



Department of Toxic Substances Control

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ALAMEDA POINT
SSIC NO. 5090.3



Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

700 Heinz Avenue, Suite 200
Berkeley, California 94710-2721

Arnold Schwarzenegger
Governor

April 8, 2005

Mr. Thomas L. Macchiarella
Southwest Division Naval Facilities Engineering Command
Attn: Code 06CA.TM
1220 Pacific Highway
San Diego, CA 92132-5190

DRAFT FINAL REMEDIAL INVESTIGATION REPORT, OU-1, IR SITES 6, 7, 8, and 16, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Mr. Macchiarella:

Attached are the comments prepared by the Human Health and Ecological Risk Division (HERD) of the Department of Toxic Substances Control (DTSC) concerning the draft final Remedial Investigation (RI) report for OU-1 dated October 1, 2004. Please review and incorporate the comments in any future risk assessment conducted for above referenced sites. Should you have any questions, please contact me at 510-540-3767 or mliao@dtsc.ca.gov.

Sincerely,

Marcia Y. Liao

Marcia Liao
Remedial Project Manager
Office of Military Facilities

Enclosure

Mr. Thomas Macchiarella
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cc:

Greg Lorton, SWDiv
Glenna Clark, SWDiv
Anna-Marie Cook, EPA
Judy Huang, RWQCB
Elizabeth Johnson, City of Alameda
Peter Russell, Russell Resources
Jean Sweeney, RAB Co-Chair
Lea Loizos, Arc Ecology



Department of Toxic Substance Control



Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

1011 N. Grandview Avenue
Glendale, California 91201

Arnold Schwarzenegger
Governor

MEMORANDUM

TO: Marcia Liao, DTSC Project Manager
OMF Berkeley Office
700 Heinz Street, Second Floor
Berkeley, CA 94704

FROM: James M. Polisini, Ph.D.
Staff Toxicologist, HERD
1011 North Grandview Avenue
Glendale, CA 91201

DATE: March 4, 2005

SUBJECT: NAVAL AIR STATION ALAMEDA (ALAMEDA POINT) DRAFT OU-1
REMEDIAL INVESTIGATION REPORT, SITES 6,7,8 AND 16
[SITE 201209-18 PCA 18040 H:48]

BACKGROUND

HERD reviewed the document titled *Draft Final Remedial Investigation Report, Operable Unit 1, Sites 6, 7, 8 and 16, Alameda Point*, dated October 1, 2004. This Draft Final Remedial Investigation (RI) Report was prepared by Tetra Tech EM, Inc. of San Diego, California. HERD previously reviewed the document titled *Draft OU-1 Remedial Investigation Report, Sites 6, 7, 8, and 16, Alameda Point, Volume I of III*, dated February 13, 2004, in a HERD memorandum dated July 23, 2004.

NAS Alameda was an active naval facility from 1940 to 1997. Operations included aircraft, engine, gun and avionics maintenance; fueling activities; and metal plating, stripping and painting. An unconfined landfill exists on the margin of San Francisco Bay in the western bayside area of NAS Alameda. In addition to skeet range activities, linked storm water and industrial wastewater lines discharged to the Seaplane Lagoon in the Northwest and Northeast corners, as well as the Oakland Inner Harbor Channel side of NAS Alameda.

Site 6 is approximately 600 feet north of the Seaplane Lagoon and approximately 5.6 acres in size. Nearly all of Site 6 is covered with asphalt and concrete, buildings, roads and parking lots. Site 6 is also known as building 41 (Aircraft Intermediate Maintenance Facility) was constructed before 1945 and was used to house seaplanes and to repair

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aircraft components. Site 6 also includes RCRA units, NAS Alameda generator components, fuel lines, storm drains and sanitary sewer lines.

Site 7 is located along the eastern boundary of Alameda Point approximately 1800 yards from San Francisco Bay. Site 7 is approximately 5.6 acres in size. Approximately 70 percent of Site 7 is open space covered by primarily with asphalt and concrete and some bare ground. Buildings and structures cover the remaining 30 percent of Site 7. Site 7 is also known as the Naval Exchange Service Station area. The automobile service station operated from 1966 to 1997.

