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August 8, 2011

VIA EMAIL: To: jmadigan@waterboards.ca.gov
cc: bwolfe@waterboards.ca.gov; ltang@waterboards.ca.gov; wjohnson@waterboards.ca.gov; moakley@rmcwater.com

Mr. John Madigan
San Francisco Bay Regional Water Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Comments Regarding Tentative Order Reissuing the NPDES Permit (CA0038636) for the Hayward Marsh

Dear Mr. Madigan:

Thank you for the opportunity to comment on the Tentative Order for the reissuance of the NPDES Permit for the Hayward Marsh. We would particularly like to thank you and your staff for your diligence and care in preparing this document. Our detailed comments can be found in the attached document.

The Union Sanitary District (District) and its co-permittees, the East Bay Regional Park District (EBRPD) and the East Bay Dischargers Authority (EBDA), are proud of our work with the Hayward Marsh, which has widely been recognized as an important demonstration site for the use of reclaimed water to restore and maintain a thriving wetland habitat.

We would like to call your attention especially to our concern about the proposed effluent limitations for ammonia. We are very concerned that it will not be feasible for the District to comply with the proposed limits. This is the first permit in which the Basin Plan's water quality objectives for unionized ammonia are being applied inside the Marsh, and the first time that they have been used to conduct a reasonable potential analysis and derive water quality-based effluent limits for the Marsh. Previously, compliance with these objectives (implemented as receiving water limits), was required at monitoring location E-3, where effluent from the Marsh meets the San Francisco Bay. Results of many years of regular

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monitoring demonstrate that these objectives are being met at that point, and that ammonia concentrations in Marsh effluent are not impacting water quality in the Bay. Including effluent limits for ammonia that the District may not be able to meet is contrary to the goals of the project, as they are not necessary to protect water quality in the Bay or the already-thriving aquatic ecosystem in the Marsh and serve instead as an additional liability for the District that discourages the continued support of this important and environmentally-beneficial project.

For this reason, and because it has come to our attention that significant additional issues may possibly be added to the permit after the tentative order review period, we request that the permit reissuance schedule be extended beyond the currently anticipated September 2011 adoption to allow time for proper analysis.

Thank you for consideration of these comments. Please let me know if you have any questions or would like additional information.

Sincerely,

David Livingston
Manager, Treatment and Disposal Services

cc: Bruce Wolfe, Regional Water Board
Lila Tang, Regional Water Board
Bill Johnson, Regional Water Board
Monica Oakley, RMC / Oakley Water Strategies

Union Sanitary District
Hayward Marsh

Comments on Tentative Order for Reissuance of NPDES Permit No. CA0038636

August 8, 2011

Union Sanitary District (District) appreciates the opportunity to submit the following comments on the Tentative Order (TO) reissuing the NPDES permit for Hayward Marsh (CA0038636).

Due to the significance of certain issues addressed in the following comments (e.g., compliance feasibility concerns related to the proposed ammonia limits), and because it has come to our attention that significant additional issues may possibility be added to the permit after the TO review period, the District requests that the permit reissuance schedule be extended beyond the currently anticipated September 2011 adoption to allow time for proper analysis.

COMMENTS ON THE TENTATIVE ORDER

1. The District requests clarification in the description of uses of the Marsh.

The District requests that the Regional Water Board make the following edits to the description of uses of the Marsh; it is important that there is no confusion about the fact that the Marsh is not open to the public.

(Page 4)

> Additionally, the area around Hayward Marsh ~~offers many educational opportunities for local schools and residents, and has considerable value as a wetland restoration demonstration site for local, national, and international scientists, academics, engineers, and other professionals~~ provides important research opportunities related to the use of recycled water in wetlands restoration and management.

2. The District requests that the ammonia effluent limits be revised to address the results of a more realistic compliance feasibility analysis approach.

The TO indicates that compliance with the proposed ammonia effluent limits will be feasible because an analysis of the averages of sample results collected at monitoring locations 2AE and 2BE shows that the 95th percentile of this data set (26 mg/L) is below the proposed average monthly effluent limit (AMEL) (27 mg/L) and the 99th percentile of the data set (30 mg/L) is less than the proposed maximum daily effluent limit (66 mg/L). However, several of these averages and a number of individual samples exceed the proposed AMEL, as shown in **Figure 1.** The proposed ammonia limits were calculated using data collected from May 2006 through August 2010. Figure 1 also includes more recent data collected through June 2011. The figure illustrates how it is common for concentrations to be clustered seasonally, making compliance through averaging unreliable. For these reasons, the District does not agree that the 95th percentile comparison adequately ensures compliance feasibility, and urges the Regional Water

Board to consider using a value greater than the maximum effluent concentration for this purpose instead. The maximum averaged concentration shown is 32.6 mg/L and the maximum individual concentration is 48 mg/L.

