EBDA

EAST BAY DISCHARGERS AUTHORITY
2651 Grant Avenue
San Lorenzo, CA 94580-1841
(510) 278-5910
FAX (510) 278-6547

A Joint Powers Public Agency

July 12, 2006 **Via Email and Certified Mail**

Mr. Bruce Wolfe, Executive Officer
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Attn: Lila Tang and Tong Yin

**Comments on Tentative Order R2-2006-XXXX, NPDES Permit No. CA0037869, Reissuing the NPDES Permit for East Bay Dischargers Authority**

Dear Mr. Wolfe:

The Authority and its member agencies appreciate the opportunity to comment on the Tentative Order (T.O.) reissuing the above referenced NPDES permit. The Authority's formal comments and recommended modifications to the T.O. are attached. We have extracted specific sections from the T.O. and the Authority's recommended changes are shown in redline/strikeout mode. The comments include two attachments that are being submitted as supporting documentation for two of the recommended changes.

Thank you for consideration of these comments. Please feel free to contact me if you have any questions.

Sincerely,

Charles V. Weir
General Manager

Attachment

c: EBDA, LAVWMA, and Zone 7 Member Agency Managers
Monica Oakley, Oakley Water Strategies
Robert Whitley, Whitley Burchett
Tom Hall, EOA
Michele Plá, BACWA
Melissa Thorme, Downey Brand

C:\My Documents\Word Docs\Regulatory Issues\NPDES Permit 2006\Formal_Comments_June7_TO_07-12-06.doc

# EAST BAY DISCHARGERS AUTHORITY
# 2006 NPDES PERMIT RENEWAL

**Formal Comments on Tentative Order**
July 12, 2006

Comments by the East Bay Dischargers Authority on its tentative order NPDES permit are shown below, roughly in the order they appear in the permit:

## 1. "MINOR EDITS" SUBMITTED ON JUNE 26, 2006 VIA EMAIL

EBDA requests consideration of the minor edits that were submitted in a redline/strikeout version of the June 7 draft. A summary of the edits includes the following:

a. Minor formatting and grammatical changes to the Table of Contents
b. Corrected miscellaneous typos in the document
c. Table 1 – corrected EBDA and error in 2004 ADWF totals (see also Table F-2)
d. Made all references to the Attachments **bold**
e. Corrected all references to E-1 to M-001
f. Spelled out CBOD and TSS at first use under II.M and deleted reference to CTR in same section (also in Fact Sheet III.C.5)
g. Added (MRP) at first use in II.P
h. Corrected LAVWMA agency compliance with coliform limit in first paragraph of Section IV (comment No. 1)
i. Corrected ug/l and ug/L to µg/L in several places
j. Corrected ML for mercury to 0.0005 µg/L in several places. The MDL is 0.0002 (comment No. 2)
k. Added "Federal" before Standard Provisions in VI.A.1
l. Added "as applicable" to VI.C.1 (comment No. 3)
m. Suggested changes to VI.C.3 (comment Nos. 4 & 5) Also see below.
n. Corrected "Combined" to "EBDA Common" Outfall in List of Tables to Attachment E
o. Corrected "Quality" to "Resources" in Attachment E.1.B
p. Standardized use of "biosolids" and deleted extra lines in Table E-2 (comment No. 6)
q. Added a footnote to clarify mg (million gallons) from mg/L (milligrams) and standardized lower case for mg and mgd in Tables E-3 and E-4 (comment No. 7)
r. Italicized *Ceriodaphnia dubia* in B.1.d
s. Biosolids and minor typo in VII.A and B
t. Deleted old references to SMP in VIII and corrected "l" to "L"
u. Changed BOD to CBOD in several places for consistency
v. Corrected section reference in X.C
w. Changed "quipped" to "equipped" in F.II.A.3 and F.II.F.2
x. Changed "Available" to "Achievable" in II.B.2
y. Added "organic" to II.D and changed "toxic" to "priority" in several places (comment No. 11)
z. Changed "our" to "its" under USD Section
aa. Technical changes to mercury discussion in IV.A.3 (comment Nos. 8-10)

bb. Added “receiving water” for clarification in IV.C.4
cc. Corrected reference to “wells” under Zone 7 discussion
dd. Changed “some” to “most” under PRA discussion (just before Table F-10)
ee. Added alternate copper limits to Table F-11 (comment No. 12)
ff. Deleted “epoxide” in Heptachlor discussion in IV.C.5.e.6
gg. Added pH to discussion in IV.C.6.c
hh. Corrected wording in IV.C.7.d
ii. Corrected “performance-based” in mercury mass limit discussion in IV.C.8
jj. Corrected reference in IV.C.9.a.iv
kk. Corrected references in V
ll. Corrected reference in VII.A
mm. Added “and its member agencies” to VII.A
nn. (not included in emailed version but noted later) Replace “Brine” with “Reject” in II.F.4 (page F-15)

## 2. THE PERMITTED FLOW IS FOR AVERAGE DRY WEATHER DESIGN FLOW, NOT WET WEATHER FLOW

EBDA believes it is inappropriate to indicate a “permitted” wet weather flow for the EBDA discharge. This misuse of standard terminology in the wastewater industry results in effectively creating a disincentive for maximizing flow during rainfall events through publicly-owned treatment works (POTWs), and is more stringent than federal law. To date, the term “permitted flow” has been used for Average Dry Weather Design Flow (ADWF), the capacity the treatment plant is designed for during dry weather. The actual flow, which is used for compliance purposes, is measured during three consecutive dry weather months. There is no language in the Prohibitions Section of the Tentative Order to support an approach that would limit wet weather flows. The language should be revised in three sections as follows:

(page 2)
**Footnote (7) to Table 1:**

(7) Wet Weather Flow (WWF); sum does not equal parts due to LAVWMA flow. The maximum LAVWMA flow to the EBDA system, under an EBDA/LAVWMA agreement, is 41.2 mgd, including Zone 7 groundwater reverse osmosis reject flow, if capacity is available. During peak EBDA WWF only 19.72 mgd capacity is available to LAVWMA in the EBDA system. If EBDA system capacity is not available due to peak WWF, LAVWMA is authorized to discharge up to 21.5 mgd of its peak WWF to San Lorenzo Creek by a separate Regional Water Board ~~o~~Order (Order No. R2-2006-0026). Under the industrial pretreatment permit that will be issued by DSRSD, Zone 7 groundwater reverse osmosis reject water is interruptable flow. The pretreatment permit will provide that at times of peak WWF, discharge from Zone 7 to DSRSD will be suspended ~~so as to not cause or contribute to any exceedance of EBDA’s peak WWF limitation, or to any discharge under Order No. R2-2006-0026~~.

(page 3)

## II. FINDINGS

### A. Background *(Third paragraph)*

EBDA, its member agencies, and LAVWMA, are hereinafter collectively referred to as Discharger. The Discharger submitted a Report of Waste Discharge, dated February 17, 2005, and applied for an NPDES permit renewal to discharge up to ~~189.1~~119.1 mgd of ~~treated wastewater~~average dry weather design flow from the EBDA outfall, hereinafter Facility. The application was deemed complete on August 18, 2005, pursuant to a Regional Water Board letter extending the requirements of Order No. 00-087 until the permit is renewed.

(page F-3)

| | |
|---|---|
| **Facility Permitted Flow** | ~~189.1 mgd (Peak wet weather flow capacity)~~<br>100.7 mgd (average dry weather flow).<br>Proposed 119.1 mgd (future average dry weather flow) subject to completion of studies demonstrating reliability and capacity of improvements to Individual Treatment Plants to be completed around 2008 to 2030. |
| **Facility Design Flow** | 100.7 mgd (current average dry weather flow).<br>~~Proposed~~ 119.1 mgd (future average dry weather flow) ~~subject to completion of studies demonstrating reliability and capacity of improvements to Individual Treatment Plants to be completed around 2008 to 2030.~~<br>189.1 mgd (contractual wet weather flow) |
| **Watershed** | San Francisco Bay |
| **Receiving Water** | Lower San Francisco Bay |
| **Receiving Water Type** | Enclosed Bay, Marine |

(page F-8)

**Footnote (8) to Table F-2:**

(8) Wet Weather Flow (WWF); sum does not equal parts due to LAVWMA flow. The maximum LAVWMA flow to the EBDA system, under an EBDA/LAVWMA agreement, is 41.2 mgd, including Zone 7 RO reject flow, if capacity is available. During peak EBDA WWF only 19.72 mgd capacity is available to LAVWMA in the EBDA system. If EBDA system capacity is not available due to peak WWF, LAVWMA is authorized to discharge up to 21.5 mgd of its peak WWF to San Lorenzo Creek by a separate Regional Water Board ~~o~~Order (R2-2006-0026). Under the industrial pretreatment permit that will be issued by DSRSD, Zone 7 groundwater reverse osmosis reject water is interruptible flow. The pretreatment permit provides that at times of peak WWF, discharge of Zone 7 groundwater reverse osmosis reject water to DSRSD will be ~~interrupted (i.e., suspended) so as to not cause or contribute to any exceedance of EBDA's peak WWF flow rate cap, or to any discharge under Order No. R2-2006-0026~~.

## 3. IT IS UNREASONABLE TO REQUEST PERMITTEES TO CONDUCT A REASONABLE POTENTIAL ANALYSIS EVERY YEAR

The effluent characterization language in Provision C.2.a. indicates that the permittee must conduct a reasonable potential analysis every year. This is unreasonable because conducting a reasonable potential analysis requires specialized expertise and detailed knowledge of the ever-changing regulatory climate, including continually changing interpretations of various regulations within Region 2 and throughout the state. It is difficult enough to prepare a reasonable potential analysis at each permit renewal. Moreover, municipal wastewater treatment plants have fairly predictable performance; the constituents which are found to have reasonable potential are fairly consistent among plants, as well as from permit renewal to permit renewal. This overly burdensome requirement should be removed from the permit as follows (page 18):

**VI. PROVISIONS**

**C. Special Provisions**

**2. Special Studies, Technical Reports and Additional Monitoring Requirements**

**a. Effluent Characterization for Selected Constituents**

The Discharger shall continue to monitor and evaluate the discharge from Outfall 001 (measured at M-001) for the constituents listed in Enclosure A of the Regional Water Board's August 6, 2001 Letter, according to the sampling frequency specified in the attached MRP **(Attachment E)**. Compliance with this requirement shall be achieved in accordance with the specifications stated in the Regional Water Board's August 6, 2001 Letter under Effluent Monitoring for Major Discharger.

The Discharger shall evaluate~~ion~~ on an annual basis if concentrations of any constituent increase over past performance. ~~Furthermore, if that increase would result in reasonable potential to cause or contribute to an excursion above applicable WQO/WQC for constituents without effluent limitations in this Order, t~~The Discharger shall investigate the ~~source~~ cause of the increase, which may include but is not limited to an increase in the effluent monitoring frequency, monitoring of internal process streams, and monitoring of influent sources. This may be satisfied through identification of these constituents as "Pollutants of Concern" in the Discharger's Pollutant Minimization Program described in **Provision C.3.b**, below. A summary of the annual evaluation of data, and source investigation activities shall also be reported in the annual self-monitoring report.