Site 8 is located in the central portion of NAS Alameda. Site 8 is approximately 4.3 acres in size. Approximately 80 percent of Site 8 is covered by asphalt and concrete and consists mainly of building, roads and parking lots. Little vegetation is reported at the site. Site 8 was the Pesticide Storage Area (Building 114) which opened in 1944 as the center for weed and pest control.

Site 16 is located in the southeastern corner of NAS Alameda approximately 400 feet from San Francisco Bay. Site 16 is approximately 11.1 acres. Approximately 50 percent of Site 16 is covered by asphalt and concrete roads and parking lots. Buildings cover approximately 30 percent of Site 16 and 20 percent is unpaved open area. Little vegetation is reported at Site 16. Eight large shipping containers were used for avionics parts, test equipment, and chemicals including solvents. Before placement of the containers in 1948, Site 16 was used for aircraft parking, storage of paint, solvent, acids and bases. Above ground and underground storage tanks were located at the site.

GENERAL COMMENTS

No Navy Response to Comments responding to the HERD July 23, 2004 memorandum to Marcia Liao were presented in Appendix J with the Response to Comments by other agencies, departments and interested entities. HERD assumes this was due to the lateness of the HERD comments on the draft Remedial Investigation (RI) Report. Comments contained in this memorandum address the more significant HERD July 23, 2004 comments as well as some additional risk assessment issues. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

Screening of Contaminants of Potential Concern (COPCs) against the U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) to develop a list of site-specific Contaminants of Concern (COCs) is retained in the Human Health Risk Assessment. This is counter to HERD previous comments and direction to Navy contractors for other sites at NAS Alameda and counter to EPA direction on the intended use of PRGs. PRGs are meant to screen sites, not to screen chemicals. Implementation of this health-based screening step for winnowing the COPCs to a list of COCs reduces the estimate of incremental cancer and/or non-cancer hazard by some unknown fraction dependent on

the number of COPCs dropped. The upper bound of this underestimate would be 9.9×10^{-7} incremental risk for each carcinogenic COPC eliminated and an additional 0.99 non-cancer hazard quotient for each non-carcinogenic COPC eliminated. HERD does not agree that this degree of uncertainty is appropriate in a HHRA.

SPECIFIC COMMENTS

1. As a point of historical record, HERD never agreed to point estimates of 'ambient' concentrations developed from the data set for areas designated as pink, blue and yellow as indicative of an 'ambient' soil concentrations in these areas (Volume I, Section 3.4.3.1, page 3-17 and Appendix G, Section G.4.2.4, page G-8). HERD has requested an electronic copy of the data set referenced for soils (Tetra Tech, Inc., 1997) for independent evaluation, but has yet to receive an electronic copy. The fact that this Draft Final RI Report contains a section with statistical tests of Operable Unit 1 (OU1) soil concentrations to site-specific soil concentrations (Volume II, Appendix E) indicates an electronic copy is available. Please forward an electronic copy of the 'ambient' soil data set for the pink, blue and yellow areas in an excel-readable format to HERD.
2. The benzo(a)pyrene (BaP) Toxicity Equivalency Factors (TEFs) proposed (Volume I, Section 3.4.4, page 3-19) are those listed in the U.S. EPA Preliminary Remediation Goal (PRG) table, with the exception of the 'Cal modified' TEFs for benzo(k)fluoranthene and chrysene. HERD commented on July 23, 2004 that 'the most conservative TEF, whether listed as 'Cal modified' in the PRG table or as released by the CalEPA Office of Environmental Health Hazard Assessment (OEHHA) should be used in evaluating incremental cancer risk and or non-cancer hazard.' The CalEPA approved TEFs for polycyclic aromatic hydrocarbons (PAHS) are:

Polycyclic Aromatic Hydrocarbon	CalEPA TEF	TEF Listed
Benz(a)pyrene	1.0	1.0
Benzo(a)anthracene	0.1	0.1
Benzo(b)fluoranthene	0.1	0.1
Benzo(k)fluoranthene	0.1	0.01
Dibenz(a,h)anthracene	0.34	1.0
Indeno(1,2,3-c,d)perylene	0.1	0.1
Chrysene	0.01	0.001

The difference from CalEPA TEFs for dibenz(a,h)anthracene is health protective and therefore complies with previous HERD comments. However, the CalEPA TEF for benzo(k)fluoranthene and chrysene is ten times higher, and therefore more protective, than the TEF used in the HHRA. Please use the more protective CalEPA TEFs in the Final RI Report for these two PAHs as directed in the July 23, 2004 HERD comment.