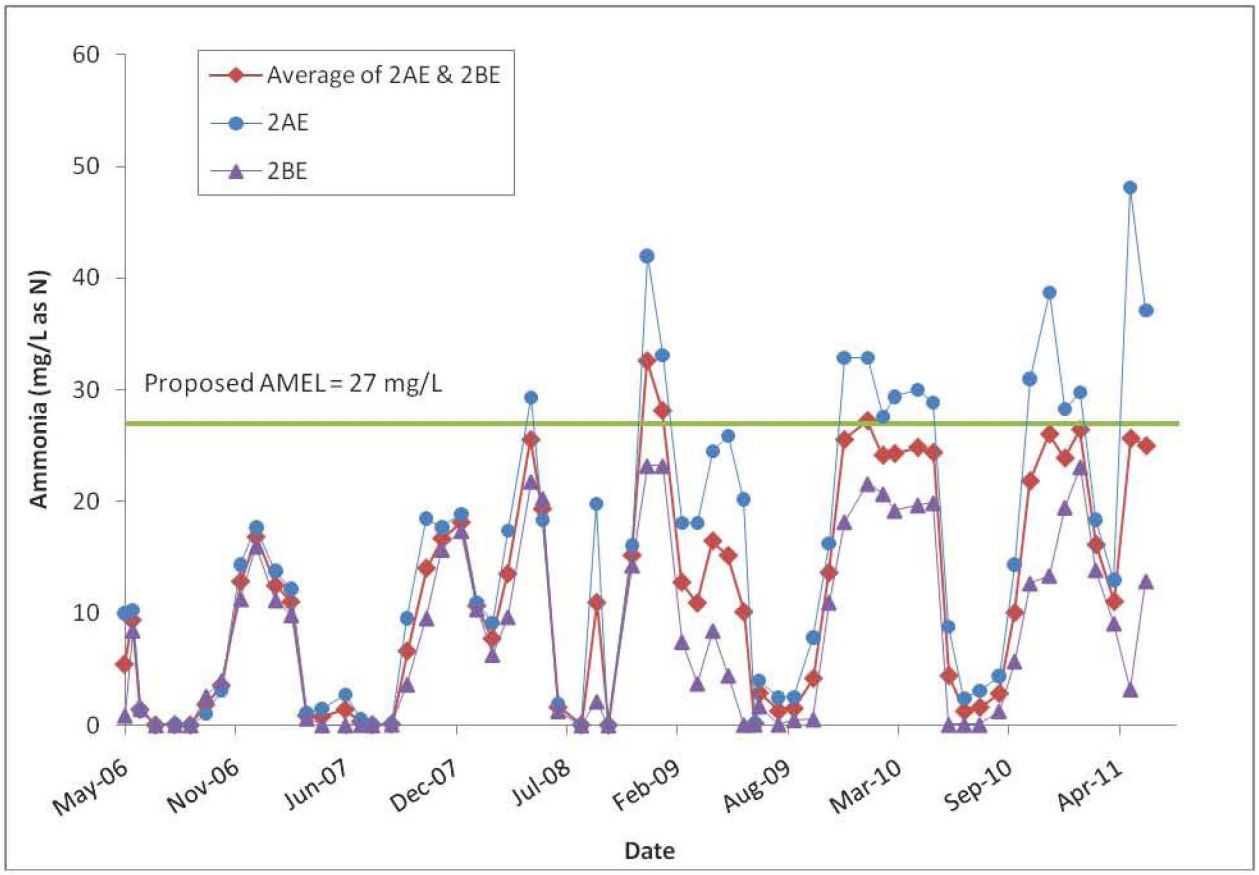

Figure 1. Ammonia Concentrations in Hayward Marsh at Monitoring Locations 2AE and 2BE Compared to the Proposed Average Monthly Effluent Limit

Reductions in ammonia concentrations in Marsh influent (Plant effluent) rely primarily on nitrification. This process is quite effective in warmer months, but cannot be relied on in the colder months. The Hayward Marsh was not designed for nitrification, and concentrations measured at 2AE and 2BE are highly variable and mostly not within the District's control.

Ammonia concentrations at 2AE and 2BE have also been increasing in recent years. In response, District staff has begun to investigate sources and options for control strategies. These investigations have so far offered several possible explanations for the increasing concentrations.

Since January 2007, effluent flows have decreased while ammonia concentrations have risen. To a certain extent, the reduced flows associated with water conservation will result in concurrent increases in concentrations of common domestic pollutants, such as ammonia. This phenomenon is believed to be typical of many Bay Area POTWs experiencing water conservation-related flow reductions.

District staff believes that the increases in ammonia concentrations are also related in part to industrial discharges. For example, a new photovoltaic design and manufacturing facility (for solar panels) was built in the service area, beginning production in April 2007. A step in the manufacturing process requires the use of ammonia. As production has increased since start-up, so too have ammonia concentrations in plant effluent and at monitoring locations 2AE and 2BE. This facility is permitted under the District's pretreatment program. However, local limits have not been developed for ammonia, since it has not historically been a pollutant of concern. A study conducted prior to issuance of this facility's permit indicated that ammonia concentrations associated with the discharge would not inhibit or upset the treatment process, there has been no numeric ammonia limit for the Hayward Marsh, and there was no other reason to disallow this discharge at that time. Additional increases in ammonia contributions are expected from industries such as this one that have already been permitted but are not at full production capacity. The District understands that controlling these industrial sources may be accomplished through the pretreatment program. However, this process could take several years, as it would likely include the development of new local limits, revisions to the District's sewer use ordinance, and allowing time for the industries to implement the new requirements.

Given the high variability and recent trend, it would be more realistic to judge compliance feasibility based on the maximum concentration measured in the individual samples collected at 2AE and 2BE (48 mg/L), indicating the need for an AMEL of 49 mg/L. Ammonia effluent limits calculations resulting in an AMEL of 49 mg/L are shown in **Table 1**, below. This approach for determining ammonia effluent limits is consistent with every other POTW that has received ammonia limits in the Bay Area under the new approach since 2007.

Table 1. Ammonia Effluent Limits Calculations

PRIORITY POLLUTANTS	**Total Ammonia (acute)**	**Total Ammonia (chronic)**
Units	**mg/L N**	**mg/L N**
Basis and Criteria type	Basin Plan Aquatic Life	Basin Plan Aquatic Life
Criteria -Acute (calculated)	11.4	-----
Criteria -Chronic (calculated)	-----	0.92
SSO Criteria –Acute	-----	-----
SSO Criteria –Chronic	-----	-----
Water Effects ratio (WER)	1	1
Lowest WQO	11.38	0.92
Site Specific Translator - MDEL	-----	-----
Site Specific Translator - AMEL	-----	-----
Dilution Factor (D) (if applicable)	50	50
No. of samples per month	4	30
Aquatic life criteria analysis required? (Y/N)	Y	Y
HH criteria analysis required? (Y/N)	N	N
Applicable Acute WQO	11.38	
Applicable Chronic WQO		0.92

HH criteria		
Background (Maximum Conc for Aquatic Life calc)	0.187	0.095
Background (Average Conc for Human Health calc)		
Is the pollutant on the 303d list and/or bioaccumulative (Y/N)?	N	N
ECA acute	571	
ECA chronic		42.0
ECA HH		
No. of data points <10 or at least 80% of data reported non detect? (Y/N)	N	N
Avg of effluent data points	10.12	10.12
Std Dev of effluent data points	9.41	9.41
CV calculated	0.93	0.93
CV (Selected) – Final	0.93	0.93
ECA acute mult99	0.22	
ECA chronic mult99		0.89
LTA acute	124.29	
LTA chronic		37.6
minimum of LTAs	124.29	37.6
AMEL mult95	1.88	1.30
MDEL mult99	4.59	4.59
AMEL (aq life)	233.40	48.87
MDEL(aq life)	570.98	172.53
MDEL/AMEL Multiplier	2.45	3.53
AMEL (human hlth)		
MDEL (human hlth)		
minimum of AMEL for Aq. life vs HH	233	48.9
minimum of MDEL for Aq. Life vs HH	571	172.5
Current limit in permit (30-day average)	-----	-----
Current limit in permit (daily)	-----	-----
Final limit – AMEL*	~~233~~	49
Final limit – MDEL*	~~571~~	173

*The final limits selected are the more stringent of those based on the acute or chronic objective.