A final report that presents all the data shall be submitted to the Regional Water Board no later than 180 days prior to the Order expiration date. This final report shall be submitted with the application for permit reissuance.

## 4. SIGNIFICANT CHANGES TO THE POLLUTION PREVENTION LANGUAGE FROM PREVIOUS PERMITS NEED TO BETTER REFLECT ACTUAL CONDITIONS, AND BE REVISED BACK TO PREVIOUSLY AGREED-UPON LANGUAGE

Several text changes for the pollution prevention program were made for the first time in the EBDA permit, contrary to previous agreements with permittees. Additionally, the submittal date options for annual Pollutant Minimization Program reports need to be the same as the existing permit to accommodate workload issues for the EBDA member agencies. As an example, if the option of August 30th is eliminated, then three significant reports will be required within a one month period (Semiannual Pretreatment, Annual Pretreatment, and Pollutant Minimization Program) and only one in August. The current permit allows for two reports due in each semiannual period (Semiannual Pretreatment and Annual Pretreatment due in January and February, respectively; Semiannual Pretreatment and Pollutant Minimization Program due in July and August, respectively) which allows for better agency efficiency. Changing this balance would not be a good use of public agency resources.

We have concerns with the specific requirement for two EBDA agencies regarding copper and request that that language be deleted. Hayward is spending $55 million to upgrade its treatment plant. Oro Loma/Castro Valley is spending $35 million to upgrade their treatment plant. We have analyzed influent and effluent copper data for all four EBDA plants from 2001 to date, **Attachment No. 1**. In the analysis all non-detect data was assumed to be at the method detection limit (MDL) and all detected but not quantified data (E flagged) was reported as measured. Thus, actual concentrations would have been lower than the analysis shows and percent removals would have been higher. The analysis shows the following:

- Influent data for Hayward and Oro Loma/Castro Valley (and indeed all four plants) has been decreasing since 2003 indicating pollutant minimization and pretreatment programs are effective and no additional requirements are warranted.
- While Hayward's pre-2006 effluent data are slightly higher that the other three plants and the removal efficiency for Hayward and Oro Loma/Castro Valley are slightly lower than the other two plants, this is more a function of treatment efficiency, rather than pollutant minimization program effectiveness.
- Effluent data from all four plants on a monthly (one sample per month) and annual basis are well below the proposed and alternate effluent limits for copper. The data are remarkably consistent and clearly indicate that there is no risk that effluent copper concentrations have the potential to increase and have an impact on Bay water quality.

Therefore it is inappropriate to specifically require two EBDA agencies to do anything other than what they are already doing. As noted above the two agencies in question are spending a total of $90 million to upgrade their treatment processes. It is well known that effluent copper concentration is a function of treatment plant efficiency, particularly total suspended solids removal. Once these two projects are completed and fully operational, we have every expectation that treatment efficiency will increase and effluent copper concentrations will decrease accordingly.

We acknowledge that once the Basin Plan is amended for the new copper site-specific objective that there will be additional requirements for all POTWs to ensure copper concentrations do not increase in the future.

Therefore, we request modifications to the following section (starting on page 20 of the tentative order):

**VI. PROVISIONS**

**C. Special Provisions**

**2. Best Management Practices and Pollutant Minimization Program**

**a.** The Discharger shall continue to implement and improve, in a manner acceptable to the Executive Officer, its existing Pollutant Minimization Program to reduce pollutant loadings of copper, mercury, and cyanide to the treatment plant and therefore to the receiving waters. ~~Specifically for copper, within 90 days of the effective date of this Order, the City of Hayward and the Oro Loma/Castro Valley Sanitary Districts shall identify sources of copper to its Individual Treatment Plants (such as from printers and automotive facilities), and develop a plan to reduce those sources. Finally,~~ In addition, the Discharger shall implement any applicable additional pollutant minimization measures described in Basin Plan implementation requirements associated with the copper SSO and cyanide SSO if and when each of those SSOs become effective and the alternate limits take effect.

**b.** The Discharger shall submit an annual report, acceptable to the Executive Officer, no later than August 31st~~February 28th~~ of each calendar year. ~~The annual report shall cover January through December of the preceding year.~~ For those agencies choosing to submit earlier in the year, the report shall cover the preceding 12 months two months prior to the submittal date. As an example, a report submitted on June 30, shall cover the preceding 12 month ending in April. Each annual report shall include at least the following information:

i. *A brief description of its treatment plant, treatment plant processes and service area*.

**c.** Pollutant Minimization Program for Pollutants with Effluent Limitations

The Discharger shall ~~expand~~ develop and conduct a~~its~~ Pollutant Minimization Program (PMP) as further described below when there is evidence (e.g., sample results ~~reported as DNQ when the effluent limitation is less than the MDL, sample results~~ from analytical methods more sensitive than those methods required by this Order, presence of whole effluent toxicity, ~~health advisories for fish consumption,~~ results of benthic or aquatic organism tissue sampling) that a priority pollutant is present in the effluent above an effluent limitation and either:

i. A sample result is reported as DNQ and the effluent limitation is less than the RL; or

ii. A sample result is reported as ND and the effluent limitation is less than the MDL, using definitions described in the SIP.

d. If triggered by the reasons in c. above and notified by t~~T~~he Executive Officer, the Discharger's PMP shall include, but not be limited to, the following actions and submittals acceptable to the Regional Water Board:

i. An annual review and semi-annual monitoring of potential sources of the reportable priority pollutant(s), which may include fish tissue monitoring and other bio-uptake sampling, or alternative measures approved by the Executive Officer when it is demonstrated that source monitoring in unlikely to produce useful analytical data;

ii. Quarterly monitoring for the reportable priority pollutant(s) in the influent to the wastewater treatment system, or alternative measures approved by the Executive Officer, when it is demonstrated that influent monitoring in unlikely to produce useful analytical data;

iii. Submittal of a control strategy designed to proceed toward the goal of maintaining concentrations of the reportable priority pollutant(s) in the effluent at or below the effluent limitation;

iv. Implementation of appropriate cost-effective control measures for the reportable priority pollutant(s), consistent with the control strategy; and

v. The annual report required by 3.b. above, shall specifically address the following items ~~for the reportable priority pollutant(s)~~:

1. All PMP monitoring results for the previous year;

2. A list of potential sources of the reportable priority pollutant(s);

3. A summary of all actions undertaken pursuant to the control strategy; and

4. A description of actions to be taken in the following year.

## 5. EBDA SHOULD NOT BE HELD ACCOUNTABLE FOR REGIONAL WATER BOARD INACTION

EBDA believes it is inappropriate to require, in advance, pollutant reductions by permittees starting July 1, 2009, in the event the cyanide site-specific objective and the mercury TMDL are not adopted by the Regional Water Board. The municipal governments around the Bay Area

have contributed millions of dollars to conduct these studies, the technical work is complete, and peer review is complete. The only activity that remains is the Basin Plan Amendment adoption and approval process, over which the permittees have no control. This requirement is effectively punishing permittees because the Regional Water Board cannot accomplish the tasks it has committed to. In addition, this provision assumes that wholly new technologies capable of reducing trace contaminants from POTW effluent can be developed in a few months. Moreover, the need for these technologies is extremely doubtful, and in any event EBDA should not be put in the position of having to develop technologies that would obviate the need for TMDLs. Timely and appropriate action by the Regional Water Board to adopt TMDLs and the SSO, with the participation of EBDA and other Bay Area POTWs, will render this entire issue moot. Language should be revised as follows:

(page 22)

**4. Requirement to Support SSO and TMDL, and Assure Compliance with Final Limits**

This Order grants a compliance schedule for mercury, and alternative final limits for cyanide and copper that are based on pending SSOs. The Discharger shall participate in and support the development of the mercury TMDL, cyanide site-specific objective (SSO), and copper SSO. ~~In the event the mercury TMDL, or cyanide SSO are not developed by July 1, 2009, the Discharger shall submit by July 1, 2009, a schedule that documents how it will further reduce cyanide and mercury concentrations to ensure compliance with the final limits specified in Effluent Limitations and Discharge Specifications IV.7.~~

(page F-53)

**4. Requirement to Support SSO and TMDL, and Assure Compliance Schedules with Final Limits**

Maximum allowable compliance schedules are granted to the Discharger for mercury and cyanide because of the uncertainty in the time it takes to complete the TMDL and SSO for these pollutants. Therefore, it is appropriate to require the Discharger participate and support the development of the TMDL and SSO. For copper, this commitment is also necessary because data from the *North of Dumbarton Bridge Copper and Nickel Site-Specific Objective (SSO) Derivation (Clean Estuary Partnership March 2005)* suggest that the CTR criterion (3.1 µg/l) used in calculating the WQBELs in this Order will likely to be lowered in the SSO (2.5 µg/l chronic, and 3.9 µg/l acute). Since more generous WERs from this same SSO effort has been used in calculating the copper limits in this Order, it is appropriate for the Discharger to support the copper SSO effort to ensure the timely completion of the SSO to ensure the most appropriate limit for protection of beneficial uses. ~~For mercury and cyanide, the requirement to submit a report of further measures to reduce these pollutants and assure compliance with the final limits should the TMDL or SSO not be completed is based on the Basin Plan, Chapter 4 (Implementation of Effluent Limits, [F] Compliance Schedules). The Basin Plan states in part: "*The primary goal in setting compliance schedules is to promote the completion of source control and waste minimization measures…Justification for compliance schedules will*~~

~~*include…(c) a proposed schedule for additional source control measures or waste treatment*.” Additional source control or treatment was not thoroughly addressed in the Discharger’s Infeasibility Study, in recognition of ongoing TMDL and SSO efforts that would lead to different final WQBELs than those specified in this Order. However, should the TMDL and SSO not be completed in time, the Discharger will need to reduce its discharge concentrations to meet the final WQBELs in this Order. As such, this requirement is necessary to identify additional steps for the Discharger to take to comply with the final limits specified in this Order.~~

## 6. COMPLIANCE DETERMINATION

EBDA believes that is it inappropriate to include any provisions related to compliance determination in a permit. Compliance determination criteria should be included in the State Water Board Enforcement Policy. Therefore, EBDA requests that Section VII. Compliance Determination be deleted in its entirety.

If the Regional Water Board opts not to delete Section VI in its entirety, then EBDA recommends the use of alternative language as noted below. The alternative language was used in Region 9 and was developed by that Region’s legal counsel. Neither the State Water Board nor EPA objected to this alternative language. The language is contained in Order No. R9-2006-002.

(page 27)
**VII. COMPLIANCE DETERMINATION**

Compliance with the effluent limitations contained in Section IV of this Order will be determined as specified below:

**A. General.**
Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined in the MRP and Attachment A 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).

**B. Multiple Sample Data.**
When determining compliance with an AMEL 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 “Detected, but Not Quantified” (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.

**C~~A~~. Average Monthly Effluent Limitation (AMEL)**

~~If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the Dischargers will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for that month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the discharger will be considered out of compliance for that calendar month. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.~~

The Dischargers shall determine the average monthly effluent value (AMEV) for a given parameter by calculating the arithmetic average of all daily effluent values (DEVs) for each parameter within each calendar month. The AMEV calculation for a given calendar month shall not include DEVs from any other calendar month. If only a single DEV is obtained for a parameter during a calendar month, that DEV shall be considered the AMEV for that parameter for that calendar month. The AMEV shall be attributed to each day of the calendar month for determination of compliance with the Average Monthly Effluent Limitation (AMEL) for a given parameter for that given calendar month. For any calendar month during which no DEV is obtained, the AMEV cannot be determined for that calendar month.