3. In addition to the PAH issues raised outlined above, naphthalene has recently been designated a carcinogen via the inhalation route by the CalEPA Office of Environmental Health Hazard Assessment (OEHHA) with an inhalation slope factor of $1.2 \times 10^{-01} \text{ (mg/kg-day)}^{-1}$ (http://www.oehha.ca.gov/air/hot_spots/naphth.html). Naphthalene must be included as a carcinogen for the complete assessment of incremental cancer risk.
4. The proposed hierarchy for selection of Toxicity Reference Values (TRVs) (Section 3.4.6.4, page 3-27) continues to make no mention of 'Cal modified' TRVs or selection of TRVs, both cancer slope factors (CSFs) and Reference Doses (RfDs), selected by the CalEPA OEHHA. The most conservative TRV, whether listed as 'Cal modified' in the PRG table or as released by the CalEPA OEHHA should be used in evaluating incremental cancer risk and or non-cancer hazard unless a dual track method of estimating incremental cancer risk and non-cancer hazard is utilized for OU1. This same comment was made on the Draft RI Report.
5. HERD does not find acceptable a lead soil Exposure Point Concentration (EPC) which allows 5 percent of the children exposed to exceed the health-associated blood concentration of 10 $\mu\text{g/dl}$ (Section 3.4.6.5, page 3-29) in a residential-use scenario. HERD recommends the Human Health Risk Assessments (HHRAs) risk assessment point for child soil lead exposure as the 99th percentile value rather than the 95th percentile value proposed in this RI Report. This same comment was made in the July 23, 2004 HERD memorandum.
6. Prior to eliminating potential COCs from the ERA when the Frequency of Detection (FOD) is less than 5 percent (Section 3.4.7.1, Step 1, page 3-34, the geographic distribution of those COCs should be evaluated using maps. The locations detected should be evaluated to determine whether an isolated location has a FOD greater than 5 percent (i.e., a hot spot) and the COC should therefore be retained as a COC. This evaluation should be included in Step 2 of the proposed process. A consideration of geographic distribution appears to be utilized later in the process for COCs (e.g., Site 6 silver, Section 4.4.3.2 page 4-23), but should also be employed in selecting potential COCs.
7. Please explain, in the text, the necessity for using a Food Chain Multiplier (FCM) (Section 3.4.7.3, page 3-38) to derive the tissue concentration of a potential prey item (e.g., ground squirrel) from the amount ingested by that consumer (e.g., soil invertebrates) when the Navy has performed co-located soil, plant, invertebrate and vertebrate tissue analyses at Mare Island Naval Shipyard and Hunters Point Shipyard. These direct measurements, while subject to some deficiencies, would replace modeled values for trophic transfer with measured values of the ratio between different trophic levels with the same soil concentration.