These limits would require a dilution credit of D=50. This overall dilution of the effluent would be achieved within approximately 93 meters of the shoreline[1]. However, it is very important to note that the model used to determine overall dilution factors did not consider decay of ammonia in the environment, meaning that effective dilution for ammonia will be much greater than that

[1] Estimation of Dilution for Hayward Marsh Discharge to San Francisco Bay. LimnoTech. August 2, 2011.

predicted by this model. For example, ammonia concentrations measured just outside the Marsh (at E-3) are much lower than the values that would be predicted based on the overall dilution factor alone. In fact, un-ionized ammonia concentrations measured at E-3 have consistently been significantly lower than the Basin Plan's water quality objectives, as shown in **Figure 2**, below.

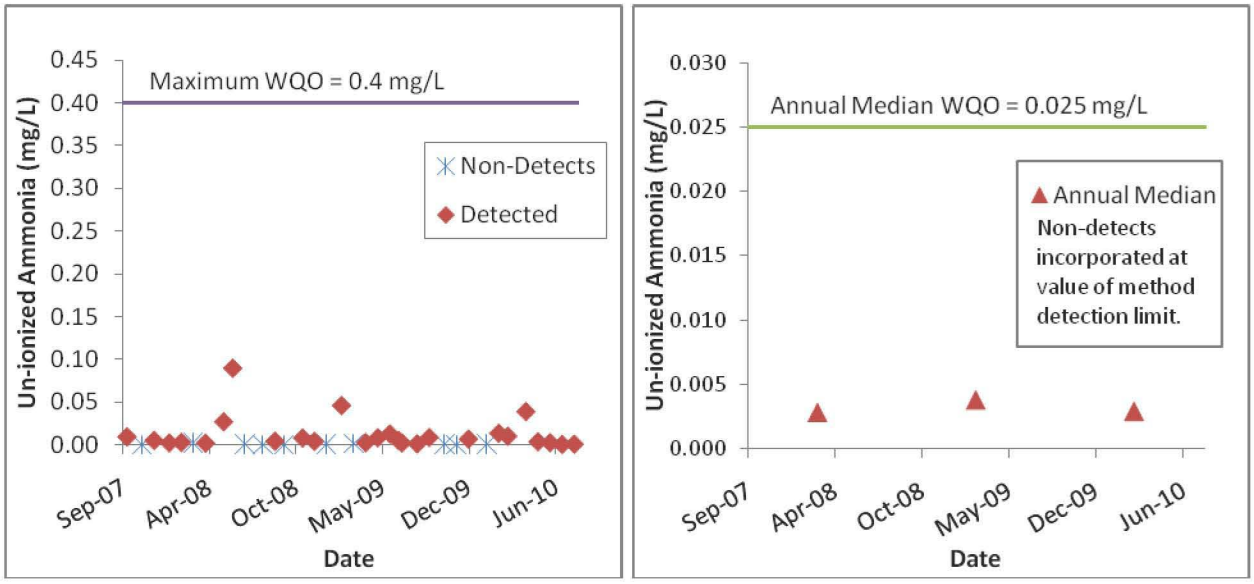

Figure 2. Un-ionized ammonia Concentrations Measured at E-3 (September 2007 – August 2010) Compared to Water Quality Objectives

The mixing zone corresponding to an overall dilution factor of 50, although larger than the mixing zone described in the TO, is still limited to an extremely small fraction of the San Francisco Bay. For this reason, the increase in size of the mixing zone is not expected to change the analysis of the conditions in State Implementation Plan (SIP) section 1.4.2.2.A and 1.4.2.2.B, as explained in section IV.D.4 in the Fact Sheet.

Given the uncertainties and timeframe related to identifying and controlling sources of ammonia, if effluent limits cannot be revised sufficiently to ensure compliance attainability, District staff request that a compliance schedule and performance-based interim limit be included in the permit. The Basin Plan allows for the option of including a compliance schedule when it will not be immediately feasible for the discharger to meet effluent limits based on a new water quality standard. This is the first time that the Basin Plan's un-ionized ammonia water quality objectives have been used to determine reasonable potential and calculate effluent limits for the Hayward Marsh and the first time they have been applied to the effluent from discharge points 2AE and 2BE. In the previous permit, the ammonia objectives were simply applied as receiving water limits with compliance determined at discharge point E-3, and full compliance was achieved. Further, a reasonable potential analysis based on these ammonia objectives conducted according to the methods described in US EPA's Technical Support Document for Water Quality-Based Toxics Control indicates that reasonable potential would not have been triggered if the objectives were to have been applied at the established location (E-3).

The District respectfully requests the following revisions to the TO to address the concerns described above:

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Table 7. Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations	
		Average Monthly Effluent Limit (AMEL)	Maximum Daily Effluent Limit (MDEL)
Copper [1]	µg/L	12	20
Cyanide	µg/L	6.7	15
Nickel [1]	µg/L	20	27
Total Ammonia	mg/L as Nitrogen	~~27~~49	~~66~~173

[1] Metals limitations are expressed as total recoverable metal.

(Page F-22)

- **Ammonia.** Based on an ~~statistical~~ analysis of ammonia effluent data collected from June 2006 through June 2011~~August 2010 (and averaging concentrations between Discharge Point Nos. 2AE and 2BE)~~, a dilution ratio of ~~20~~51:1 (D=~~19~~50) is sufficient for the Dischargers to comply with the resulting ammonia limits because the maximum concentration ~~95th percentile of the effluent data~~ (~~26~~48 mg/L) is less than the AMEL of ~~27~~49 mg/L ~~and the 99th percentile of the effluent data (30 mg./L) is less than the MDEL of 66173 mg/L (see section IV.C.4.b(4) of this Fact Sheet)~~. Based on ~~Figure 6~~dilution modeling conducted for the District in August 2011 as an extension of the Mixing Zone Study, a dilution of ~~20~~51:1 is achieved approximately ~~62~~93 meters from shore. ~~Therefore, this Order establishes an ammonia mixing zone extending about 62 meters from shore.~~ Actual ammonia concentrations measured at E-3 are in reality much lower than those that would be predicted based solely on this dilution of the effluent, and water quality objectives for ammonia are generally met just outside the Marsh itself, indicating that ammonia concentrations from Marsh effluent are not impacting the Bay.

