluent limitations for metals be expressed as total recoverable metal. Since applicable WQC for metals are typically expressed as dissolved metal, factors or translators must be used to convert metals concentrations from dissolved to total recoverable and vice versa. The CTR includes default conversion factors that are used in NPDES permitting activities; however, site-specific conditions, such as water temperature, pH, suspended solids, and organic carbon, greatly impact the form of metal (dissolved, filterable, or otherwise) that is present in the water and therefore available to cause toxicity. In general, the dissolved form of the metals is more available and more toxic to aquatic life than the filterable forms. Site-specific translators can be developed to account for site-specific conditions, thereby preventing exceedingly stringent or under protective WQOs.

Site-specific translators for copper and nickel were developed for South San Francisco Bay and are in the Basin Plan. The site-specific translators for copper and nickel are presented in Table F-9.

For this permit reissuance, Regional Water Board staff developed site-specific translators for chromium (VI), zinc, and lead for the South San Francisco Bay using data from the Dumbarton Bridge RMP station (BA30), and following USEPA's recommended guidelines for translator development. These translators were applied in determining reasonable potential and/or effluent limitations for these constituents. These translators were updated using additional RMP data collected since the previous Order issuance. The newly calculated translators for Zn, Cr(VI), and Pb are also presented in Table F-9, below. In determining the need for and calculating WQBELs for all other metals, where appropriate, Regional Water Board staff used default conversion factors from Table 2 of the CTR.

Table F-9. Site-Specific Translators for Cu, Ni, Zn, Cr(VI), and Pb for South San Francisco Bay

Pollutant	AMEL Translator	MDEL Translator
Copper	0.53	0.53
Nickel	0.44	0.44
Zinc	0.24	0.56
Chromium (VI)	0.037	0.089
Lead	0.060	0.15

3. Determining the Need for WQBELs

Assessing whether a pollutant has Reasonable Potential is the fundamental step in determining whether or not a WQBEL is required. Using the methods prescribed in section 1.3 of the SIP, Regional Water Board staff analyzed the effluent data to determine if the discharge demonstrates Reasonable Potential. The Reasonable Potential Analysis (RPA) compares the effluent data with numeric and narrative WQOs in the Basin Plan, the NTR, and the CTR.

a. **Reasonable Potential Methodology.** The RPA identifies the observed MEC in the effluent for each pollutant based on effluent concentration data. There are three triggers in determining Reasonable Potential according to Section 1.3 of the SIP.

(1) The first trigger (Trigger 1) is activated if the MEC is greater than or equal to the lowest applicable WQC (MEC ≥ WQC), which has been adjusted, if appropriate, for pH, hardness, and translator data. If the MEC is greater than or equal to the adjusted WQC, then that pollutant has Reasonable Potential, and a WQBEL is required.

(2) The second trigger (Trigger 2) is activated if the observed maximum ambient background concentration (B) is greater than the adjusted WQC (B > WQC), and the pollutant is detected in any of the effluent samples.

(3) The third trigger (Trigger 3) is activated if a review of other information determines that a WQBEL is required to protect beneficial uses, even though both MEC and B are less than the WQC.

b. **Effluent Data.** The Regional Water Board's August 6, 2001, letter titled *Requirement for Monitoring of Pollutants in Effluent and Receiving Water to Implement New Statewide Regulations and Policy* (hereinafter referred to as the August 6, 2001, Letter, Attachment G), formally required the Discharger to initiate or continue monitoring for the priority pollutants using analytical methods that provide the best detection limits reasonably feasible. Regional Water Board staff analyzed these effluent data and the nature of the discharge to determine if the discharge has Reasonable Potential. The RPA was based on the effluent monitoring data collected by the Discharger from January 2005 through December 2007 for inorganic pollutants, and from November 2003 through January 2008 for organic pollutants.

c. **Ambient Background Data.** Ambient background values are typically used to determine reasonable potential and to calculate effluent limitations, when necessary. For the RPA, ambient background concentrations are the observed maximum detected water column concentrations. The SIP states that, for calculating WQBELs, ambient background concentrations are either the observed maximum ambient water column concentrations or, for criteria intended to protect human health from carcinogenic effects, the arithmetic mean of observed ambient water concentrations.

The background data used in the RPA were generated at the Dumbarton Bridge RMP station, except for ammonia, for which the maximum ambient concentration at the South Bay RMP station was used.