**D~~B~~. Average Weekly Effluent Limitation (AWEL)**

~~If the average of daily discharges over a calendar week exceeds the AWEL for a given parameter, an alleged violation will be flagged and the Dischargers will be considered out of compliance for each day of that week for that parameter resulting in 7 days of noncompliance. The average of daily discharges over the calendar week that exceeds the AWEL for a parameter will be considered out of compliance for that week only. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Dischargers will be considered out of compliance for that calendar week. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.~~

The Dischargers shall determine the average weekly effluent value (AWEV) for a given parameter by calculating the arithmetic average of all daily effluent values (DEVs) for each parameter within each calendar week (Sunday through Saturday). The AWEV calculation for a given calendar week shall not include DEVs from any other calendar week. If only a single DEV is obtained for a parameter during a calendar week, that DEV shall be considered the AWEV for that parameter for that calendar week. The AWEV shall be attributed to each day of the calendar week for determination of compliance with the Average Weekly Effluent Limitation (AWEL) for a given parameter for that given

calendar week. For any calendar week during which no DEV is obtained, the AWEV cannot be determined for that calendar week.

**E~~C~~. Maximum Daily Effluent Limitation (MDEL)**

~~If a daily discharge exceeds the MDEL for a given parameter, an alleged violation will be flagged and the discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.~~

The Dischargers shall determine the daily effluent value (DEV) for a given parameter from the results of a flow-weighted 24-hour composite sample collected during a calendar day (12:00 am through 11:59 pm) or any continuous 24-hour period that ends on and reasonably represents a given calendar day for purposes of sampling. Upon approval by the Regional Water Board, the Dischargers may also determine the DEV for a given parameter from the arithmetic mean of results from one or more flow-weighted grab samples taken over the course of one calendar day or a 24-hour period that reasonably represents the calendar day. The DEV shall not include results from any sample outside of the 24-hour period that represents the calendar day. The DEV shall be attributed to the calendar day for determination of compliance with the Maximum Daily Effluent Limit (MDEL) for a given parameter for that given calendar day. For any calendar day during which a 24-hour flow-weighted composite sample, or flow-weighted grab samples in lieu of a 24-hour composite sample, are not obtained, a DEV cannot be determined for that calendar day.

**F~~D~~. Instantaneous Minimum Effluent Limitation**

~~If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, a violation will be flagged and the discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).~~

The Discharger~~s~~ shall determine the instantaneous effluent value (IEV) for a given parameter from the results of any grab sample. The IEV for a given grab sample shall not include IEVs from any other grab sample. An IEV shall be attributed to each separate grab sample result for determination of compliance with the Instantaneous Minimum Effluent Limitation for a given parameter.

**G~~E~~. Instantaneous Maximum Effluent Limitation**

~~If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, a violation will be flagged and the discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).~~

The Discharger shall determine the instantaneous effluent value (IEV) for a given parameter from the results of any grab sample. The IEV for a given grab sample shall not include IEVs from any other grab sample. An IEV shall be attributed to each separate grab sample result for determination of compliance with the Instantaneous Maximum Effluent Limitation for a given parameter.

## 7. WHOLE EFFLUENT CHRONIC TOXICITY SAMPLE BUFFERING

As noted in the T.O. ammonia toxicity was determined to be the cause of toxicity to *Ceriodaphnia dubia* in the mid 1990's. EBDA conducted a TIE to identify ammonia and determined that the addition of a buffer to prevent pH upward drift eliminated the toxicity. Chronic toxicity testing using *C. dubia* since that time has always been in compliance with permit limits. Regional Water Board staff approved the use of the buffer based on a review of the TIE.

EBDA submitted a Chronic Toxicity Screening Program Final Report in February 2005. The initial phase of the study used unbuffered samples and concluded, "EBDA effluent consistently elicited significantly toxic effects on both lethal and sublethal endpoints measured for the two most sensitive species used in this study." The study further concluded, "The consistent toxicity hierarchy observed between the fathead minnows and the mysids is likely due to the confounding influence of ammonia typically present in EBDA effluent at relatively elevated levels." Additional toxicity tests were run using buffered samples and the study concluded, "…results generated for the unbuffered and buffered treatments … shows that the toxic effects were essentially eliminated for both species…".

Regional Water Board staff has indicated the convincing evidence that ammonia present in EBDA effluent be presented to document that receiving water standards will not be exceeded by discharge of the ultimate ADWF of 119.1 mgd. Continued receiving water monitoring or a dynamic model were offered as possible solutions. Since the 119.1 mgd flow will not be reached for many years, receiving water modeling does not seem to be a viable option. A dynamic model could be time consuming and expensive, but is being investigated.

**Attachment No. 2** is a July 5, 2006 Memo, "Ammonia Analysis for East Bay Dischargers Authority Capacity Increase." The report analyzed receiving water unionized ammonia data from 1995-2006 and effluent ammonia data from 1999-2005. The analysis concludes that future receiving water ammonic concentrations will range from 0.0104 to 0.0120 mg/L, which are well below the Basin Plan objective of 0.025 mg/L. Historic data showed only a single violation of receiving water unionized ammonia concentrations in March 1998, following an El Nino winter. Effluent ammonia averaged 15 mg/L during that month, which is below historical averages. The single event in 1998 was caused by factors other that the EBDA discharge. Therefore, EBDA requests that the language for Whole Effluent Chronic Toxicity be amended to something similar to the following (page E-10):

## B. Whole Effluent Chronic Toxicity

1. Chronic Toxicity Monitoring Requirements

   d. *Dilution Series.* The Discharger shall conduct tests at 50%, 25%, 10%, 5%, and 2.5%. The "%" represents percent effluent as discharged. Samples may be buffered using the biological buffer MOPS (3-(N-Morpholino)propanesulfonic Acid) to control pH drift and ammonia toxicity caused by increasing pH during the test. ~~The Discharger may use a buffer after obtaining written approval from the Executive Officer.~~ This allowance ~~maybe~~is based on the Discharger's studies in the mid-1990's with *Ceriodaphnia dubia*~~ceriodaphnia dubia~~. The Discharger conducted a full scale Phase III TIE that confirmed the toxicity was due to ammonia caused by pH drift during static renewal testing. Use of the buffer in that case eliminated the toxicity. This allowance is further based on the Discharger conducting a Chronic Toxicity Screening Study in 2005 as part of the permit renewal process. In Phase 1 of the study both of the most sensitive species showed significant toxicity due to the likely presence of ammonia and upward pH drift. The tests were repeated in Phase 2 using both buffered and unbuffered samples. In the buffered samples the toxic effects were eliminated. The Discharger has also submitted a technical memorandum documenting that the ultimate ADWF of 119.1 mgd will result in receiving water unionized ammonia concentrations increasing from current level of 0.0104 to 0.0120 mg/L, which is well below the receiving water objective of 0.025 mg/L. Therefore, the Discharger has ~~Another condition for the approval is a demonstration~~ demonstrated that the beneficial uses of the receiving waters are protected through demonstration of compliance with applicable ammonia objectives.

## 8. TSS IS SUFFICIENT FOR BLENDING SAMPLING AND BOD IS NOT NEEDED AS AN INDICATOR OF COMPLIANCE

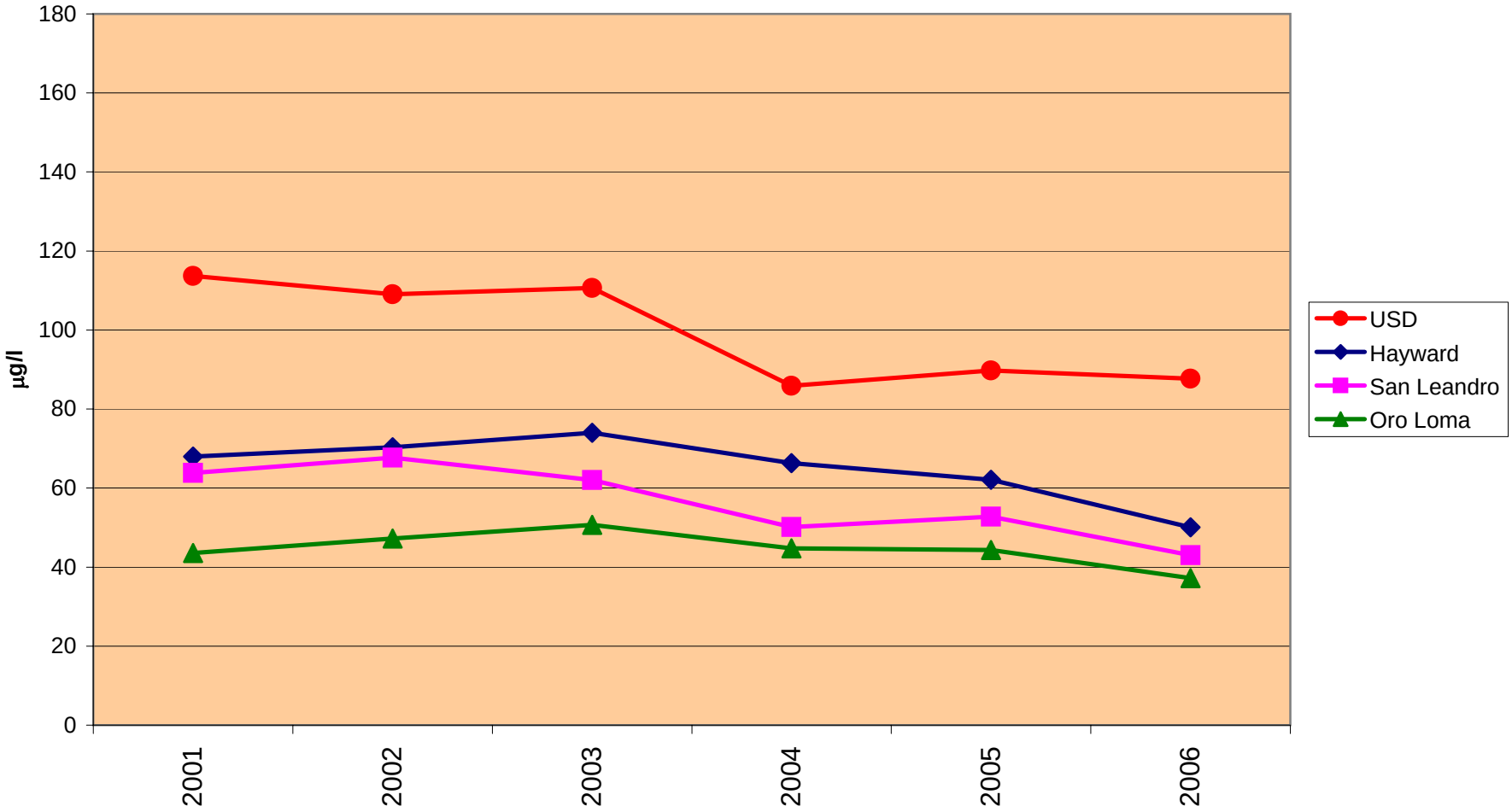
It is well known that CBOD and TSS track together in POTW effluents. In addition the CBOD 5-day test is not a practical indicator of issues during blending because blending happens on the order of hours instead of the several days it takes to get results back from a BOD test. Therefore, EBDA requests that CBOD be removed from the requirements for sampling during blending, and language revised as follows (page E-14):

   i. When bypassing occurs from any primary or secondary treatment unit(s), samples of the discharge shall be collected for the duration of the bypass event for ~~BOD and~~ TSS analyses in 24-hour composite or less increments, and continuous monitoring of flow, chlorine residual, and grabs for pH and coliform. Samples in accordance with proper sampling techniques for all other limited pollutant parameters shall also be collected and retained for analysis if necessary. If ~~BOD or~~ TSS values exceed the weekly average effluent limits, analysis of the retained samples shall be conducted for all these pollutant constituents that have effluent limits for the duration of the bypass,

until the ~~BOD and~~ TSS ~~are~~is in compliance with their weekly effluent limitations. Holding times for these retained samples must be complied with.