(Page F-25)

(c) Ammonia WQBELs. Basin Plan section 4.5.5.2 indicates that WQBELs for toxic pollutants are to be calculated according to the SIP methodology. Basin Plan section 3.3.20 refers to ammonia as a toxic pollutant; therefore, it is consistent with the Basin Plan to use the SIP methodology to establish ammonia effluent limitations. WQBELs calculated according to SIP procedures with a CV of 0.~~89~~93 and a dilution ratio of ~~20~~51:1 (D=~~19~~50) are an AMEL of ~~27~~49 mg/L and an MDEL of ~~66~~173 mg/L.

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d. Effluent Limitation Calculations

The following table shows the WQBEL calculations for copper, nickel, cyanide, and ammonia. These WQBELs apply at Discharge Point Nos. 2AE and 2BE (average concentration between the two discharge points) because the effluent is discharged to the receiving water at these locations.

Table F-9. WQBEL Calculations

PRIORITY POLLUTANTS	Copper	Nickel	Cyanide	Total Ammonia (chronic)	Total Ammonia (acute)
Units	**ug/L**	**ug/L**	**ug/L**	**mg/L N**	**mg/L N**
Basis and Criteria type	Basin Plan Site Specific Objective	Basin Plan and CTR Saltwater Aquatic Life	Basin Plan Site Specific Objective	Basin Plan Aquatic Life	Basin Plan Aquatic Life
Criteria –Acute		74		-----	11.~~4~~
Criteria –Chronic		8.2		0.92	-----
Site Specific Objective Criteria -Acute	11	-----	9.4	-----	-----
Site Specific Objective Criteria -Chronic	6.9	-----	2.9	-----	-----
Water Effects ratio (WER)	1	1	1	1	1
Lowest Water Quality Objective	12	16	2.9	0.92	11
Site Specific Translator - MDEL	0.94	0.88	-----	-----	-----
Site Specific Translator - AMEL	0.60	0.53	-----	-----	-----
Dilution Factor (D) (if applicable)	1.5	0.5	2.25	~~19~~50	~~19~~50
No. of samples per month	4	4	4	~~4~~ 30	4
Aquatic life criteria analysis required? (Y/N)	Y	Y	Y	Y	Y
HH criteria analysis required? (Y/N)	N	N	N	N	N
Applicable Acute Water Quality Objective	12	84	9.4	-----	11
Applicable Chronic Water Quality Objective	12	16	2.9	0.92	
HH criteria	1,300	610	700	-----	-----
Background (Maximum Conc for Aquatic Life calc)	2.5	3.7	ND	0.095	0.19
Background (Average Conc for Human Health calc)	1.8	2.2	ND	-----	-----
Is the pollutant on the 303d list and/or bioaccumulative (Y/N)?	N	N	N	N	N
ECA acute	25	124	31		~~340~~ 571
ECA chronic	25	21	9.4	~~25~~ 42	
ECA HH					
No. of data points <10 or at least 80% of data reported	N	N	Y	N	N

non detect? (Y/N)					
Avg of effluent data points	6.4	11	1.7	~~13~~10	~~13~~10
Std Dev of effluent data points	4.0	2.4	0.85	~~11~~9.4	~~11~~9.4
CV calculated	0.62	0.21	N/A	0.~~89~~93	0.~~89~~93
CV (Selected) – Final	0.62	0.21	0.60	0.~~89~~93	0.~~89~~93
ECA acute mult99	0.31	0.63	0.32	-----	0.~~23~~22
ECA chronic mult99	0.52	0.78	0.53	0.~~90~~89	-----
LTA acute	7.8	77	9.8	-----	~~76~~124
LTA chronic	13	17	5.0	~~22~~38	-----
minimum of LTAs	7.8	17	5.0	~~22~~38	~~76~~124
AMEL mult95	1.6	1.2	1.6	~~1.8~~1.3	~~1.8~~1.9
MDEL mult99	3.2	1.6	3.1	~~4.4~~ 4.6	~~4.4~~ 4.6
AMEL (aq life)	12	20	7.7	~~41~~ 49	~~140~~233
MDEL(aq life)	25	27	16	~~98~~173	~~340~~571
MDEL/AMEL Multiplier	2.0	1.3	2.0	~~2.40~~3.5	~~2.40~~2.4
AMEL (human hlth)	-----	-----	-----	-----	-----
MDEL (human hlth)	-----	-----	-----	-----	-----
minimum of AMEL for Aq. life vs HH	12	20	7.7	~~41~~ 49	~~140~~233
minimum of MDEL for Aq. Life vs HH	25	27	16	~~98~~173	~~340~~571
Current limit in permit (30-day average)	12	14	6.7	-----	-----
Current limit in permit (daily)	20	22	15	-----	-----
Final limit – AMEL	12	20	6.7	~~27~~ 49	~~140~~233
Final limit – MDEL	20	27	15	~~66~~173	~~340~~571

3. The District requests that the fecal coliform effluent limits be revised for consistency with Basin Plan water quality objectives for REC-2.

During the current permit term and with Regional Water Board concurrence, the District invested significant resources in the development of a Use Attainability Analysis to clarify that the appropriate bacteria water quality objectives for the Marsh are those included in the Basin Plan Table 3-1 for the protection of the non-water contact recreation beneficial use (REC-2). These objectives are a monthly log mean of 2,000 MPN/100ml and a monthly 90th percentile of 4,000 MPN/100ml.

The TO includes proposed fecal coliform limits of a 5-day geometric mean of 500 MPN/100 ml and a 90th percentile of 1,100 MPN/100 ml. These limits are unnecessarily stringent and it is not

clear why they are being retained even though new information is available that was not available when these limits were established. Lower bacteria limits will result in more chlorine used for disinfection. Chlorine is a known toxic chemical both for the people handling it and for transportation risks. As a result, its use should be reduced whenever possible.