Not all the constituents listed in the CTR have been analyzed by the RMP. These data gaps are addressed by the Regional Water Board's August 6, 2001, Letter, which formally required dischargers to conduct ambient background monitoring and effluent monitoring for those constituents not currently monitored by the RMP and to provide this technical information to the Regional Water Board.

On May 15, 2003, a group of several San Francisco Bay Region Dischargers (known as the Bay Area Clean Water Agencies, or BACWA) submitted a collaborative receiving water study, entitled the San Francisco Bay Ambient Water Monitoring Interim Report (2003). This study includes monitoring results from sampling events in 2002 and 2003 for the remaining priority pollutants not monitored by the RMP. The study included the Dumbarton Bridge monitoring station. Additional data were provided from the BACWA Ambient Water Monitoring: Final CTR Sampling Update Report, dated June 15, 2004.

The RPA was conducted and the WQBELs were calculated using RMP data from 1993 through 2006 at the Dumbarton Bridge RMP station, and additional data from the BACWA receiving water study.

d. **RPA Determination.** The MECs, most stringent applicable WQC, and background concentrations used in the RPA are presented in Table F-10, along with the RPA results (yes or no) for each pollutant. Reasonable Potential was not determined for all pollutants because there are not applicable WQC for all pollutants, or monitoring data were not available for others. The RPA determines that cyanide, dioxin-TEQ, chlorodibromomethane, and total ammonia exhibit Reasonable Potential by Trigger 1. Mercury exhibits reasonable potential by Trigger 2. Copper and nickel have reasonable potential by Trigger 3 as explained below.

Table F-10. Summary of RPA Results

CTR #	Priority Pollutants	MEC or Minimum DL (1)(2) (µg/L)	Governing WQO/WQC (µg/L)	Maximum Background or Minimum DL (1)(2) (µg/L)	RPA Results(3)
1	Antimony	< 60	4300	1.3	No
2	Arsenic	1.1	36	5.1	No
3	Beryllium	< 0.05	No Criteria	0.11	Ud
4	Cadmium	0.26	2.5	0.17	No
5a	Chromium (III)	0.8	207	15	No
5b	Chromium (VI)	0.8	200	15	No
6	**Copper**	**11.2**	**13**	**8.6**	**Yes**
7	Lead	0.5	36	4.2	No
8	**Mercury (303 d listed)**	**0.0059**	**0.051**	**0.068**	**Yes**
9	**Nickel**	**4.5**	**27**	**16**	**Yes**
10	Selenium (303 d listed)	1.6	5	0.63	No
11	Silver	< 0.2	2.2	0.12	No
12	Thallium	Not Available	6.3	0.16	Ud
13	Zinc	59	170	21	No
14	**Cyanide**	**5.8**	**2.9**	**< 0.4**	**Yes**
15	Asbestos	Not Available	No Criteria	Not Available	Ud
16	2,3,7,8-TCDD	< 1.8E-07	1.4E-08	2.4E-08	No
	Dioxin TEQ (303 d listed)	**4.1E-08**	**1.4E-08**	**2.6E-07**	**Yes**
17	Acrolein	< 0.50	780	< 0.5	No
18	Acrylonitrile	< 0.33	0.66	< 0.02	No
19	Benzene	< 0.03	71	< 0.05	No
20	Bromoform	68	360	< 0.5	No
21	Carbon Tetrachloride	0.9	4.4	0.07	No
22	Chlorobenzene	< 0.03	21000	< 0.5	No
23	**Chlorodibromomethane**	**56**	**34**	**0.057**	**Yes**