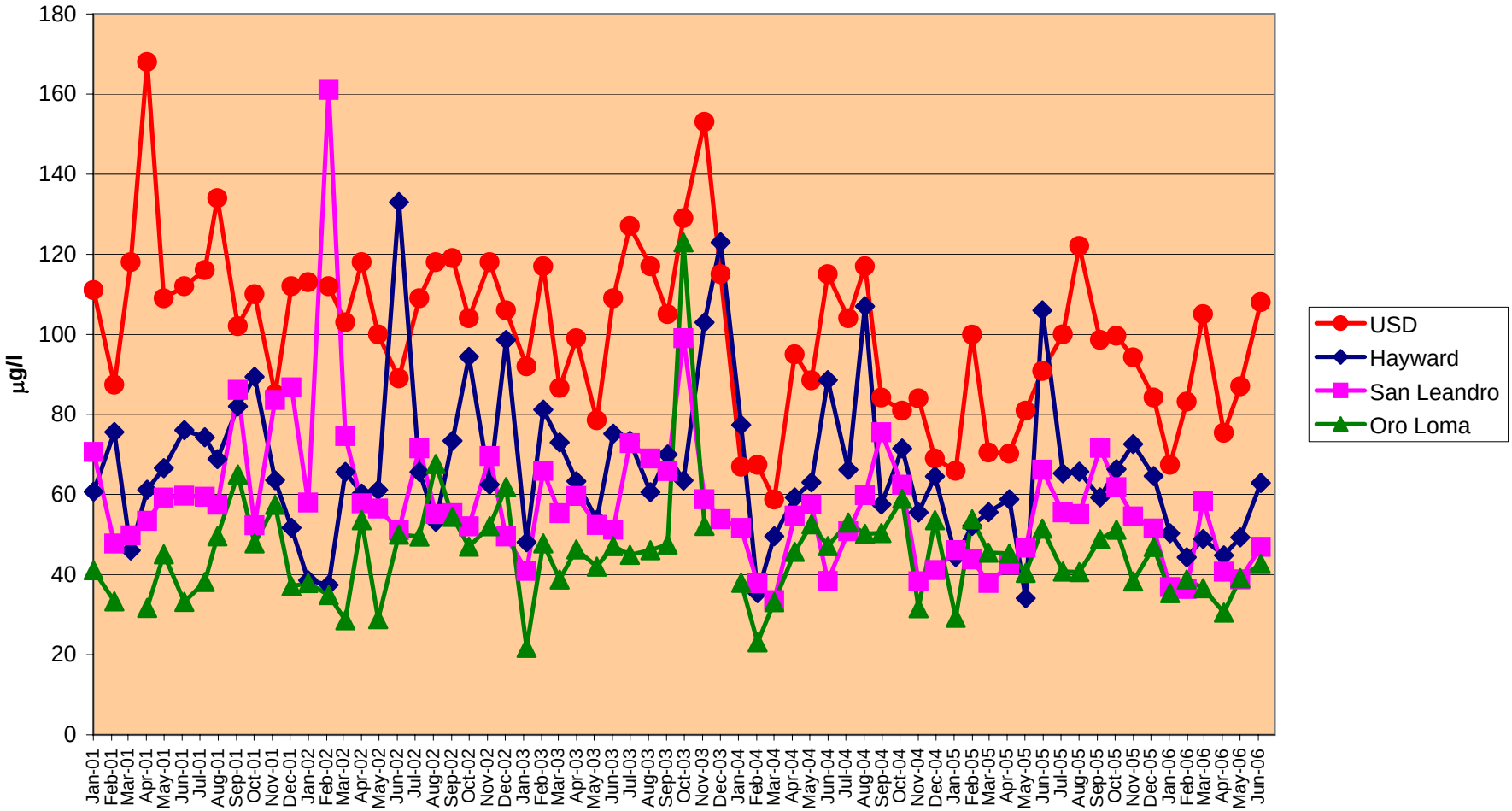
Attachment No. 1

# EBDA Plants
# Annual Average Influent Copper
# 2001-2006 to date



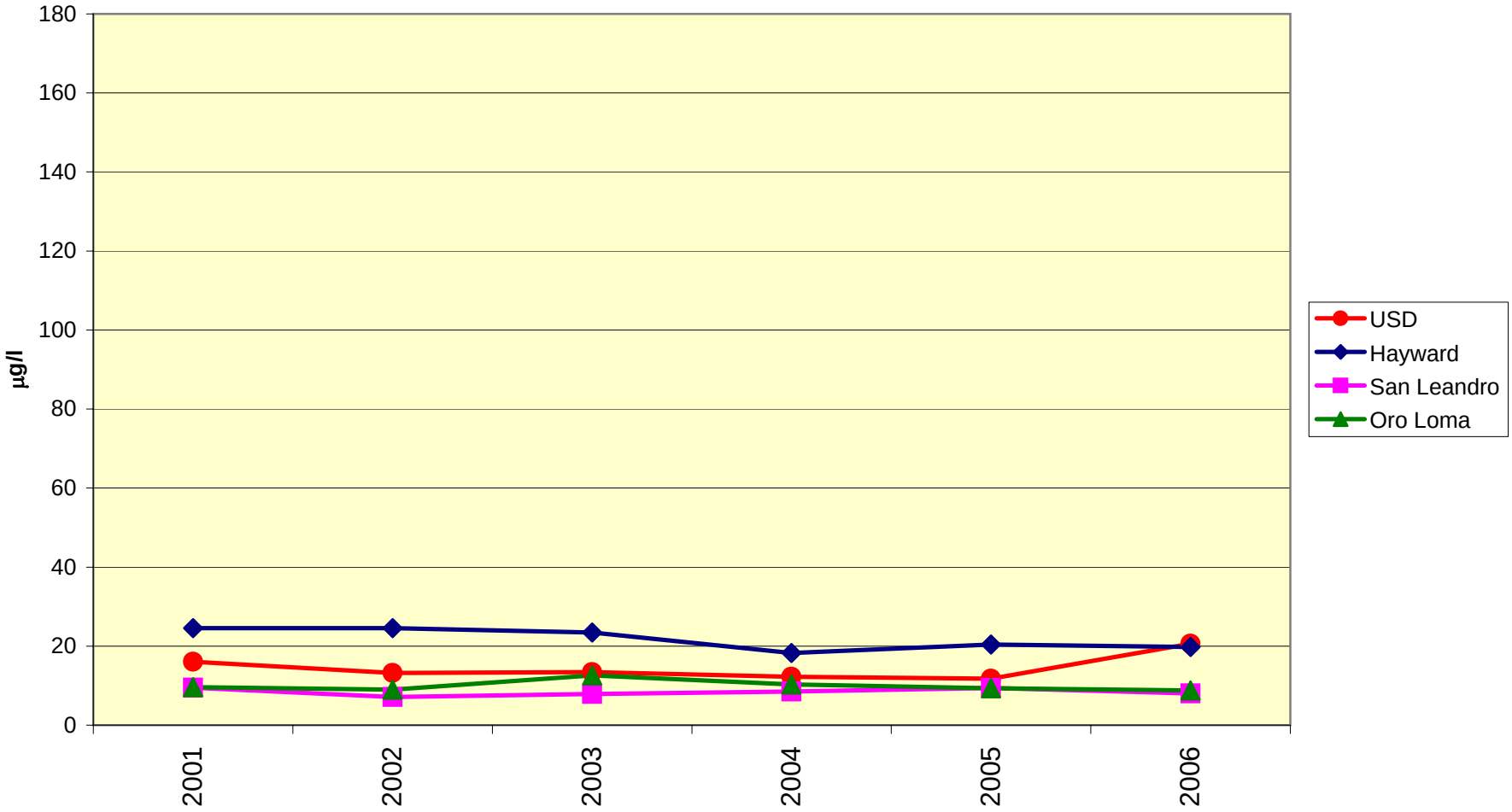
Attachment No. 1

# EBDA Plants
# Monthly Influent Copper
# 2001-2006 to date



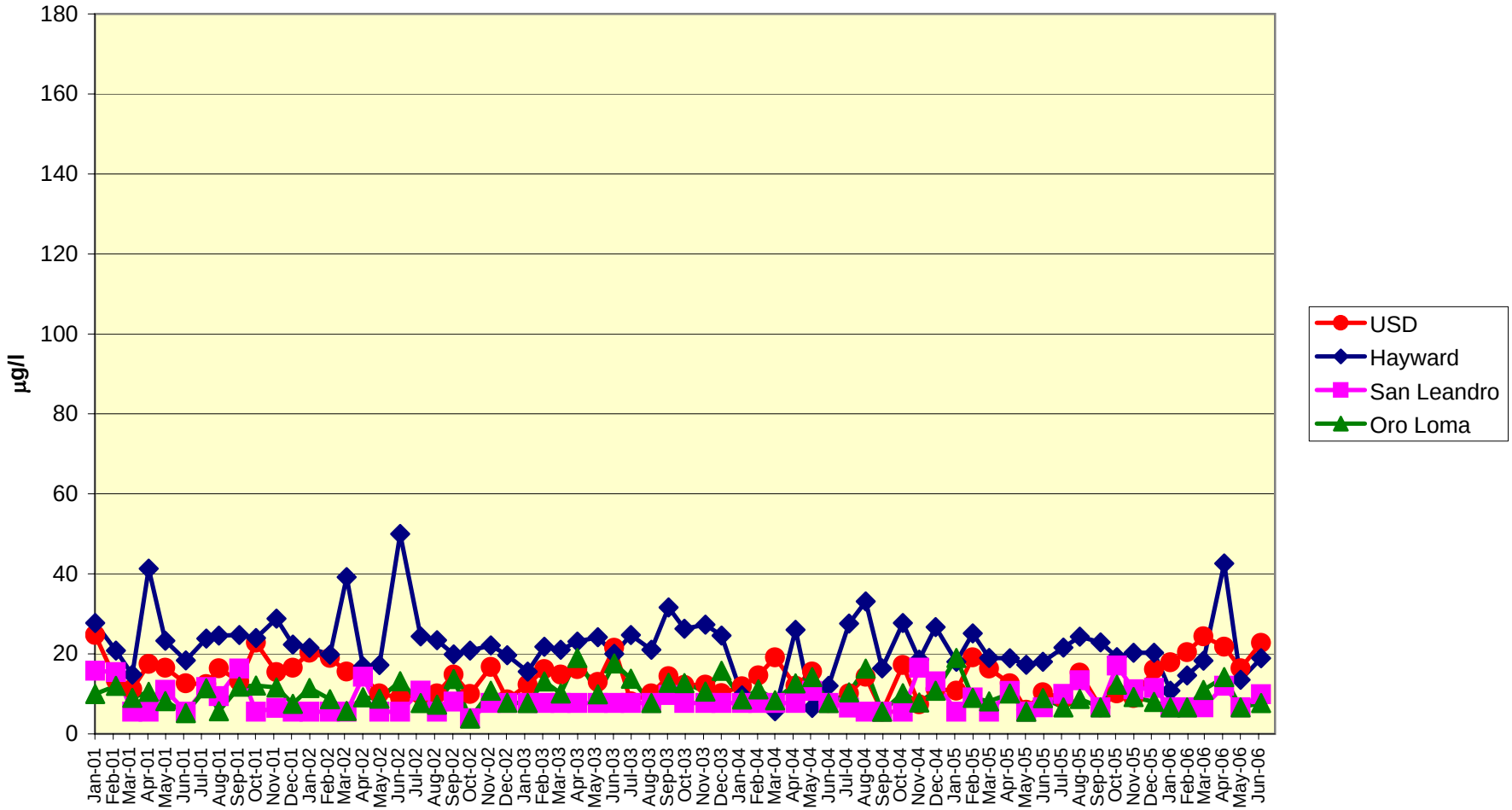
Attachment No. 1

# EBDA Plants
# Annual Average Effluent Copper
# 2001-2006 to date



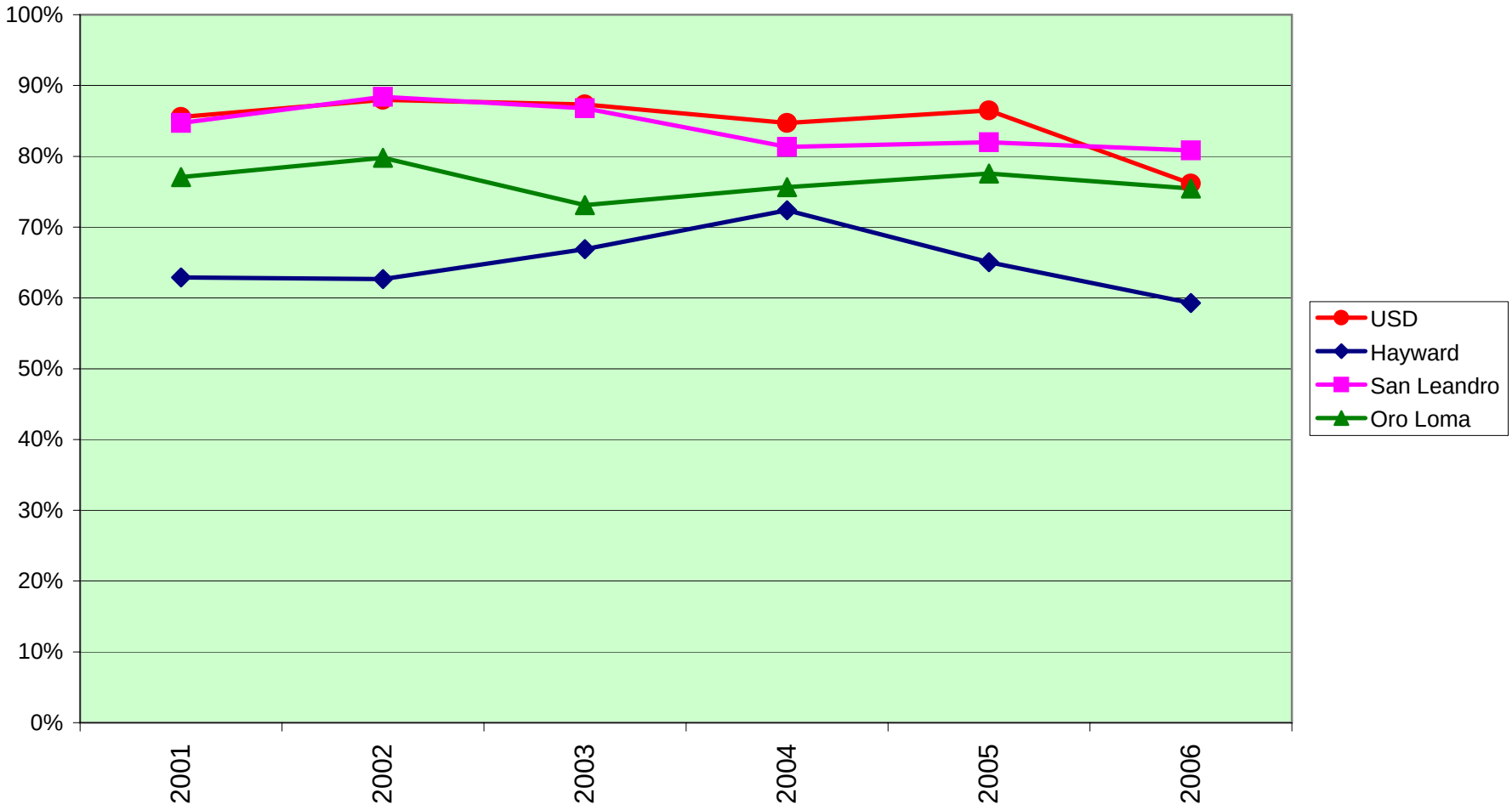
Attachment No. 1

# EBDA Plants
# Monthly Effluent Copper
# 2001-2006 to date



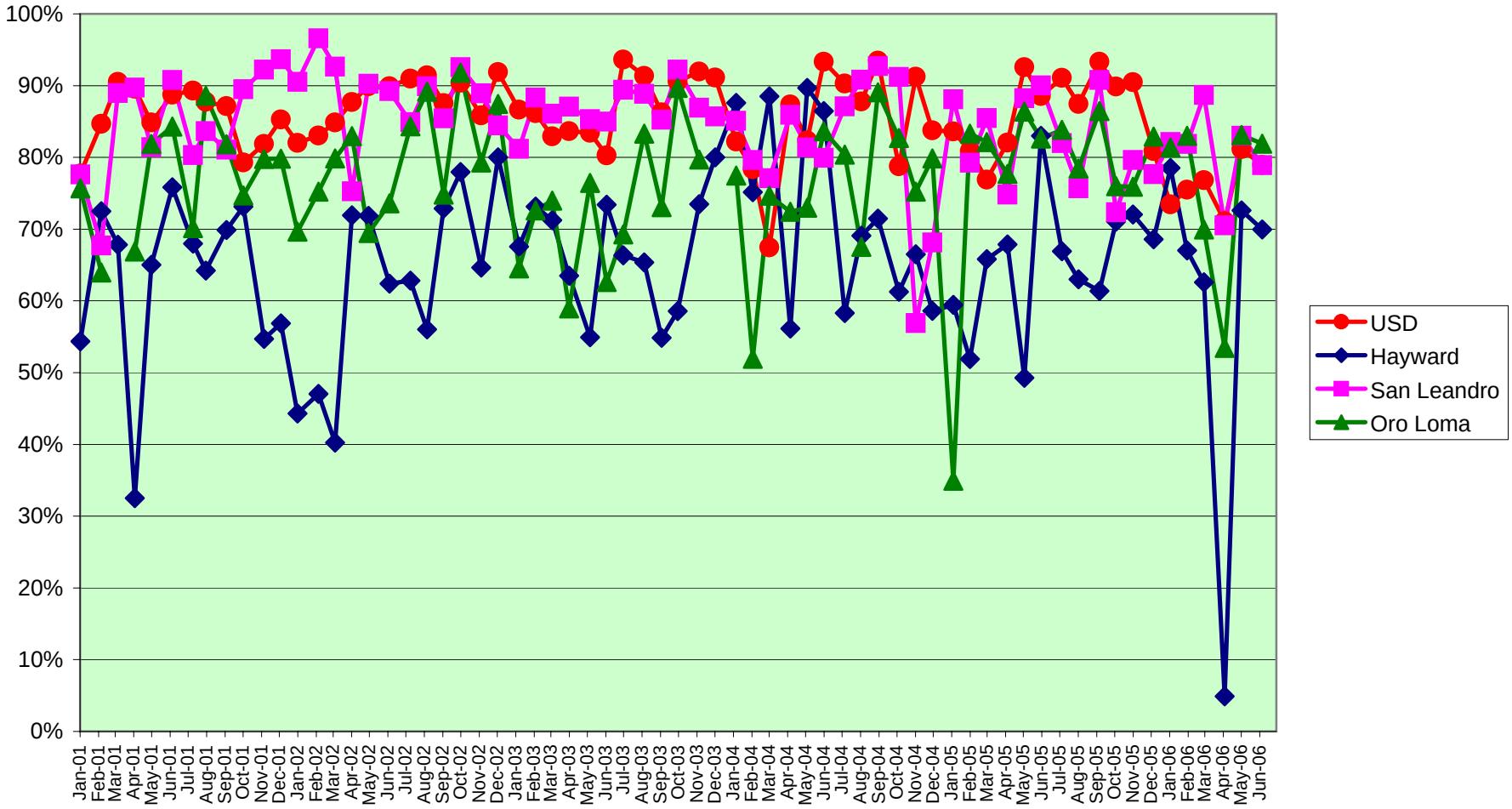
Attachment No. 1

**EBDA Plants**
**Annual Average Percent Removal Copper**
**2001-2006 to date**



Attachment No. 1

# EBDA Plants
## Monthly Percent Removal Copper
## 2001-2006 to date



Attachment No. 1

| Cu | City of Hayward | | | City of San Leandro | | | Oro Loma | | | USD | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Inf | Eff | %rem | Inf | Eff | %rem | Inf | Eff | %rem | Inf | Eff | %rem |
| Jan-01 | 60.7 | 27.7 | 54% | 70.6 | 15.8 | 78% | 41.1 | 10 | 76% | 111 | 24.7 | 78% |
| Feb-01 | 75.6 | 20.8 | 72% | 47.7 | 15.4 | 68% | 33.3 | 12 | 64% | 87.4 | 13.4 | 85% |
| Mar-01 | 46.0 | 14.8 | 68% | 49.8 | 5.5 | 89% | | 9.03 | | 118 | 11.2 | 91% |
| Apr-01 | 61.2 | 41.3 | 33% | 53.4 | 5.5 | 90% | 31.7 | 10.5 | 67% | 168 | 17.5 | 90% |
| May-01 | 66.6 | 23.3 | 65% | 59.2 | 11 | 81% | 45.1 | 8.17 | 82% | 109 | 16.5 | 85% |
| Jun-01 | 76.1 | 18.4 | 76% | 59.7 | 5.5 | 91% | 33.2 | 5.21 | 84% | 112 | 12.6 | 89% |
| Jul-01 | 74.3 | 23.8 | 68% | 59.4 | 11.7 | 80% | 38.2 | 11.4 | 70% | 116 | 12.4 | 89% |
| Aug-01 | 68.8 | 24.6 | 64% | 57.4 | 9.39 | 84% | 49.6 | 5.67 | 89% | 134 | 16.4 | 88% |
| Sep-01 | 82.0 | 24.7 | 70% | 86.1 | 16.3 | 81% | 65 | 11.8 | 82% | 102 | 13.1 | 87% |
| Oct-01 | 89.4 | 24.0 | 73% | 52.3 | 5.5 | 89% | 47.8 | 12.1 | 75% | 110 | 22.8 | 79% |
| Nov-01 | 63.6 | 28.8 | 55% | 83.6 | 6.5 | 92% | 57.4 | 11.6 | 80% | 85 | 15.4 | 82% |
| Dec-01 | 51.7 | 22.3 | 57% | 86.7 | 5.5 | 94% | 37.1 | 7.49 | 80% | 112 | 16.5 | 85% |
| Jan-02 | 38.6 | 21.5 | 44% | 58 | 5.5 | 91% | 37.9 | 11.5 | 70% | 113 | 20.3 | 82% |
| Feb-02 | 37.4 | 19.8 | 47% | 161 | 5.5 | 97% | 34.9 | 8.64 | 75% | 112 | 19 | 83% |
| Mar-02 | 65.6 | 39.2 | 40% | 74.6 | 5.5 | 93% | 28.6 | 5.76 | 80% | 103 | 15.6 | 85% |
| Apr-02 | 60.2 | 16.9 | 72% | 57.8 | 14.3 | 75% | 53.6 | 9.14 | 83% | 118 | 14.5 | 88% |
| May-02 | 61.1 | 17.2 | 72% | 56.5 | 5.5 | 90% | 28.9 | 8.83 | 69% | 100 | 10.1 | 90% |
| Jun-02 | 133.0 | 50.0 | 62% | 51.1 | 5.5 | 89% | 50 | 13.2 | 74% | 89 | 8.98 | 90% |
| Jul-02 | 65.6 | 24.4 | 63% | 71.5 | 10.8 | 85% | 49.5 | 7.75 | 84% | 109 | 9.83 | 91% |
| Aug-02 | 53.2 | 23.4 | 56% | 55.1 | 5.56 | 90% | 67.6 | 7.34 | 89% | 118 | 10.1 | 91% |
| Sep-02 | 73.4 | 19.9 | 73% | 55.3 | 8.06 | 85% | 54.4 | 13.7 | 75% | 119 | 14.8 | 88% |