8. HERD is unaware of any study performed at NAS Alameda which proposed development of 'ambient' concentrations of pesticides (Section 3.4.7.5, page 3-40, eighth bullet item). Please provide a reference to the investigation which was the basis for any such values to which HERD and/or DTSC agreed.
9. The Representative Species and the Measurement Endpoints of reproductive or physiological impact presented (Table 4-35, page 1 of 1) appear protective of ecological receptors based on the CSM. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.
10. The HHRA indicates a groundwater incremental cancer risk (ICR) of 4.7×10^{-04} and a Hazard Index (HI) of 9 for children in a residential scenario (Table 4-27) at Site 6. Site 6 should obviously proceed to a Feasibility Study (FS) based on these values.
11. Tables for Site 6 (Tables 4-26 through 4-32), as well as other sites, do not appear to sum the incremental cancer risk due to soil exposure and groundwater potential intake. U.S. EPA Guidance and DTSC Guidance require that total incremental cancer risk (e.g., due to soil and groundwater) be evaluated in the RI Report. Please provide a table presenting the incremental cancer risk and the non-cancer hazard summed for both soil and groundwater for all sites in this RI Report where soil and groundwater intakes are currently presented separately.
12. There is no reason to assume that avian species would react differently than mammalian species in terms of exposure and systemic toxic effects that are not related to the difference in reproductive strategies (e.g., egg shell deposition) or organ structure and function (e.g., avian kidneys compared to mammalian kidneys). For a more complete qualitative evaluation of potential avian hazard, mammalian Toxicity Reference Values (TRVs) should be used for avian species where no avian-specific TRVs (e.g., Table 4-35) are available and the toxic endpoint is not related to specific reproductive differences (e.g., calcium metabolism which could reasonably be related to egg shell formation). HERD suggests this qualitative approach only because of the large number of COCs lacking avian toxicity values in this assessment and the recommendation of No Further Action based on limited exposure and/or limited terrestrial habitat at OU1 sites.
13. Even a cursory evaluation of the range of Site 7 soil concentrations detected, the frequency of detection and the sample location of the maximum concentration (Section 5.3.4.2, page 5-28) indicates the potential COCs and the locations requiring the closest scrutiny (e.g., B07A-08, M07A-02, M07A-08 and S07A-02). The elevated soil concentrations appear to be associated with two areas, the vicinity of the Underground Storage Tanks and the soil debris area near Building 68-3 (Section 5.3.4.2, page 5-29). Locations requiring further groundwater action (e.g., W-3, W-1, and CA07-01) are also obvious in the summary of groundwater results (Section 5.3.4.2, page 5-29). A similar comment was made in the HERD July 23, 2004

memorandum. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

14. Arsenic is listed as a 'risk driver' in soil and groundwater for Site 7 (Section 5.3.4.3, page 5-30). Thallium is listed as a 'risk driver' for groundwater in the same section. None of these potential COCs are listed previously in the list of chemicals used at Site 7 outlining the range of concentrations in soil and groundwater. Please provide an additional table outlining the chemicals known to have been used at Site 7 similar to the tables provided (Section 5.3.4.2, pages 5-28 and 5-29), but including the potential COCs categorized as 'risk drivers'.
15. The 'previous agreement' among the Navy and regulatory agencies, setting the PAH screening level at 0.62 mg/kg for PAHs (a residential scenario risk of 1×10^{-05}), is repeatedly cited (e.g., Section 5.3.4.3, page 5-33). Other HHRA agreements for NAS have been ignored. The Navy and regulatory agencies, including HERD, also agreed that PRGs could be used to screen potential COCs as long as no more than ten carcinogenic COPCs or non-carcinogenic COPCs were screened out and the non-carcinogenic screening level was one tenth (0.1) the PRG. This is a NAS Alameda-specific exception to standard HERD Human Health Risk Assessment guidance that PRGs are for screening sites, using the methodology provided in the full EPA PRG document, not for screening potential COCs. The upper bound error incorporated by using a simple PRG screen, as implemented by the Navy (Appendix G, Section G.4.2.3, page G-7), is to decrease the incremental cancer risk by 9.9×10^{-7} for each carcinogenic COPC and decrease the non-cancer hazard quotient by 0.99 for any non-carcinogenic COPC dropped from the HHRA. Please review the COPCs which were removed, but would remain in the HHRA based on the criterion as stated above and provide an estimate of the change that result in the HHRA for carcinogens and non-carcinogens.
16. Thallium is not a COC which would be degraded in groundwater. Please provide a rationale for the indication from recent data that thallium concentrations are decreasing to non-detectable levels (Section 5.3.4.3, page 5-34). One possibility is that the groundwater monitoring locations for the 2002 sampling are no longer within the plume of groundwater from Site 7. The Corrective Action Plan for free product at Site 7 should be expanded monitor groundwater for thallium outside the sampling locations where thallium was historically detected.
17. HERD agrees that a separate Exposure Point Concentration (EPC) and risk may be calculated for the area of soil debris within Site 7 (Section 5.3.6.1, page 5-39). This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.
18. The evaluation of lead in soil at the soil debris area arrives at a 95th percentile protective soil concentration of 230 mg/kg (Section 5.3.6.3, page 5-44) for Site 7.