CTR #	Priority Pollutants	MEC or Minimum DL (1)(2) (µg/L)	Governing WQO/WQC (µg/L)	Maximum Background or Minimum DL (1)(2) (µg/L)	RPA Results(3)
24	Chloroethane	< 0.03	No Criteria	< 0.5	Ud
25	2-Chloroethylvinyl Ether	< 0.1	No Criteria	< 0.5	Ud
26	Chloroform	4	No Criteria	< 0.5	Ud
27	Dichlorobromomethane	18	46	< 0.05	No
28	1,1-Dichloroethane	< 0.04	No Criteria	< 0.05	Ud
29	1,2-Dichloroethane	< 0.04	99	0.04	No
30	1,1-Dichloroethylene	< 0.05	3.2	< 0.5	No
31	1,2-Dichloropropane	< 0.03	39	< 0.05	No
32	1,3-Dichloropropylene	0.07	1700	Not Available	No
33	Ethylbenzene	< 0.04	29000	< 0.5	No
34	Methyl Bromide	0.24	4000	< 0.5	No
35	Methyl Chloride	< 0.04	No Criteria	< 0.5	Ud
36	Methylene Chloride	1.4	1600	< 0.5	No
37	1,1,2,2-Tetrachloroethane	< 0.04	11	< 0.05	No
38	Tetrachloroethylene	< 0.04	8.9	< 0.05	No
39	Toluene	1.2	200000	< 0.3	No
40	1,2-Trans-Dichloroethylene	< 0.05	140000	< 0.5	No
41	1,1,1-Trichloroethane	< 0.03	No Criteria	< 0.5	Ud
42	1,1,2-Trichloroethane	< 0.05	42	< 0.05	No
43	Trichloroethylene	0.08	81	< 0.5	No
44	Vinyl Chloride	< 0.05	525	< 0.5	No
45	Chlorophenol	< 0.7	400	< 1.2	No
46	2,4-Dichlorophenol	< 0.7	790	< 1.5	No
47	2,4-Dimethylphenol	< 0.5	2300	< 1.3	No
48	2-Methyl-4,6-Dinitrophenol	< 0.6	765	< 1.2	No
49	2,4-Dinitrophenol	< 0.5	14000	< 0.7	No
50	2-Nitrophenol	< 0.6	No Criteria	< 1.3	Ud
51	4-Nitrophenol	< 0.6	No Criteria	< 1.6	Ud
52	3-Methyl-4-Chlorophenol	< 0.6	No Criteria	< 1.1	Ud
53	Pentachlorophenol	< 0.6	7.9	< 1	No
54	Phenol	5.7	4600000	< 1.3	No
55	2,4,6-Trichlorophenol	< 0.6	6.5	< 1.3	No
56	Acenaphthene	< 0.03	2700	0.0026	No
57	Acenephthylene	< 0.02	No Criteria	0.0026	Ud
58	Anthracene	< 0.0095	110000	0.0023	No
59	Benzidine	< 1	0.00054	< 0.0015	No
60	Benzo(a)Anthracene	< 0.02	0.049	0.011	No
61	Benzo(a)Pyrene	< 0.0095	0.049	0.045	No
62	Benzo(b)Fluoranthene	< 0.0095	0.049	0.057	No
63	Benzo(ghi)Perylene	< 0.02	No Criteria	0.015	Ud
64	Benzo(k)Fluoranthene	< 0.0095	0.049	0.021	No
65	Bis(2-Chloroethoxy)Methane	< 0.5	No Criteria	< 0.3	Ud
66	Bis(2-Chloroethyl)Ether	< 0.6	1.4	< 0.32	No
67	Bis(2-Chloroisopropyl)Ether	< 0.5	170000	Not Available	No
68	Bis(2-Ethylhexyl)Phthalate	0.6	5.9	0.93	No
69	4-Bromophenyl Phenyl Ether	< 0.4	No Criteria	< 0.23	Ud
70	Butylbenzyl Phthalate	< 0.5	5200	0.0055	No
71	2-Chloronaphthalene	< 0.5	4300	< 0.3	No
72	4-Chlorophenyl Phenyl Ether	< 0.5	No Criteria	< 0.31	Ud
73	Chrysene	< 0.0095	0.049	0.022	No
74	Dibenzo(a,h)Anthracene	< 0.02	0.049	0.0088	No
75	1,2-Dichlorobenzene	< 0.03	17000	< 0.3	No
76	1,3-Dichlorobenzene	< 0.03	2600	< 0.3	No
77	1,4-Dichlorobenzene	0.1	2600	< 0.3	No
78	3,3-Dichlorobenzidine	< 0.6	0.077	< 0.001	No
79	Diethyl Phthalate	1.8	120000	0.3	No
80	Dimethyl Phthalate	< 0.4	2900000	< 0.21	No
81	Di-n-Butyl Phthalate	< 0.5	12000	2.2	No
82	2,4-Dinitrotoluene	< 0.4	9.1	< 0.27	No
83	2,6-Dinitrotoluene	< 0.5	No Criteria	< 0.29	Ud
84	Di-n-Octyl Phthalate	< 0.7	No Criteria	< 0.38	Ud
85	1,2-Diphenylhydrazine	< 0.6	0.54	0.0053	No
86	Fluoranthene	< 0.02	370	0.039	No
87	Fluorene	< 0.02	14000	0.0055	No
88	Hexachlorobenzene	< 0.5	0.00077	0.00048	No

