

## RESPONSE TO WRITTEN COMMENTS

on Tentative Order for:  
South Bayside System Authority  
1400 Radio Road, Redwood City, San Mateo County

The Regional Water Board received written comments from the following parties on a tentative order distributed in April 2012 for public comment:

- I. South Bayside System Authority
- II. Baykeeper

This response to their comments summarizes each comment in *italics*, followed by Regional Water Board staff response. For the full content and context of each comment, refer to the comment letters. All revisions to the tentative order are shown with underline for additions and strikethrough for deletions.

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### I. South Bayside System Authority (SBSA)

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#### **SBSA Comment 1.**

*SBSA requests that the phrase “free chlorine” be edited to “chlorine” in the second paragraph of Table 6, Footnote 4, because free chlorine does not exist in wastewater effluent in the presence of ammonia.*

#### **Response to SBSA Comment 1.**

We agree and made the requested revision. We also made the identical revision to Table 7, Footnote 4.

#### **SBSA Comment 2.**

*SBSA requests that the effluent limitation for dibenzo(a,h)anthracene be replaced by a special study designed to determine whether dibenzo(a,h)anthracene is a pollutant of concern in its effluent.*

#### **Response to SBSA Comment 2.**

We did not revise the tentative order. State Implementation Policy (SIP) section 1.4 requires an effluent limit when a pollutant has reasonable potential to cause or contribute to an excursion above a water quality objective, and provides a specific procedure for this analysis. In this case, SBSA detected dibenzo(a,h)anthracene in its effluent at a concentration greater than the water quality objective, showing reasonable potential in accordance with the SIP procedure. SBSA investigated this result with its contract laboratory and found no reason to invalidate it.

**SBSA Comment 3.**

*SBSA requests that the monitoring point for fecal coliform bacteria be revised in Provision IV.A.3, Fecal Coliform Bacteria, to be consistent with the Monitoring and Reporting Program (MRP) (Attachment E), and that the process flow diagram at Tentative Order Attachment C be replaced by an updated process flow diagram.*

**Response to SBSA Comment 3.**

We agree and made the requested revisions. The revision to Provision IV.A.3 is shown below:

- 3. Fecal Coliform Bacteria.** Discharges at Discharge Point 001, with compliance measured at Monitoring Location EFF-001-D as described in the MRP (Attachment E), shall meet the following limitations of bacteriological quality:

**SBSA Comment 4.**

*SBSA requests that the MRP requirement to monitor pH and temperature in the effluent and receiving water concurrently with total ammonia in the effluent (Table E-3, Effluent Monitoring, Footnote 9) be removed for consistency with other recently adopted San Francisco Bay Region permits, and because SBSA participates in the RMP and there is no limitation for un-ionized ammonia.*

**Response to SBSA Comment 4**

We agree, and revised Table E-3 as follows:

**Table E-3. Effluent Monitoring**

Parameter	Units	Sample Type	Minimum Sampling Frequency	Location
∴	∴	∴	∴	∴
Temperature	°C	Grab	1/Day	EFF-001
∴	∴	∴	∴	∴
Ammonia <sup>[9]</sup>	mg/L as N	C-24	1/Month	EFF-001
Copper	µg/L	C-24	1/Month	EFF-001
Cyanide <sup>[10]</sup> [9]	µg/L	Grab	1/Month	EFF-001
∴	∴	∴	∴	∴

∴

[9] ~~Total Ammonia. Monitoring for total ammonia shall occur concurrently with effluent and receiving water monitoring for temperature and pH for determination of the un-ionized ammonia fraction.~~

[10] ~~Cyanide. The Discharger may monitor cyanide at a point prior to disinfection.~~

**SBSA Comment 5.**

*SBSA requests revision of Attachment E, section V.B.2, Chronic Toxicity Monitoring Requirements, to approve using the clinoptilolite form of zeolite to remove ammonia from chronic toxicity effluent test solutions prior to chronic toxicity tests. SBSA references a study performed by Pacific EcoRisk laboratory, submitted with its July 25, 2011, Chronic Toxicity Screening Study Report showing that clinoptilolite treatment only minimally affected metals concentrations.*

**Response to SBSA Comment 5.**

We did not revise the tentative order. SBSA's screening study recommends that *Americamysis bahia* (Gulf Mysid) be retained as the chronic toxicity test species and that zeolite treatment be authorized only if *Mytilus galloprovincialis* (Mussel) is chosen instead, due to this species' hypersensitivity to ammonia. The tentative order accordingly requires the use of *A. bahia*. SBSA may still pursue authorization for chronic toxicity sample adjustment in accordance with Attachment E, Provision V.B.d, if needed.