The only method by which HERD could approximate this value was to exclude ingestion of homegrown produce. The 99th percentile of the blood lead distribution in children must be used when developing a proposed Remedial Action Goal. Please obtain the agreement of U.S. EPA Region 9 for the exclusion of this pathway and in the event that U.S. EPA Region 9 staff agree, clearly indicate the exclusion of this pathway in the evaluation of lead in the text of this section together with the revised soil lead concentration based on the 99th percentile blood lead of 10 µg/dl for non-pica children.

19. Please move the text section discussing lead to the end of the section discussing the risk and hazard estimates for soil (Section 5.3.6.3, page 5-44), rather than placing it following the discussion of risk and hazard estimates for groundwater.
20. The conclusion that Site 7 ecological hazard is overestimated (Section 5.4.2.2, page 5-57) and the decision for No Further Action (NFA) for site 7 ecological receptors (Section 5.4.3, page 5-58) is based on the small size and low probability that the Site 7 soil debris area would support ecological habitat (Section 5.4.2.2, page 5-57). A deed restriction should be implemented to maintain the current use and limit exposure of ecological receptors to Site 7 soils.
21. The statement that lack of VOC data in soil from the surface to 2 feet bgs is not perceived as a data gap (Section 6.3.2.1, page 6-17) due to rapid volatilization is not applicable to human exposure via indoor air. Underestimation of the indoor air exposure pathway will reduce the potential total intake in Site 8 scenarios by an unknown amount dependent on the VOC soil concentration in the zero to 4 feet bgs and zero to 8 feet bgs samples. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.
22. COPCs are identified as posing a potential risk to ecological receptors at Site 8 (Section 6.4.2.2, page 6-43). NFA is recommended by the Navy based on the low 'likelihood the site will be used for ecological habitat' (Section 6.4.3, page 6-43). A deed restriction should be placed on Site 8 such that ecological receptors are not attracted to the area.
23. HERD does not find acceptable a lead soil Exposure Point Concentration (EPC) which allows 5 percent of the children exposed to exceed the health-associated blood concentration of 10 µg/dl (Section 7.3.6.3, page 7-42) for a residential use scenario of Site 16. HERD recommends the Human Health Risk Assessments (HHRAs) risk assessment point for child soil lead exposure as the 99th percentile value rather than the 95th percentile value proposed in this RI Report. This same comment was made in the July 23, 2004 HERD memorandum.
24. The recommendations for Site 6 are confusing. The text (Section 8.1.3, page 8-4) states that 'Based on the data and risks discussed previously, soil and groundwater

at Site 6 are recommended for further evaluation in an FS'. The following paragraph then states that 'No COCs were identified for soil' and proceeds to outline minimal or no risk at Site 6. The associated summary table (Table 8-5) indicates that No Further Action (NFA) is recommended for Site 6 soil. HERD assumes in the following summary that the first statement is in error and that NFA for Site 6 is the proposed recommendation.

25. The initial sentence of the recommendation for each site is that 'Based on the data and risks discussed previously, soil and groundwater are recommended for further evaluation in an FS' (Site 6, Section 8.1.3, page 8-4; Site 7, 8.2.3, page 8-10; Site 8, Section 8.3.3, page 8-14; and, Site 16, Section 8.4.3, page 8-18). Statements are then made in each section which apparently result in the recommendations listed (Table 8-5) to differ from the stated recommendation of further evaluation for soil and groundwater at all sites. HERD constructed the following table in an attempt to duplicate the shorter tabular summary presentation (Table 8-5) and list some of the rationale. The recommendations for NFA or FS in this table agree with that in the summary (Table 8-5):