CTR #	Priority Pollutants	MEC or Minimum DL (1)(2) (µg/L)	Governing WQO/WQC (µg/L)	Maximum Background or Minimum DL (1)(2) (µg/L)	RPA Results(3)
89	Hexachlorobutadiene	< 0.5	50	< 0.3	No
90	Hexachlorocyclopentadiene	< 0.5	17000	< 0.3	No
91	Hexachloroethane	< 0.4	8.9	< 0.2	No
92	Indeno(1,2,3-cd) Pyrene	< 0.0095	0.049	0.078	No
93	Isophorone	< 0.5	600	< 0.3	No
94	Naphthalene	< 0.02	No Criteria	0.011	Ud
95	Nitrobenzene	< 0.5	1900	< 0.25	No
96	N-Nitrosodimethylamine	< 0.4	8.1	< 0.3	No
97	N-Nitrosodi-n-Propylamine	< 0.6	1.4	< 0.001	No
98	N-Nitrosodiphenylamine	< 0.4	16	< 0.2	No
99	Phenanthrene	< 0.0095	No Criteria	0.014	Ud
100	Pyrene	< 0.0095	11000	0.056	No
101	1,2,4-Trichlorobenzene	< 0.05	No Criteria	< 0.3	Ud
102	Aldrin	< 0.002	0.00014	1.37E-6	No
103	alpha-BHC	< 0.002	0.013	0.00066	No
104	beta-BHC	< 0.003	0.046	0.00061	No
105	gamma-BHC	< 0.002	0.063	0.0017	No
106	delta-BHC	0.089	No Criteria	0.00013	Ud
107	Chlordane (303 d listed)	< 0.02	0.00059	0.00057	No
108	4,4-DDT (303 d listed)	< 0.002	0.00059	0.00020	No
109	4.4-DDE	< 0.003	0.00059	0.00068	No
110	4,4-DDD	< 0.002	0.00084	0.00077	No
111	Dieldrin (303d)	< 0.002	0.00014	0.00029	No
112	alpha-Endosulfan	< 0.002	0.0087	0.000027	No
113	beta-Endosulfan	< 0.002	0.0087	0.000046	No
114	Endosulfan Sulfate	< 0.002	240	0.00016	No
115	Endrin	< 0.002	0.0023	0.00012	No
116	Endrin Aldehyde	< 0.003	0.81	Not Available	No
117	Heptachlor	< 0.003	0.00021	0.000022	No
118	Heptachlor Epoxide	< 0.002	0.00011	0.00017	No
119-125	PCBs sum (303 d listed)	< 0.017	0.00017	0.0040	No
126	Toxaphene	< 0.14	0.0002	Not Available	No
	Tributyltin	Not Available	0.0074	0.003	Ud
	Total PAHs	< 0.0095	15	0.38	No
	Total Ammonia (as N in mg/L)	**4.4**	**1.21**	**0.28**	**Yes**

Footnote for Table F-10:

(1) The MEC and maximum background concentration are the actual detected concentrations unless preceded by a "<" sign, in which case the value shown is the minimum detection level (DL).

(2) The MEC or maximum background concentration is "Not Available" when there are no monitoring data for the constituent.

(3) RPA Results = Yes, if MEC > WQO/WQC, B > WQO/WQC and MEC is detected, or Trigger 3;
= No, if MEC and B are < WQO/WQC or all effluent data are undetected;
= Undetermined (Ud), if no criteria have been promulgated or there are insufficient data.

e. **Constituents with limited data.** In some cases, Reasonable Potential cannot be determined because effluent data or ambient background concentrations are not available. The Dischargers will continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further RPA will be conducted to determine whether to add numeric effluent limitations to this Order or to continue monitoring.

f. **Pollutants with no Reasonable Potential.** WQBELs are not included in this Order for constituents that do not demonstrate Reasonable Potential; however, monitoring for those pollutants is still required. If concentrations of these constituents are found to have