| Oct-02 | 94.4 | 20.8 | 78% | 52 | 3.86 | 93% | 47 | 3.85 | 92% | 104 | 10 | 90% |
| Nov-02 | 62.5 | 22.1 | 65% | 69.6 | 7.7 | 89% | 52.1 | 10.8 | 79% | 118 | 16.7 | 86% |
| Dec-02 | 98.6 | 19.7 | 80% | 49.5 | 7.7 | 84% | 61.9 | 7.77 | 87% | 106 | 8.61 | 92% |
| Jan-03 | 48.1 | 15.6 | 68% | 40.9 | 7.7 | 81% | 21.7 | 7.7 | 65% | 92 | 12.3 | 87% |
| Feb-03 | 81.2 | 21.8 | 73% | 65.9 | 7.7 | 88% | 47.8 | 13.1 | 73% | 117 | 16.2 | 86% |
| Mar-03 | 73.0 | 21.0 | 71% | 55.3 | 7.7 | 86% | 38.8 | 10.1 | 74% | 86.6 | 14.8 | 83% |
| Apr-03 | 63.3 | 23.1 | 64% | 59.6 | 7.7 | 87% | 46.3 | 19 | 59% | 99 | 16.2 | 84% |
| May-03 | 53.7 | 24.2 | 55% | 52.4 | 7.7 | 85% | 42 | 9.9 | 76% | 78.5 | 13 | 83% |
| Jun-03 | 75.2 | 20.0 | 73% | 51.2 | 7.7 | 85% | 47.1 | 17.6 | 63% | 109 | 21.5 | 80% |
| Jul-03 | 73.4 | 24.7 | 66% | 72.8 | 7.7 | 89% | 44.9 | 13.8 | 69% | 127 | 8.1 | 94% |
| Aug-03 | 60.6 | 21.0 | 65% | 69 | 7.7 | 89% | 46.1 | 7.7 | 83% | 117 | 10.1 | 91% |
| Sep-03 | 70.0 | 31.6 | 55% | 65.8 | 9.71 | 85% | 47.5 | 12.8 | 73% | 105 | 14.4 | 86% |
| Oct-03 | 63.5 | 26.3 | 59% | 99 | 7.7 | 92% | 123 | 12.7 | 90% | 129 | 12.2 | 91% |
| Nov-03 | 103.0 | 27.3 | 73% | 58.8 | 7.7 | 87% | 52.2 | 10.6 | 80% | 153 | 12.3 | 92% |
| Dec-03 | 123.0 | 24.6 | 80% | 53.8 | 7.7 | 86% | | 15.8 | | 115 | 10.2 | 91% |
| Jan-04 | 77.4 | 9.6 | 88% | 51.6 | 7.7 | 85% | 38 | 8.57 | 77% | 66.9 | 11.9 | 82% |
| Feb-04 | 35.4 | 8.8 | 75% | 37.8 | 7.7 | 80% | 23.1 | 11.1 | 52% | 67.4 | 14.6 | 78% |
| Mar-04 | 49.6 | 5.7 | 89% | 33.6 | 7.7 | 77% | 33.1 | 8.39 | 75% | 58.7 | 19.1 | 67% |
| Apr-04 | 59.3 | 26.0 | 56% | 54.7 | 7.7 | 86% | 45.7 | 12.6 | 72% | 95 | 12 | 87% |
| May-04 | 63.0 | 6.5 | 90% | 57.5 | 10.7 | 81% | 52.6 | 14.2 | 73% | 88.5 | 15.6 | 82% |
| Jun-04 | 88.6 | 12.0 | 86% | 38.4 | 7.7 | 80% | 47.1 | 7.7 | 84% | 115 | 7.7 | 93% |
| Jul-04 | 66.2 | 27.6 | 58% | 50.8 | 6.55 | 87% | 53 | 10.4 | 80% | 104 | 10.1 | 90% |
| Aug-04 | 107.0 | 33.1 | 69% | 59.8 | 5.5 | 91% | 50.2 | 16.3 | 68% | 117 | 14.3 | 88% |
| Sep-04 | 57.5 | 16.4 | 71% | 75.5 | 5.5 | 93% | 50.4 | 5.5 | 89% | 84.2 | 5.5 | 93% |
| Oct-04 | 71.5 | 27.7 | 61% | 62.4 | 5.5 | 91% | 58.9 | 10.2 | 83% | 80.9 | 17.2 | 79% |
| Nov-04 | 55.5 | 18.6 | 66% | 38.3 | 16.5 | 57% | 31.6 | 7.83 | 75% | 84 | 7.35 | 91% |
| Dec-04 | 64.5 | 26.7 | 59% | 41.1 | 13.1 | 68% | 53.6 | 10.8 | 80% | 69 | 11.2 | 84% |
| Jan-05 | 44.4 | 18.0 | 59% | 46.1 | 5.5 | 88% | 29.2 | 19 | 35% | 65.9 | 10.8 | 84% |
| Feb-05 | 52.2 | 25.1 | 52% | 43.8 | 9.09 | 79% | 53.8 | 8.99 | 83% | 99.9 | 19.1 | 81% |
| Mar-05 | 55.6 | 19.0 | 66% | 37.9 | 5.5 | 85% | 45.5 | 8.13 | 82% | 70.5 | 16.3 | 77% |

Attachment No. 1