Navy OU1 Recommendations				
	Site 6	Site 7	Site 8	Site 16
HHRA Soil	NFA	FS – Arsenic and Lead	FS – PCBs and PAHs and lead (from TPH) in shallow soil.	NFA
HHRA Groundwater	FS – VOCs	In place active corrective action for free product. As, PAHs, Mn, Th are risk drivers.	NFA. No COCs identified for groundwater.	FS – VOCs, Pesticides and Lead
ERA Soil	NFA	NFA – Future Use, Limited Size (1 acre)	FS – Lead	NFA
ERA Groundwater	NFA	NFA – Incomplete Pathway	NFA	NFA
HHRA = Human Health Risk Assessment COCs = Contaminants of Concern ERA = Ecological Risk Assessment PAHs = Polycyclic Aromatic Hydrocarbons PCBs = Polychlorinated Biphenyls VOCs = Volatile Organic Compounds (including chlorinated and non-chlorinated) NFA = No Further Action FS = Feasibility Study				

HERD has no risk-assessment objection to recommendations for those sites and media recommended to proceed to the Feasibility Study given the extended timeframe will allow reconsideration of the HHRA results, specifically for PAHs and lead. HERD recommends that the HHRA cancer risk and non-cancer hazard, as well as lead in soil hazard, be re-evaluated as outlined in the Specific Comments and those sites recommended for No Further Action (NFA) be re-evaluated. This re-evaluation of the HHRA could be transmitted to DTSC and HERD in a separate document to limit cost.

APPENDIX G SPECIFIC COMMENTS

26. East Bay Municipal Utility District (East Bay MUD) drinking water lead concentration, for use in the DTSC LEADSPREAD spreadsheet calculation, is listed as 0.15 µg/l rather than 15 µg/l (Section G.1, page G-1). Please correct this typographic error.
27. Geophysical studies or record searches should be cited which indicate that utilities, which might require access for repair or expansion, are not present at depths exceeding the zero to eight feet below ground surface (bgs). This depth interval is used to calculate the Exposure Point Concentration (EPC) for the construction worker scenario (Section G.5.3.1, page G-12).

CONCLUSIONS

The results and recommendations of the HHRA rely, in part, on 1) use of simple PRG ratios to screen inorganic and organic Contaminants of Potential Concern, 2) the assumption that the currently-planned use will be the actual future use, and 3) reliance on 'agreements' regarding PAH screening concentrations and polychlorinated biphenyl (PCB) soil site screening at 1 mg/kg to evaluate potential further action. HERD recommends revision of the HHRA to 1) include those COPCs eliminated based on simple PRG ratios 2) use of Toxicity Equivalency Factors (TEFs) for PAHs released by OEHHA (including naphthalene as a carcinogen via inhalation) and 3) evaluation of lead hazard using a LEADSPREAD soil concentration protective of the 99th percentile of non-pica children at 10 µg/dl blood lead.

Deed restriction, or some document of equivalent legal standing, should be implemented where the Navy-proposed NFA option is recommended based on the projected use (i.e., planned future use) and therefore lack of exposure. Acceptance of NFA, on this basis, requires careful review by the DTSC Project Manager of the 'agreements' cited for PAHs and PCBs when evaluating the proposed action for OU1 sites 6, 7, 8, and 16.

The conclusions of the ERA are, in part, based on current lack of habitat and an assumption that future use will not lead to significant increases in habitat and thus

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increased exposure to ecological receptors. A deed restriction should be placed on the OU1 parcels to limit future use to current uses so that future exposure pathways do not differ significantly from current exposure pathways to the detriment of ecological receptors.

REFERENCE

Tetra Tech, Inc. 1997. Samples for Use as Background, Naval Air Station Alameda, Alameda, California. February 7 and March 14.

HERD Internal Reviewer: Michael Anderson, Ph.D.
Staff Toxicologist HERD



cc: Ned Black, Ph.D., BTAG Member
U.S. EPA Region IX (SFD-8-B)
75 Hawthorne Street
San Francisco, CA 94105

Ms. Beckye Stanton
U. S. Fish and Wildlife Service
2800 Cottage Way
Suite W-2605
Sacramento, CA 95825-1846

Charlie Huang, Ph.D., BTAG Member
California Department of Fish and Game
1700 K Street, Room 250
Sacramento, CA 94244-2090

Laurie Sullivan, M.S., BTAG Member
National Oceanic and Atmospheric Administration
c/o U. S. EPA Region 9 (H-1-2)
75 Hawthorne Street
San Francisco, CA 94105-3901

Judy Huang
San Francisco Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612