For these reasons, the District requests that the Regional Water Board make the following revisions to the TO and the Fact Sheet:

(Page 9)

2. **Effluent Fecal Coliform Bacteria Limitations at Monitoring Location E-1:** Treated wastewater shall meet the following limits for bacteriological quality:

   a. 5-~~day~~sample geometric mean fecal coliform density of 2,000~~500~~ MPN/100mL.

   b. 90th percentile value (determined as the second highest) of the most recent ten samples of 4,000~~1,100~~ MPN/100mL.

(Page F-28)

5. **Fecal Coliform Bacteria**

   This Order establishes ~~retains the~~ fecal coliform effluent limitations ~~from the previous Order~~ to protect non-contact recreation beneficial uses (REC2). These effluent limitations (5-~~day~~ sample geometric mean <~~500~~2,000 MPN/100ml; ten-sample 90th percentile <4,000~~1,100~~ MPN/100ml) are ~~more stringent then~~ equivalent to the fecal coliform water quality objectives for non-contact water recreation contained in Basin Plan Table 3-1. ~~(30-day mean <2,000 MPN/100ml; 30-day 90th percentile <4,000 MPN/100ml)~~. ~~Although the previous permit did not specify that the 90th percentile limit is based on the most recent ten samples, that is how 90th percentile values are calculated in the 1995 *Justification for Fecal Coliform Effluent Limitation* report, discussed below, that justifies fecal coliform limits instead of total coliform limits for EBDA and Hayward Marsh. This Order clarifies the 90th percentile limit.~~

   ~~The fecal coliform limits in this Order are based on California Department of Public Health (CDPH) recommendations. Basin Plan section 4.16, Water Recycling, encourages coordination between the State Water Board, Regional Water Boards, and CDPH in implementing water recycling, and states in section 4.16.2, Interagency Water Recycling Program and Coordination, "The Water Board seeks cooperation and participation of professionals from the water recycling industry and the water, health, and regulatory agencies to assure the development of criteria that are both attainable and appropriate." In 1990, CDPH (then the California Department of Health Services) recommended fecal coliform bacteria levels for Limited Water Contact Recreation (REC-2) of a geometric mean of 500 MPN/100 ml and a 90th percentile of 1,100 MPN/100 ml. A receiving water monitoring study the Dischargers conducted in 1994 and 1995 (*Justification for Fecal Coliform Effluent Limitation)* concluded that these fecal coliform limits would protect Hayward Marsh beneficial uses.~~ A ~~more~~ recent bacteriological monitoring study, required by Provision VI.C.14 of the previous Order, reported bacteria levels in San Francisco Bay near the Hayward Marsh discharge. The Dischargers implemented the study during the summer of 2008, sampling the receiving waters five times between July 25 and August

22 for total coliform, fecal coliform, and enterococci. On November 25, 2008, the Dischargers submitted the results, which indicate that all receiving water monitoring data collected in San Francisco Bay near Hayward Marsh were within applicable Basin Plan objectives for REC-2 for indicator bacteria.

(Page F-29)

E. Anti-backsliding and Antidegradation

As stated in Fact Sheet section III.C.5, Antidegradation, there will be no lowering of receiving water quality beyond the current level authorized in the previous Order; therefore findings justifying degradation are unnecessary. Similarly, as discussed in Fact Sheet section III.C.6, all effluent limitations in this Order are consistent with anti-backsliding requirements. In most cases, this Order retains effluent limitations from the previous Order, imposes more stringent limitations, or imposes new limitations.

In a few instances (regarding mercury, 4,4'-DDD, heptachlor, and heptachlor epoxide), this Order removes effluent limitations that were in the previous Order. It does not retain the mercury effluent limitations because Hayward Marsh mercury discharges are now regulated through Order No. R2-2007-0077, which implements the San Francisco Bay Mercury and PCB TMDLs. As for the 4,4'-DDD, heptachlor, and heptachlor epoxide effluent limitations, because the RPA showed no Reasonable Potential for these pollutants to cause or contribute to exceedances of water quality criteria, this Order does not retain the limitations. This is consistent with the anti-backsliding provisions of State Water Resources Control Board Order WQ 2001-16. This is also consistent with antidegradation requirements of 40 CFR 131.12 because degradation is not expected since more recent representative data show that these pollutants are not present in the discharge.

This Order contains less stringent fecal coliform effluent limitations than those in the previous Order. These limits are not subject to the prohibition contained in Clean Water Act Section 402(o) against establishment of less stringent limitations (antibacksliding) because new information is available that was not available when the more stringent limitations were developed. The previous Order included fecal coliform limits of a geometric mean of 500 MPN/100 ml and a 90th percentile of 1,100 MPN/100 ml. These limits were based on a receiving water monitoring study the Dischargers conducted in 1994 and 1995 (*Justification for Fecal Coliform Effluent Limitation)*. As indicated in this study, these limits were intended to protect limited water contact recreation beneficial uses in the vicinity of the EBDA outfall. More recently, a Use Attainability Analysis was developed to clarify that REC-2 is the limiting beneficial use related to bacteria water quality objectives in Basins 3A and 3B, and REC-2 waters are sufficiently protected by the applicable fecal coliform objectives in Basin Plan Table 3-1: a monthly log mean of 2,000 MPN/100ml and a monthly 90th percentile of 4,000 MPN/100ml. In addition, the Water Board desires to reduce the use of chlorine for disinfection when it is safe to do so and consistent with the protection of public health.

If the previous limits must be retained, the District requests that their definitions be revised as follows:

(Page 9)

2. **Effluent Fecal Coliform Bacteria Limitations at Monitoring Location E-1:** Treated wastewater shall meet the following limits for bacteriological quality:
   a. 5-~~day~~sample geometric mean fecal coliform density of 500 MPN/100mL.
   b. 90th percentile value (determined as the second highest) of the most recent ten samples of 1,100 MPN/100mL.

4. The District requests that the Regional Water Board revise the Surface Receiving Water Limitations section to be consistent with the goals of Hayward Marsh.

Hayward Marsh was designed and constructed to use reclaimed wastewater for the purposes of providing brackish marsh habitat. Since its inception, the District has seen a plethora of flora and fauna make their homes in the wetland, particularly bird species. The Marsh continues to be operated to support these wildlife species and to protect their nesting sites.

However, the natural conditions supported in marsh habitats can vary greatly from that of open water bodies such as the San Francisco Bay. While anaerobic conditions often prevail in wetland ecosystems, they are rare in larger water bodies[2]. Influences of the biota, sediment chemistry, and minimal wave action often have a much greater impact on wetlands due to the smaller water volume that naturally exists. These influences can have significant impact on pH and dissolved oxygen, which in turn influence other parameters such as sulfide and ammonia. As a result, water quality objectives for these parameters that are applicable to the Bay are not appropriate for the Marsh.