| Cu | City of Hayward | | | City of San Leandro | | | Oro Loma | | | USD | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **Inf** | **Eff** | **%rem** | **Inf** | **Eff** | **%rem** | **Inf** | **Eff** | **%rem** | **Inf** | **Eff** | **%rem** |
| Apr-05 | 58.8 | 18.9 | 68% | 42.5 | 10.7 | 75% | 45.3 | 10.1 | 78% | 70.2 | 12.6 | 82% |
| May-05 | 34.1 | 17.3 | 49% | 46.7 | 5.5 | 88% | 40.4 | 5.5 | 86% | 80.9 | 6.01 | 93% |
| Jun-05 | 106.0 | 18.0 | 83% | 66.2 | 6.6 | 90% | 51.5 | 8.94 | 83% | 90.8 | 10.4 | 89% |
| Jul-05 | 65.3 | 21.6 | 67% | 55.5 | 10 | 82% | 40.8 | 6.6 | 84% | 100 | 8.9 | 91% |
| Aug-05 | 65.7 | 24.3 | 63% | 55.1 | 13.4 | 76% | 40.6 | 8.75 | 78% | 122 | 15.3 | 87% |
| Sep-05 | 59.3 | 22.9 | 61% | 71.6 | 6.6 | 91% | 48.8 | 6.6 | 86% | 98.6 | 6.6 | 93% |
| Oct-05 | 66.3 | 19.2 | 71% | 61.8 | 17.1 | 72% | 51.2 | 12.3 | 76% | 99.6 | 10.1 | 90% |
| Nov-05 | 72.6 | 20.3 | 72% | 54.5 | 11.1 | 80% | 38.3 | 9.22 | 76% | 94.2 | 8.97 | 90% |
| Dec-05 | 64.6 | 20.3 | 69% | 51.5 | 11.5 | 78% | 46.9 | 8.02 | 83% | 84.2 | 16.1 | 81% |
| Jan-06 | 50.3 | 10.8 | 79% | 36.9 | 6.6 | 82% | 35.4 | 6.6 | 81% | 67.4 | 17.9 | 73% |
| Feb-06 | 44.3 | 14.6 | 67% | 36.4 | 6.6 | 82% | 38.8 | 6.6 | 83% | 83.2 | 20.4 | 75% |
| Mar-06 | 48.9 | 18.3 | 63% | 58.3 | 6.6 | 89% | 36.6 | 11 | 70% | 105 | 24.35 | 77% |
| Apr-06 | 44.8 | 42.6 | 5% | 40.7 | 12 | 71% | 30.5 | 14.2 | 53% | 75.4 | 21.8 | 71% |
| May-06 | 49.3 | 13.5 | 73% | 38.8 | 6.6 | 83% | 39.1 | 6.6 | 83% | 87 | 16.4 | 81% |
| Jun-06 | 62.9 | 18.9 | 70% | 46.9 | 9.9 | 79% | 42.7 | 7.72 | 82% | 108 | 22.75 | 79% |
| **average** | **66.5** | **22.0** | **65%** | **57.8** | **8.4** | **84%** | **45.3** | **10.0** | **77%** | **100.5** | **14.0** | **85%** |

| | Inf Cu | Eff Cu | Rem | Inf Cu | Eff Cu | Rem | Inf Cu | Eff Cu | Rem | Inf Cu | Eff Cu | Rem |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** | **Avg** |
| **2001** | 68.0 | 24.5 | 63% | 63.8 | 9.5 | 85% | 43.6 | 9.6 | 77% | 113.7 | 16.0 | 86% |
| **2002** | 70.3 | 24.6 | 63% | 67.7 | 7.1 | 88% | 47.2 | 9.0 | 80% | 109.1 | 13.2 | 88% |
| **2003** | 74.0 | 23.4 | 67% | 62.0 | 7.9 | 87% | 50.7 | 12.6 | 73% | 110.7 | 13.4 | 87% |
| **2004** | 66.3 | 18.2 | 72% | 50.1 | 8.5 | 81% | 44.8 | 10.3 | 76% | 85.9 | 12.2 | 85% |
| **2005** | 62.1 | 20.4 | 65% | 52.8 | 9.4 | 82% | 44.4 | 9.3 | 78% | 89.7 | 11.8 | 86% |
| **2006** | 50.1 | 19.8 | 59% | 43.0 | 8.1 | 81% | 37.2 | 8.8 | 75% | 87.7 | 20.6 | 76% |
| **01-06** | 66.5 | 22.0 | 65% | 57.8 | 8.4 | 84% | 45.3 | 10.0 | 77% | 100.5 | 14.0 | 85% |

Any < or E values reported as the RL/MDL.
For June 2003 and Feb 2004, USD effluent result is the average of 4 data points.
For June 2004, SL influent result is the average of 2 data points.
For October 2005, Hayward effluent result is the average of 2 analyses performed on the same sample.
For June 2006 USD effluent result is the average of 2 data points.