**SBSA Comment 6.**

*SBSA notes that the units for Enterococcus bacteria in Table E-3, Effluent Monitoring, should be MPN/100 mL instead of Colonies/100 mL.*

**Response to SBSA Comment 6.**

We agree and made the requested revision.

**SBSA Comment 7.**

*SBSA requests several changes to the Fact Sheet consistent with its request in Comment 2 to remove the finding of reasonable potential and the effluent limits for dibenzo(a,h)anthracene.*

**Response to SBSA Comment 7.**

We did not revise the tentative order. See our response to SBSA Comment 2.

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**II. San Francisco Baykeeper**

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**Baykeeper Comment 1.**

*Baykeeper requests recalculation of SBSA's ammonia effluent limits using site-specific background data instead far-field Regional Monitoring Program (RMP) station data.*

*Baykeeper also requests significantly more stringent ammonia effluent limits, similar to those for the Palo Alto, San Jose, and Sunnyvale plants, asserting South San Francisco Bay is nutrient-enriched. Baykeeper elaborates that the Tentative Order's average monthly effluent limit (AMEL) of 170 milligrams per liter (mg/L) for ammonia is inconsistent with Basin Plan Discharge Prohibition 2 (Basin Plan Table 4-1), banning discharges with "particular characteristics of concern to beneficial uses to San Francisco Bay south of the Dumbarton Bridge." Baykeeper points out, for comparison,*

*that the ammonia AMELs for the Palo Alto, San Jose, and Sunnyvale plants, located south of the Dumbarton Bridge, are 2.7 mg/L, 3 mg/L, and 18 mg/L. Baykeeper comments that ammonia removal requirements have not been applied consistently; only treatment plants south of the Dumbarton Bridge are required to reduce ammonia loads, although nutrients affect the entire South San Francisco Bay.*

*Regarding nutrients, Baykeeper presents United States Geological Survey nutrient data from a station near Yerba Buena Island (Station 18 at Point Blunt) and a station near SBSA's discharge point (Station 30 at Redwood Creek) to show that average nutrient concentrations are significantly higher near SBSA's discharge point and increasing in San Francisco Bay long-term. Baykeeper also refers to recent studies providing evidence that San Francisco Bay's historic resistance to the effects of nutrient enrichment is weakening, and stronger measures to control nutrients are necessary.*

### **Response to Baykeeper Comment 1.**

We disagree that our approach to ammonia and nutrients is inconsistent with our approach in other recent permits, including those for discharges south of the Dumbarton Bridge. We agree, however, that nutrients are a growing concern in the San Francisco Bay Estuary in part due to the information cited in the comment. Since current efforts underway may have an impact on ammonia limits in the future, we propose to augment the tentative order's Fact Sheet to highlight this concern and summarize the efforts underway. Finally, SBSA's discharge does not violate Basin Plan Table 4-1, Prohibition 2, because it is not located south of the Dumbarton Bridge. It is located just south of the San Mateo Bridge. The following provides details of our responses on the first two issues: consistency with other permits and nutrients.

To address ammonia, we used site-specific data to calculate effluent ammonia limits based on un-ionized ammonia objectives in Basin Plan section 3.3.20 (which address only aquatic toxicity, not nutrient effects). For ammonia, the Baykeeper's comment that we used the Yerba Buena Island RMP station as a background station is mistaken. In fact, we used site-specific data, from the Redwood Creek RMP Station (BA 40), which is closest to the discharge and is located just south of the San Mateo Bridge. We used data from this station to translate the Basin Plan's un-ionized ammonia water quality objectives to total ammonia criteria and to calculate ammonia effluent limits. For clarity, we revised the Fact Sheet as follows:

Fact Sheet section IV.C.3.c, Ambient Background Data:

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For the priority pollutants, the RPA was conducted and WQBELs were calculated using RMP data from 1993 through 2010 at the Yerba Buena Island RMP station (BC10), and additional data from the Bay Area Clean Water Agencies receiving water studies. For ammonia, the ambient concentration at the nearest RMP station to the discharge point, Redwood Creek RMP station (BA 40), was used.