In addition, applying these receiving water limits to Basins 3A and 3B is somewhat illogical. For example, the pH limits are based on deviations from "normal ambient levels." It is not clear how normal ambient levels would be defined as anything other than any of those values obtained through regular monitoring, as the Marsh is functioning as designed and constructed, and those Basins would not exist in their current state without the discharge. How would compliance with these limits be determined?

While the birds that make their home in Hayward Marsh greatly benefit from the habitat, it may not be possible for the operators to maintain both natural wetland conditions and ensure that the proposed numeric receiving water limitations are met in Basins 3A and 3B. The current NPDES permit, Order No. R2-2006-0031, indicates that compliance with the numeric receiving water objectives limits is to be measured at E-3. Moving the compliance points for these numeric limits to 3A and 3B is both contrary to the goals of the Marsh and threatens the District with the possibility of having to contest unfair and illogical allegations of permit violations in the future.

As indicated in Chapter 3 of the Basin Plan, the water quality objectives on which the proposed receiving water limitations are based were established to support the overall goal of water quality regulation, which is to protect and maintain thriving aquatic ecosystems. Because the Hayward Marsh was designed and continues to be successfully operated to create and maintain a thriving

[2] Mitsch, W.J. and J.G. Gosselink. (2007). *Wetlands (4th ed.).* Hoboken, NJ: John Wiley & Sons, Inc.

marsh habitat, this goal is already achieved, without the need for implementing these receiving water limitations in Basins 3A and 3B.

The District understands that, although Hayward Marsh is already protecting and maintaining a thriving aquatic ecosystem, it is expected that receiving water limitations will be included in the NPDES permit. Unfortunately, because of the unique nature of wetlands, these limitations do not necessarily coincide with the goal of supporting this brackish marsh habitat. Therefore, the District suggests that these objectives either be removed entirely, or be consistent with the existing permit in which they are applied to monitoring location E-3 instead of 3A and 3B.

The District requests that the following changes be made to the TO:

(Pages 9 and 10)

A. Hayward Marsh Receiving Water Basins 3A and 3B

1. ~~The discharge of waste shall not cause the following limits to be exceeded in Hayward Marsh Receiving Water Basins 3A and 3B within one foot of the water surface (as measured at Monitoring Locations C-3A and C-3B)~~

~~a. Dissolved Oxygen~~	~~5.0 mg/L, minimum~~ ~~The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.~~
~~b. Dissolved Sulfide~~	~~The maximum dissolved sulfide concentration in the receiving water shall not exceed 0.1 mg/L.~~
~~c. pH~~	~~The discharge shall not cause changes greater than 0.5 pH unites in normal ambient pH levels.~~
~~d. Nutrients~~	~~Wasters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.~~

~~2. Additionally, the~~ The Dischargers shall provide sufficient circulation through the marsh to maintain the following conditions:

~~a.~~ 1. No visible floating, suspended, or deposited oil or other products of petroleum origin;

~~b.~~ 2. No floating, suspended, or deposited macroscopic particulate matters or foam of sewage origin;

~~c.~~ 3. No bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

~~d.~~ 4. No toxic or other deleterious substances to be present in concentrations or quantities that cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or render any of these unfit for human consumption, either at levels created in the receiving waters or as a result or biological concentration; and

~~e.~~ 5. Alteration of temperature, turbidity, or apparent color beyond present natural background levels.

San Francisco Bay

The discharge of waste shall not cause the following limits to be exceeded in Lower San Francisco Bay within one foot of the water surface (as measured at Monitoring Location E-3)

1. Dissolved Oxygen	5.0 mg/L, minimum The median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, the discharge shall not cause further reduction in ambient dissolved oxygen concentrations.
2. Dissolved Sulfide	The maximum dissolved sulfide concentration in the receiving water shall not exceed 0.1 mg/L.
3. pH	The discharge shall not cause changes greater than 0.5 pH units in normal ambient pH levels.
4. Nutrients	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

5. The District requests that the Effluent Characterization Study and Report requirements be edited for clarity and consistency with associated monitoring requirements.

The District requests that the routine and annual reporting requirements be removed from the following section. These requirements are not applicable because the associated monitoring is to be conducted once within 12 months of the due date for application for reissuance. Several additional revisions are requested for clarity.

(Pages 11 and 12)

2. Special Studies and Additional Monitoring Requirements

a. Effluent Characterization Study and Report—Discharge Points 2AE and 2BE

(1) Study Elements

The Dischargers shall continue to characterize and evaluate discharge from the following discharge points to verify that the "no" or "cannot determine" reasonable potential analysis conclusions of this Order remain valid and to inform the next permit reissuance. The Discharger shall collect representative samples of the discharges as set forth below, with locations as defined in the MRP (Attachment E):

Discharge Point	Monitoring Station	Frequency
2AE	C-2AE	1/5 years within 12 months of the due date for application for reissuance
2BE	C-2BE	1/5 years within 12 months of the due date for application for reissuance

The samples shall be analyzed for the priority pollutants listed in Table C of the Regional Standard Provisions (Attachment G), except for those priority pollutants with effluent limitations where the MRP already requires monitoring. Compliance with this requirement shall be achieved in accordance with the specifications of Regional Standard Provisions (Attachment G) sections III.A.1 and III.A.2.

The Dischargers shall evaluate ~~on an annual basis~~ if concentrations of any of these priority ~~pollutant~~ pollutants have significantly increased ~~increase~~ over past performance. The Dischargers shall investigate the cause of ~~any~~ such increase. The investigation may include, but need not be limited to, an increase in monitoring frequency, monitoring of internal process streams, and monitoring of influent sources. This requirement may be satisfied through identification of the constituent as a "pollutant of concern" in the Dischargers' Pollutant Minimization Program, described in Provision VI.C.3.