Attachment No. 2

# Memorandum

LARRY WALKER ASSOCIATES

Airy Krich-Brinton
707 4th Street Suite 200
Davis, CA 95616
530-753-6400
530-753-7030 (fax)

DATE: 7-5-06

TO: Chuck Weir, EBDA

CC: Tom Grovhoug, LWA-Davis

**SUBJECT: AMMONIA ANALYSIS FOR EAST BAY DISCHARGERS AUTHORITY CAPACITY INCREASE**

Unionized ammonia data were studied in the effluent and the receiving water in the San Francisco Bay, to determine the possible effects of a capacity increase of the East Bay Dischargers Authority's (EBDA) discharge from the currently permitted value of 97.1 MGD to 119.1 MGD. Local receiving water data from NPDES permitted monitoring stations 1, 2, 3, and 4 were used in the analysis.

Station 1 is located at the midpoint of the diffuser. Station 2 is located 2,000 meters down-current from the diffuser on flood tides and Station 4 is located 1,000 meters down-current from the diffuser on ebb tides. Station 3 is located outside the direct influence of the wastewater, as studies have shown that tidal motion carries the wastewater back and forth across the outfall with a net drift to the northeast (*EBDA Receiving Water Monitoring, 2005 Annual Report*).

A map of these four receiving water stations is shown in Figure 1.

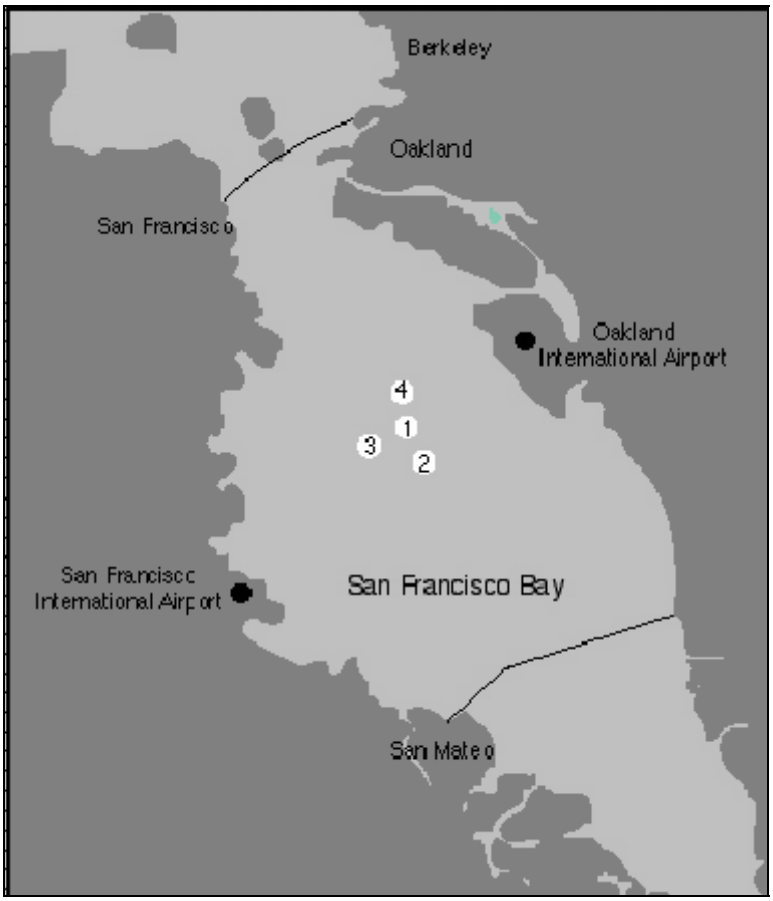



**Figure 1. Map of Receiving Water NPDES Stations**

A summary of the data is shown in Table 1. Figure 2 shows the data in a time-series plot and Figure 3 shows the data in a probability plot.

**Table 1. Summary of Unionized Ammonia Data (1995-2005) at EBDA NPDES Receiving Water Stations**

| Unionized Ammonia (NH3-N, mg/L) | Number of data points | Maximum Value | Average Value |
|---|---|---|---|
| Station 1 | 44 | 0.0665 | 0.00931 |
| Station 2 | 44 | 0.0892 | 0.00731 |
| Station 3 | 44 | 0.0490 | 0.00603 |
| Station 4 | 44 | 0.0654 | 0.0808 |
| Average | | 0.0675 | 0.00769 |

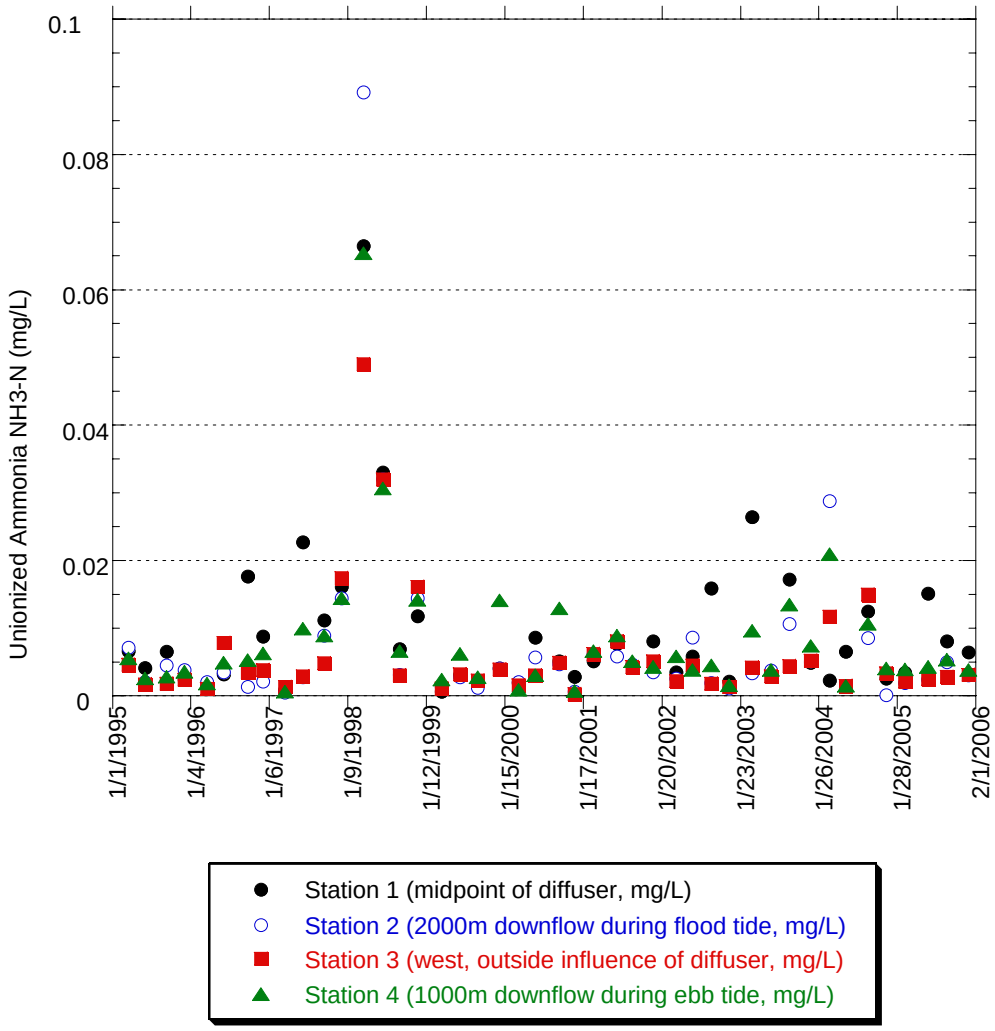



**Figure 2. Receiving Water Unionized Ammonia (1995 – 2006)**

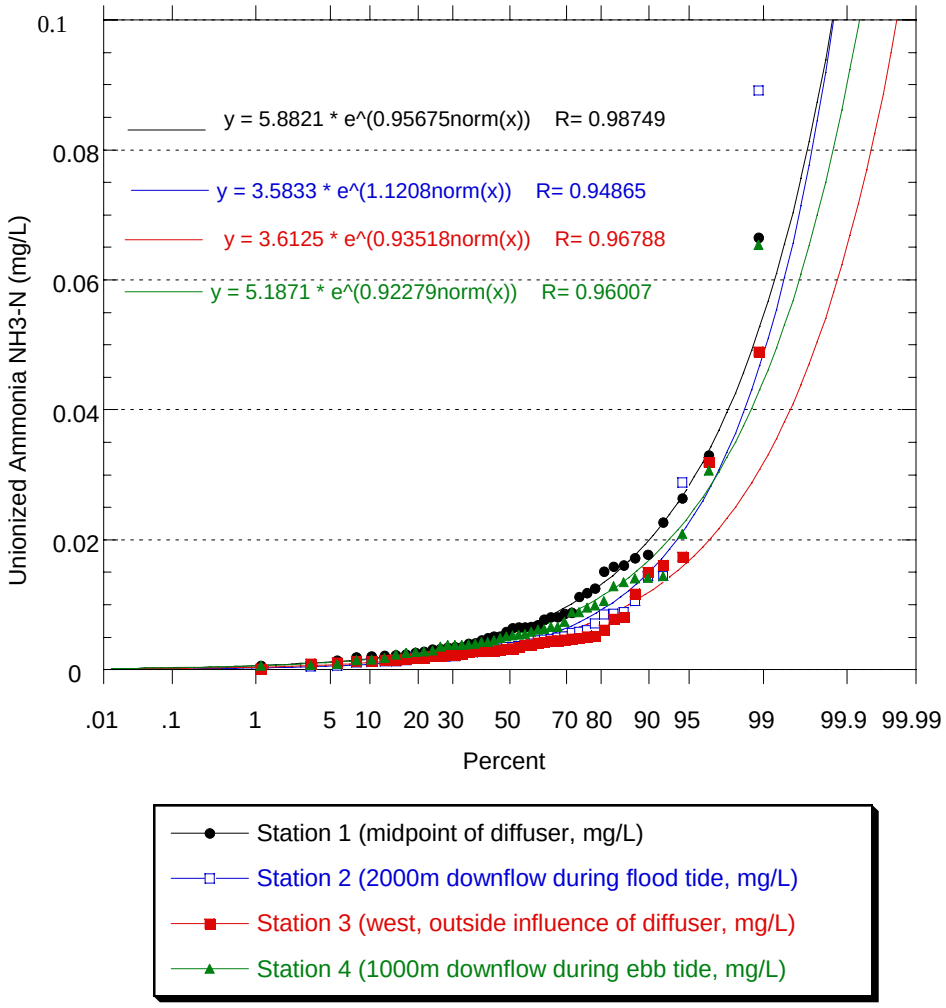



**Figure 3. Probability Plot of Receiving Water Unionized Ammonia**

Figure 2 shows that the maximum values occurred in March 1998 and have not again occurred near those concentrations. 1998 was an El Niño year that had much higher than average rainfall and severe storms. The fact that unusual concentrations occurred at all stations, including Station 3 (outside of the direct influence of the effluent) indicates that other factors caused the higher than normal concentrations.