Fact Sheet section IV.C.4.c(5)(a):

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To translate the Basin Plan un-ionized ammonia objectives, pH, salinity, and temperature data were used from the Redwood Creek RMP monitoring station (BA 40). The un-ionized fraction of total ammonia is calculated as follows:

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Fact Sheet section IV.C.4.c(5)(c):

(c) **WQBELs.** The most stringent total ammonia WQBELs, calculated according to SIP procedures using a CV of 0.19 and a dilution ratio of 176:1 (D = 175), are an AMEL of 170 mg/L and an MDEL of 250 mg/L. Total ammonia WQBELs were calculated according to SIP procedures using both acute and chronic conditions, and the more stringent (chronic) results were chosen. The effluent data CV was 0.19 and the chronic dilution credit was D = 175, resulting in an AMEL of 170 mg/L and an MDEL of 250 mg/L. Statistical adjustments were made to the total ammonia WQBEL calculations because:

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These statistical adjustments are supported by USEPA's *Water Quality Criteria; Notice of Availability; 1999 Update of Ambient Water Quality Criteria for Ammonia*, published on December 22, 1999, in the Federal Register. Following the SIP methodology, the maximum ambient background total ammonia concentration at the Redwood Creek RMP station (BA 40) of (0.22 mg/L) was used to calculate effluent limitations based on the acute criterion, and the median background total ammonia concentration at the Redwood Creek RMP Station of (0.10 mg/L) was used to calculate effluent limitations based on the chronic criterion. Because the Basin Plan's chronic un-ionized ammonia objective is an annual median, the median background concentration is more representative of ambient conditions than a daily maximum.

Regarding consistency among permits, we used the same procedure to determine if ammonia limits were warranted for SBSA as we used for the San Jose, Sunnyvale, and Palo Alto discharges (with the exception that we used the U.S. EPA Technical Support Document for Sunnyvale). We did not find reasonable potential for San Jose or Sunnyvale; hence, those facilities have performance-based limits retained from previous orders to maintain their existing performance. We found limits were warranted for Palo Alto, and the ammonia limits for SBSA and Palo Alto are calculated in the same manner, following SIP procedures by using the nearest RMP station for background data.

SBSA's limits differ from those of San Jose, Sunnyvale, and Palo Alto primarily because these latter facilities discharge to shallow water in dead-end sloughs with poor circulation and flow characteristics south of the Dumbarton Bridge. These discharges receive little, if any, initial dilution. SBSA, in contrast, discharges to deep water through a submerged diffuser; thus, its discharge receives substantial initial dilution.

To address nutrients, we have initiated a region-wide effort to study and evaluate nutrient effects in San Francisco Bay. The effects of nutrients discharged to San

Francisco Bay south of the Dumbarton Bridge have been a concern for some time: the potential effects of nutrients discharged to the rest of the San Francisco Bay Estuary are, as Baykeeper's comment indicates, a recent but increasing concern. As yet, whether the observations demonstrate a water quality problem is not well understood. To address nutrient discharges and their potential effects, we are working with the Southern California Coastal Water Research Program (SCCWRP) and San Francisco Estuary Institute (SFEI) to develop a Nutrient Assessment Framework for San Francisco Bay. A Nutrient Assessment Framework will allow us to translate the Basin Plan narrative biostimulatory objective into numeric criteria, which in turn will allow us to calculate water quality-based effluent limits for nutrients.

We developed a Draft Nutrient Strategy in March 2012, based in part on the *Nutrient Numeric Endpoint Literature Review and Data Gaps Analysis* (McKee, L.J., et. al., June 30, 2011). We also issued a 13267 letter on March 2, 2012, requiring San Francisco Bay Region wastewater dischargers, including SBSA, to monitor nutrients in their influent and effluent. The letter requires San Francisco Bay Region publicly owned treatment works (POTWs) to extensively monitor their influents and effluents for nutrients. We will use this information to compare nutrient loads from wastewater discharges to loads from other sources, to support modeling and evaluation of load reduction scenarios, and to determine the need for additional wastewater treatment to address nutrients. The data may also be used to support TMDL development or other regulatory strategies. We also recognize the Bay Area Clean Water Agencies (BACWA) engagement in funding nutrient-related studies, as acknowledged in our January 24, 2012, letter to BACWA, *Water Board Support for Nutrient Strategy Development and Implementation*. The nutrient studies (*Nutrient Strategy Development and Implementation: A proposal to BACWA and the San Francisco Bay Regional Water Quality Control Board*, January 18, 2012) include (1) coordination of nutrient strategy development and implementation, which will help refine our Draft Nutrient Strategy; (2) development of numeric biogeochemical models, which will be used to evaluate biological response under future nutrient loading scenarios; and (3) Suisun Bay Studies, which will investigate the potential relationship between ammonia, nutrients and the decline of protected pelagic fish species in Suisun Bay.