(2) Reporting Requirements

~~(a) Routine Reporting~~

~~The Dischargers shall, within 30 days of receipt of analytical results, report in the transmittal letter for the appropriate monthly self-monitoring report the following:~~

~~i. Indication that a sample or samples for this characterization study was or were collected; and~~

~~ii.. Identity of any and all priority pollutants detected above or within one order of magnitude of their applicable water quality criteria (see Fact Sheet [Attachment F] Table F-8, Reasonable Potential Analysis Summary for the criteria), together with the detected concentrations of those pollutants.~~

~~(b) Annual Reporting~~

~~The Dischargers shall provide a summary of the annual data evaluation and source investigation in the annual self-monitoring report.~~

(a~~c~~)Final Report

The Dischargers shall submit a final report that presents the priority pollutant data collected as part of this study ~~all these data~~ to the Regional Water Board no later than 180 days prior to the Order expiration date. The final report shall be submitted with the application for permit reissuance.

(Page F-33)

a. Effluent Characterization Study. This Order does not include effluent limitations for priority pollutants that do not demonstrate Reasonable Potential, but this provision requires the Dischargers to continue monitoring for these pollutants as described in the Regional Standard Provisions (Attachment G) and as specified in the MRP (Attachment E). If concentrations of these constituents increase significantly, the Dischargers are required to investigate the source of the increases ~~and establish remedial measures if the increases result in Reasonable Potential to cause or contribute to an excursion above the applicable water quality objectives~~. This requirement may be satisfied through identification of the constituent as a "pollutant of concern" in the Discharger's Pollutant Minimization Program. This provision is based on SIP sections 2.3 (Monitoring Requirements) and 2.4 (Reporting Requirements).

6. The District requests that monitoring frequencies for copper, nickel and cyanide be retained from the current permit.

The District requests that the Regional Water Board retain quarterly monitoring of copper, nickel, and cyanide, consistent with the current permit. The District has been monitoring for these pollutants consistently over several permit terms, and, given that there were no exceedances of limits for these constituents in the last permit term, District staff believes that continuing this monitoring quarterly will provide sufficient data to adequately characterize water quality and identify trends. Increasing the monitoring threefold for three constituents would significantly raise monitoring costs.

(Page E-5)

Table E-5. Treatment Basins 2A and 2B Effluent Monitoring – Monitoring Locations C-2AE and C-2BE

Parameter	Units	Sample Type(1)	Minimum Sampling Frequency
pH	s.u.	G	1/Month

Parameter	Units	Sample Type[1]	Minimum Sampling Frequency
Total Ammonia (as N)	mg/L	G	1/Month
Nitrate Nitrogen	mg/L	G	1/Month
Salinity	ppt	G	1/Month
Chromium (VI), Total Recoverable	µg/L	C-24	1/5 Years
Copper, Total Recoverable	µg/L	C-24	1/~~Month~~ Quarter
Nickel, Total Recoverable	µg/L	C-24	1/~~Month~~ Quarter
Cyanide, Total Recoverable	µg/L	C-24	1/~~Month~~ Quarter

Footnotes to Table E-5:
Units:
s.u. = standard units
mg/L = milligrams per liter
ppt = parts per thousand
G = Grab
C-24 = 24-hour Composite

(1) Grab samples shall be collected coincident with composite samples collected for the analysis of regulated parameters.

7. The District requests that monitoring requirements at locations CR and CR-B be retained from the current permit.

The District requests that the Regional Water Board remove nitrate nitrogen, total phosphorus, temperature, salinity, ammonia, copper, cyanide, nickel, and standard observations requirements from Table E-9 as consistent with the current permit. It is not clear why these parameters have been added, and the Fact Sheet does not explain why these additions are necessary. Increasing the receiving water monitoring requirements from three constituents to twelve constituents on a monthly basis would significantly increase the District's monitoring costs. The District also contributes to the Regional Monitoring Program, which ensures that these additional parameters are monitored regularly throughout the Bay.

(Pages E-7 and E-8)

Table E-9. Lower San Francisco Bay Monitoring – Monitoring Locations CR and C-R-B

Parameter	Units	Sample Type[1]	Minimum Sampling Frequency
Dissolved Oxygen	mg/L	G	1/Month
	% Saturation	G	1/Month
Sulfides[2]	mg/L	G	1/Month
pH	s.u.	G	1/Month
~~Nitrate Nitrogen~~	~~mg/L~~	~~G~~	~~1/Month~~
~~Temperature~~	~~°C~~	~~G~~	~~1/Month~~
~~Salinity~~	~~ppt~~	~~G~~	~~1/Month~~
~~Ammonia~~	~~mg/L~~	~~G~~	~~1/Month~~
~~Copper~~	~~ug/L~~	~~G~~	~~1/Month~~
~~Cyanide~~	~~ug/L~~	~~G~~	~~1/Month~~

Parameter	Units	Sample Type[1]	Minimum Sampling Frequency
~~Nickel~~	~~ug/L~~	~~G~~	~~1/Month~~
~~Standard Observations~~	~~—~~	~~—~~	~~1/Week~~

Footnotes to Table E-8:

Units:

mg/L = milligrams per liter
s.u. = standard units
G = Grab

(1) Grab samples shall be collected coincident with composite samples collected for the analysis of regulated parameters.

(2) Sulfides shall be monitored only when dissolved oxygen is <5 mg/L.

Comments 8 - 13 pertain to editorial corrections requested for clarity, consistency, and accuracy.

8. Revisions to Page 3 – Receiving Water Basins

The District requests that the phrase "to Hayward Marsh receiving water basins" be removed because the Plant only discharges directly to the Treatment Basins 1, 2A, and 2B, from which flow is then directed into the brackish water Basins 3A and 3B. The current language seems to incorrectly indicate that reclaimed wastewater from the Plant is discharged directly into Basins 3A and 3B. Additionally, the District requests that the word "all" is removed from the third sentence in the facility description because not all facilities are regulated under said permit.

(Page 3)

A. Background. The East Bay Dischargers Authority (EBDA), Union Sanitary District (the District), and East Bay Regional Park District (EBRPD) (hereinafter collectively the Dischargers) are currently discharging under Order No. R2-2006-0031 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0038636, as amended by Order R2-2010-0056, which implements copper and cyanide site-specific objectives. The Dischargers submitted a Report of Waste Discharge, dated November 10, 2010, and applied for an NPDES permit reissuance to discharge reclaimed wastewater from the Alvarado Wastewater Treatment Plant (Plant) and Hayward Marsh treatment basins ~~to Hayward Marsh receiving water basins~~. The discharge is also currently regulated under Regional Water Board Order No. R2-2007-0077 (NPDES Permit CA0038849), as amended, which supersedes all requirements on mercury and PCBs from wastewater discharges in the region. This Order does not affect the mercury and PCBs permit. 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 Dischargers herein.