Figure 3, the probability plot, shows that while the maximum overall concentration occurred at Station 2, data from Stations 1 and 4 usually have the highest concentrations of the four stations. Data from Station 3 usually have the lowest concentrations, as also shown by the average values in Table 1.

A summary of the effluent total ammonia data and converted unionized ammonia is shown in Table 2, converted with the maximum effluent pH and temperature values measured during the effluent data collection period. A time-series plot of the converted unionized ammonia effluent data is shown in Figure 4.

The use of maximum pH and temperature values to convert total ammonia to unionized ammonia is a conservative assumption, resulting in higher than probable unionized ammonia concentrations. The conversion was performed using a freshwater conversion factor, which is more conservative than a saltwater conversion factor. If other dischargers are required to conduct a similar analysis in the future, a saltwater conversion factor should be used. There were time constraints for this analysis that did not allow the use of more appropriate assumptions.

**Table 2. Summary of Ammonia Data (1999-2006) in EBDA Effluent**

| Constituent | | Number of data points | Maximum Detected Value | Average Value |
|---|---|---|---|---|
| Total Ammonia (NH3-N & NH4-N) | (mg/L) | 231 | 35.5 | 22.5 |
| Unionized Ammonia (NH3-N) [a] | (mg/L) | 231 | 0.628 | 0.398 |

[a] A conservative freshwater conversion factor of 1.77% was used to calculate the unionized ammonia fraction, determined using a maximum pH of 7.6 and a maximum temperature of 25.7 C.

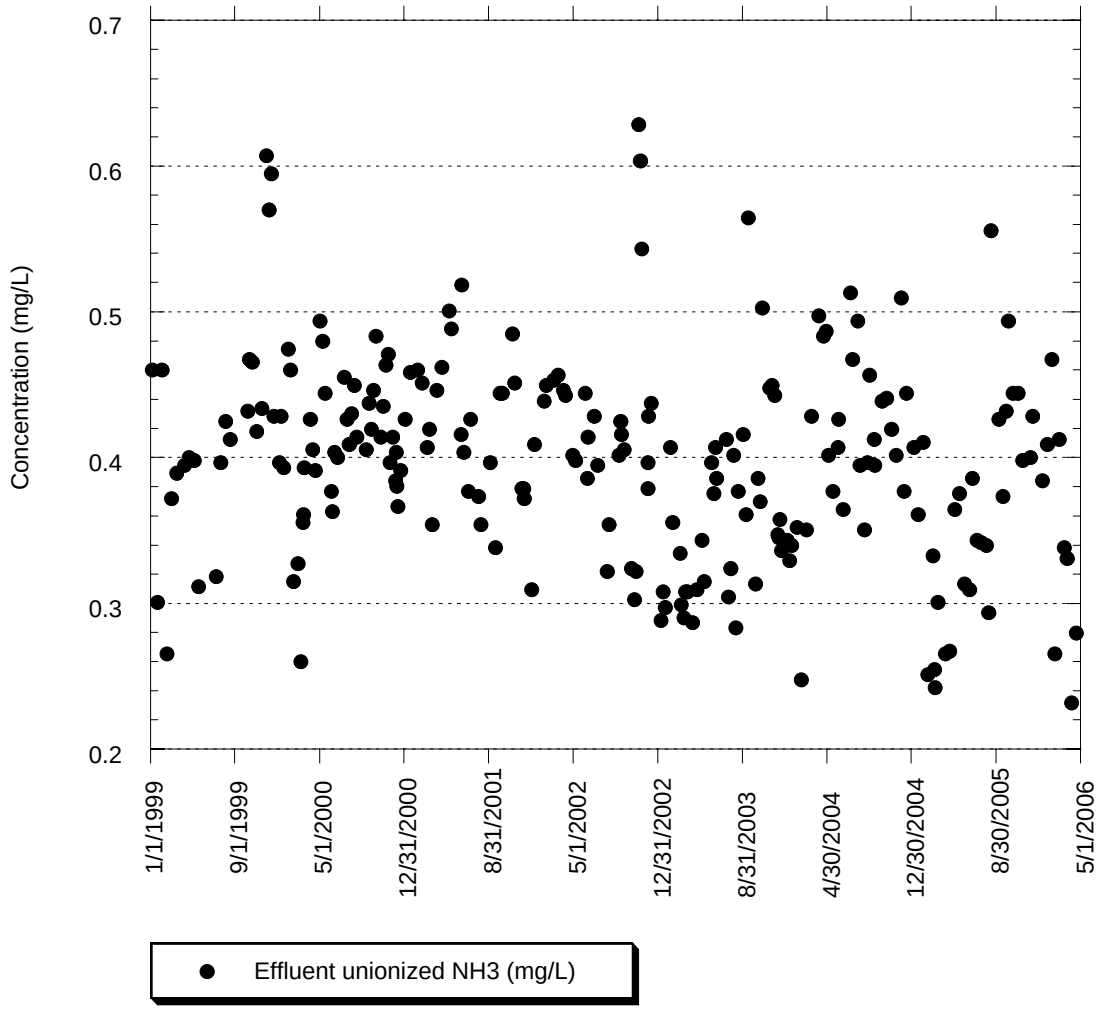



**Figure 4. Effluent Unionized Ammonia (1999 – 2006)**

The effluent and ambient/receiving water unionized ammonia data were analyzed using predicted flow increases to determine the possible future mixed concentrations of ammonia in the Bay. Table 3 shows the calculated current permitted concentrations, the predicted future concentrations using an effluent flow of 119.1 MGD, and the incremental difference. The acute scenario used maximum effluent and receiving water concentrations and the chronic scenario used average effluent and receiving water concentrations.

The calculations assume that the receiving water is ambient water, water which has not been previously influenced by effluent concentrations. Only one of the four NPDES receiving water stations is beyond the influence of the effluent, therefore the use of data from all four stations is a conservative assumption. For comparison purposes, a separate analysis was performed using maximum and average values from the one ambient station (Station 3) in place of values from all four stations.

**Table 3. Estimated Increases of In-Stream Concentrations from Increasing EBDA Discharge from 97.1 MGD to 119.1 MGD with Zone 7 Reject Flow** (in immediate vicinity of the discharge)

| Ammonia (NH3-N) | In-stream maximum concentrations (acute dilution)[a] | | | In-stream average concentrations (chronic dilution)[b] | | |
|---|---|---|---|---|---|---|
| | Current Permit (97.1 MGD) | Future with Zone 7 (119.1 MGD) | Incremental Difference | Current Permit (97.1 MGD) | Future with Zone 7 (119.1 MGD) | Incremental Difference |
| Effluent and all NPDES receiving water station data (mg/L) | 0.0733 | 0.0745 | 0.0012 | 0.0113 | 0.0120 | 0.0007 |
| Effluent and Station 3 ambient data (mg/L) | 0.0550 | 0.0562 | 0.0012 | 0.0097 | 0.0104 | 0.0007 |

[a] With current permitted 95:1 and future projected 81:1 acute dilution ratios (URS 2005).

[b] With current permitted 106:1 and future projected 91:1 chronic dilution ratios (URS 2005).

Table 3 shows that the use of ambient background concentrations results in lower calculated mixed concentrations than does the use of all-station receiving water concentrations.

A comparison of the projected future concentrations with the Basin Plan objectives for unionized ammonia is shown in Table 4. Figure 5 shows the same comparison for maximum and annual median objectives.

**Table 4. Future Projected In-Stream Concentrations Compared to Water Quality Objectives**

| Un-Ionized Ammonia (NH3-N, mg/L) | Maximum | | Annual Median | |
|---|---|---|---|---|
| | Future Maximum with Zone 7 | Objective | Future Average with Zone 7 | Objective |
| Calculated using all NPDES receiving water station data | 0.0745 | 0.4 | 0.0120 | 0.025 |
| Calculated using Station 3 ambient data | 0.0562 | 0.4 | 0.0104 | 0.025 |

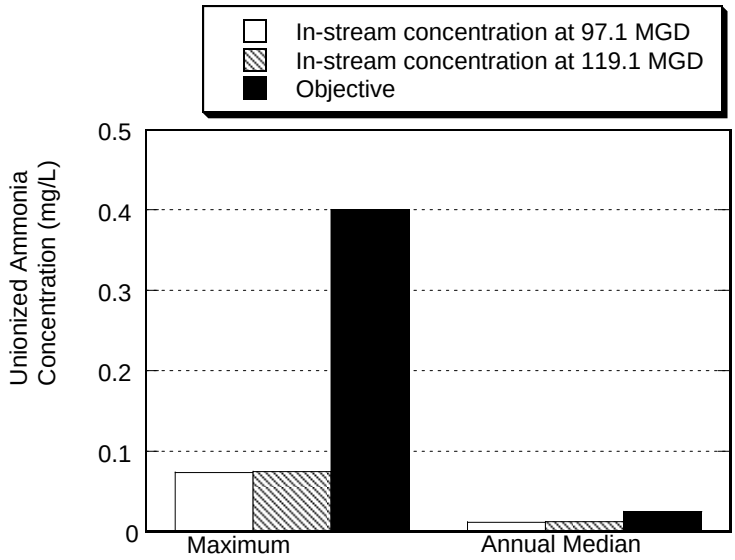



**Figure 5. Permitted and Future Proposed In-Stream Unionized Ammonia Concentrations at Discharge Point and Water Quality Objectives**

As shown in Table 4 and Figure 5, no changes are predicted which would cause violations of existing numeric water quality objectives for unionized ammonia. The use of a freshwater conversion factor, from maximum effluent pH and temperature values, to determine the unionized fraction of the total ammonia effluent concentrations results in predicted concentrations that are higher than actual concentrations. Regardless, it is concluded that the proposed increase in permitted capacity to 119.1 mgd will not have a measurable impact on either ambient levels of unionized ammonia or toxicity to aquatic organisms in the vicinity of the EBDA discharge.