We added a new subsection (e) to Fact Sheet section IV.C.4(c)(5) to summarize these findings as follows:

**(5) Total Ammonia**

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**(e) Growing Concern with Nutrients.** As described above and in section IV.C.4.b, Dilution Credit, a translated Basin Plan un-ionized ammonia objective and a conservative estimate of actual initial dilution were used to calculate the total ammonia effluent limitations. In the future, the Regional Water Board may grant less dilution credit or change the ammonia limitations in other ways to address growing concerns about nutrients in the receiving water. Currently, a region-wide effort is underway to study and evaluate potential effects. This effort, which is referred to as the San Francisco Bay Nutrient Strategy, includes developing a

nutrient assessment framework that can be used to calculate water quality-based effluent limits for nutrients. The Regional Water Board, through its Executive Officer, has also required wastewater dischargers, including this Discharger, to monitor nutrients, including ammonia, in their influent and effluent. This information will be used to compare nutrient loads from wastewater discharges to loads from other sources, to support modeling and evaluation of load reduction scenarios, and to determine the need for additional wastewater treatment to address nutrients.

**Baykeeper Comment 2.**

*Baykeeper points out that the Tentative Order includes two sets of effluent limitations for conventional and non-conventional pollutants based on the time of year, without any justification. During the wet season, the effluent limitations for carbonaceous biochemical oxygen demand (CBOD), total suspended solids (TSS), and turbidity are double what they are during the dry season. Baykeeper asserts that the permit should retain the lower of the two sets of limits for conventional and non-conventional pollutants year-round.*

**Response to Baykeeper Comment 2.**

We revised the tentative order to include the basis for these limits but did not change the limits. We revised Fact Sheet section IV.B.2 as follows:

**2. Effluent Limitations for Conventional and Non-conventional Pollutants**

- a. **CBOD<sub>5</sub> and TSS.** The effluent limitations for CBOD<sub>5</sub> and TSS are more stringent than the Secondary Treatment Standards because the Plant provides advanced secondary treatment. Consistent with anti-backsliding requirements, these limits are retained from the previous Order. The 85 percent removal requirement is based on the Secondary Treatment Standards. The dry-season (May through September) limits are more stringent than the wet-season limits because they are intended to protect shellfish harvesting based on Regional Water Board Resolutions No. 74-14, 78-8, and 83-10, summarized in Basin Plan section 5.2.8, Shellfish. They were originally imposed in 1975 through Order No. 75-47 as year-round limits to protect shellfish beds located along the shore from Burlingame to Foster City. In accordance with Resolution No. 78-8, the Shellfish Program investigated these shellfish beds and, as summarized in Resolution No. 83-10, found that they were not adversely affected by wastewater discharges from properly operated and maintained facilities meeting effluent limits during the dry season, but were affected by coliform bacteria from non-point sources, including stormwater runoff. Therefore, in 1984 (Order No. 84-6), the Regional Water Board relaxed the CBOD and TSS limits during the wet season and has retained these limits since.  
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- e. **Turbidity.** The effluent limitation for turbidity is retained from the previous Order to ensure that the Plant consistently provides advanced secondary treatment. The dry-season (May through September) limits are more stringent than the wet-season limits because they are intended to protect shellfish

harvesting based on Regional Water Board Resolutions No. 74-14, 78-8, and 83-10, summarized in Basin Plan section 5.2.8, Shellfish. They were originally imposed in 1975 through Order No. 75-47 as year-round limits to protect shellfish beds located along the shore from Burlingame to Foster City. In accordance with Resolution No. 78-8, the Shellfish Program investigated these shellfish beds and, as summarized in Resolution No. 83-10, found that they were not adversely affected by wastewater discharges from properly operated and maintained facilities meeting effluent limits during the dry season, but were affected by coliform bacteria from non-point sources, including stormwater runoff. Therefore, in 1984 (Order No. 84-6), the Regional Water Board relaxed the turbidity limits during the wet season and has retained these limits since.