B. Facility and Discharge Description

1. **Facility Description.** Union Sanitary District owns and operates the Alvarado Wastewater Treatment Plant (Plant) in Union City. The Plant provides secondary treatment of domestic, industrial, and commercial wastewaters. Most of its treated effluent is transported to an EBDA deepwater outfall where it mixes with treated

effluent from other EBDA agencies. That discharge and ~~all~~ associated facilities are regulated under NPDES Permit No. CA0037869 (currently in Order No. R2-2006-0053).

9. Revisions to Pages 4, 5, and F-7 – Rare and Endangered Species

The Preservation of Rare and Endangered Species (RARE) beneficial use in the Basin Plan was established to "support habitats necessary for the survival and successful maintenance of plant or animal species established under state/or federal law as rare, threatened, or endangered." The District requests that the descriptions of species protected by this beneficial use be revised for accuracy, as follows:

(Page 4)

Hayward Marsh is operated to enhance the beneficial uses of reclaimed wastewater, to derive net environmental benefits, and as a research site to better understand development and management of a marsh using reclaimed wastewater. The marsh supports a great density of wintering waterfowl and is an important migratory stopover for shorebirds each spring and fall. It is also a refuge for nesting shorebirds and waterfowl, including the Forster's tern, Caspian tern, black skimmer, the federally threatened ~~Western~~ western snowy plover, and the California least tern, a federal and State endangered species.

(Page 5)

On [Insert Date], the Regional Water Board adopted a Basin Plan amendment, Resolution No. RB2-2011-XXXX, "Resolution for Beneficial Uses of Hayward Marsh," that clarifies the beneficial uses of Hayward Marsh. When approved by the State Water Board, the Office of Administrative Law, and USEPA, the Basin Plan amendment will remove the water contact recreation beneficial use designation from Hayward Marsh and add the preservation of rare and endangered species beneficial use (~~rare and endangered~~ species protected under this beneficial use that can be found on Hayward Marsh include ~~Western~~ western snowy plover and California least tern).

(Page F-7)

On [Insert Date], the Regional Water Board adopted a Basin Plan amendment, "Resolution for Beneficial Uses of Hayward Marsh," that clarifies the beneficial uses of Hayward Marsh. When approved by the State Water Board, the Office of Administrative Law, and USEPA, the Basin Plan amendment will remove the water contact recreation beneficial use designation from Hayward Marsh and add the preservation of rare and endangered species beneficial use (~~rare and endangered~~ species protected under this beneficial use that can be found on Hayward Marsh include ~~Forster's tern, Caspian tern, black skimmers~~, ~~Western~~ western snowy plover~~,~~ and California least tern).

10. Revision to Page 15 - Pollutant Minimization Program Submittals for Pollutants with Effluent Limitations

The District requests that the language regarding appropriate cost-effective control measures be revised as shown below, following from the previous required step in the process and consistent with the 2006 permit.

(Page 15)

(4) ~~Implementation~~ Development of appropriate cost-effective control measures for the reporting of priority pollutants, consistent with the control strategy; and

11. Revisions to Page E-7 – Monitoring Location E-3 Requirements

The District requests that the Regional Water Board add the phrase "all applicable" to the standards observation requirement for consistency with Tables E-2, E-3, and E-4 in the TO.

(Page E-7)

Table E-8. Discharge from Earthen Discharge Channel to Lower San Francisco Bay Monitoring – Monitoring Location E-3

Parameter	Units	Sample Type[1]	Minimum Sampling Frequency
Dissolved Oxygen	mg/L	G	1/Month
	% Saturation		
Sulfides[2]	mg/L	G	1/Month
pH	s.u.	G	1/Month
Total Ammonia (as N)	mg/L	G	1/Month
Nitrate Nitrogen	mg/L	G	1/Month
Temperature	°C	G	1/Month
Salinity	ppt	G	1/Month
All Applicable Standard Observations	--	--	1/Week

Footnotes to Table E-7:

Units:

mg/L = milligrams per liter
s.u. = standard units
°C = Degrees Celsius
ppt = parts per thousand
G = Grab

(1) Grab samples shall be collected coincident with composite samples collected for the analysis of regulated parameters.

(2) Sulfides shall be monitored only when dissolved oxygen is <5 mg/L.

12. Revisions to Page F-10 – Environmental Benefits

The District would like to provide some suggested revisions to Fact Sheet Section IV.B. *Shallow Water Discharge and Basin Plan Discharge Prohibition 1* to ensure that the information is accurate and up-to-date. These revisions are shown below.

(Page F-10)

2. The marsh is a refuge for nesting shorebirds and waterfowl, and provides important nesting habitat for over 25 species of birds with active nests. This represents a

substantial regional nesting population for waterfowl and shorebirds and at one time ~~also~~ represented~~s~~ one of the largest colonies of nesting snowy egrets and black-crowned night herons in Lower San Francisco Bay.

3. Several bird species of special interest, including the Forster's tern, Caspian tern, black skimmers and the federally threatened Western snowy plover, nest within the marsh.

4. The California least tern, a federal and state endangered species, has nested successfully on an island within the marsh complex since ~~in~~ 1990. To support the California least tern, tern habitat was enhanced within the marsh with over 15,000 square feet of new nesting habitat being created. The habitat area was created with the assistance of more than 3,200 ~~2,000~~ volunteers who donated over 13,500 ~~6,000~~ hours of volunteer service. During the 2010 nesting season there were 53 nests, which produced 91 chicks and approximately 75 fledglings. ~~spring of 2005, eight pairs of California least terns attempted to nest on the enhanced nesting area and several more pairs were observed prospecting for nest sites.~~ Establishing a viable California least tern colony is of regional significance because there is only one other nesting colony within San Francisco Bay.

13. Revisions to Page F-16 – BACWA

The District requests that the Regional Water Board remove "several" and add "municipal wastewater" to clarify the discussion about the Bay Area Clean Water Agencies as indicated below.

(Page F-16)

The RMP does not monitor for all the constituents listed in the CTR. On May 15, 2003, a group of ~~several~~ San Francisco Bay Region municipal wastewater dischargers known as the Bay Area Clean Water Agencies submitted a collaborative receiving water study entitled, *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 and includes the Yerba Buena RMP station. The BACWA report, *Ambient Water Monitoring: Final CTR Sampling Update* report, dated June 15, 2004, provides additional data.