

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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SFD 8-3

January 8, 2004

Thomas Macchiarella
BRAC Operations, Code 06CA.TM
Department of the Navy, Southwest Division
Naval Facilities Engineering Command
1230 Columbia Street, Suite 1100
San Diego, CA 92101

RE: Draft Groundwater Remedial Investigation/Feasibility Study, Alameda Point Site 25 and
Alameda Annex IR-02

Dear Mr. Macchiarella:

Please find enclosed EPA's review of the above referenced document. The document was prepared by ERRG and submitted by the Navy to the agencies on October 9, 2003. EPA requested, and was granted, a 14-day review extension in accordance with the Alameda FFA Section 10.7, which pushed the submittal of comments date to December 23, 2003. EPA submitted comments via e-mail on December 23, and is following up with this cover letter and hard copy of the comments.

We appreciate the opportunity to review this Remedial Investigation/Feasibility Study and look forward to resolving our concerns. Please call me at (415) 972-3029 to discuss these comments.

Sincerely,



Anna-Marie Cook
Remedial Project Manager

enclosure

cc list: Darren Newton, SWDiv
Marcia Liao, DTSC
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**EPA Review of the Draft Groundwater Remedial Investigation/Feasibility Study,
Alameda Point Site 25 and Alameda Annex IR-02**

General Comments

1. The document is well written and makes good use of figures and tables to summarize monitoring well and hydropunch data. The description of the site and the past fill events are nicely presented and it is the first time this reviewer has seen the Navy's 2000 Beneficial Uses of Groundwater document correctly summarized. Agreements between stakeholders are thoroughly recounted in the text which aids in overall understanding of the document.
2. However, the conceptual model of the groundwater contamination has not been as well thought through as it needs to be. The most major of the problems are the assumptions that the plumes are decreasing in concentration at a first order rate of decay and that the plumes are not migrating. A few things have led to these erroneous conclusions, namely a straight comparison between monitoring well data and hydropunch data and a dependence on computer generated graphs and plumes without performing a reality check on the output. (See specific comments # 14 and 17 for details).
3. The discussion of fate and transport is generally reasonable, and appears to recognize that additional monitoring wells and data to substantiate natural attenuation processes would be important. However, the claim for the stability or decreasing contaminant of concern (COC) plumes and the role of biotransformation is largely based on a qualitative interpretation of limited data. If Monitored Natural Attenuation (MNA) is considered as part of a remedial alternative, please recognize that the additional monitoring points and complete MNA data are important components for developing the supporting lines of evidence that the enhancements to MNA are effective. Lateral and vertical profiles and contours of MNA parameters (oxidation-reduction potential [ORP], dissolved oxygen [DO], Total Organic Carbon [TOC], and other electron acceptors) are important for supporting the claimed stability or decrease in benzene and naphthalene plumes. Given the shallow groundwater data, the existing plume of benzene in groundwater, and the potential for methane generation in the anaerobic environments, a monitoring plan for soil gases should also be developed so that sufficient data are obtained and so that these data are of a quality to allow for an assessment of current and future indoor air risks.
4. Asserting that indoor air does not yield a risk without including the data used to come to this conclusion is unacceptable. All data used for an FS evaluation must be available for the agencies and the public to view. If the Coast Guard data is deemed inadequate to be included in the report, the Navy must perform its own air monitoring and present the data to the regulatory agencies and the public.
5. EPA would like to see another alternative evaluated in this study. Alternative 4 should

include biosparging with nutrient enhancement, followed by MNA with ICs. The reason EPA is promoting the nutrient enhancement in addition to biosparging is that it is not an expensive or complicated technology and the site conditions appear highly favorable for nutrient enhancement to greatly accelerate the effects of the addition of oxygen on degradation of the plume.

Specific Comments:

1. **Page 1-1, second paragraph:** The description of the parcels which overlie the plume should be better worded. The residential housing parcels occupy Parcel 181, the Coast Guard North Village Housing, and Parcel 179, Coast Guard Marina Village Housing. Parcel 179 and 180 have a school and day care center respectively.
2. **Page 1-5, Section 1.1.1, first paragraph:** It is important to be clear that this report is not limited to the same parcels that comprise Operable Unit 5, which is a soils OU, and that this report does not only focus on Site 25, Parcel 181. The groundwater plume is present under Parcels 178, 179 and 180 in addition to Parcel 181. Parcel 178 is now designated as IR Site 31 and Parcels 179 and 180 as IR Site 30 due to the presence of groundwater contamination. IR Sites 30 and 31 have not yet been assigned an Operable Unit.
3. **Page 1-11, third paragraph:** Again, this report does not focus solely on Parcel 181 as contamination also underlies Parcels 178, 179 and 180.
4. **Page 1-11, fourth paragraph:** What remediation activities occurred at Mayport/Kollman Circle during the Parcel Evaluation Plan? This information is vital in establishing whether the source for the highest concentration plume in this report has been effectively removed.
5. **Section 2.0, Physical Characteristics of the Study Area, Page 2-1:** The first bullet item refers to the location of a previous Navy removal action to address polynuclear aromatic hydrocarbons in shallow soils; however, this removal action is not described or shown on a figure. For clarity and completeness, and to demonstrate potential source area removal, please revise the RI/FS to describe this removal action and show the location on a figure.
6. **Section 2.1, Geology and Section 2.2, Hydrogeology, pages 2-1 through 2-3:** It is unclear why there are no cross-sections. Cross-sections help the reader visualize the units discussed in the text. Please include at least one cross-section in the Draft Final RI/FS.
7. **Section 2.2, Hydrogeology, Page 2-3 and Figure 4-18:** The text states “at the site, groundwater in the FWBZ flows in a north by northwest direction, towards Oakland Inner Harbor,” but Figure 4-18 indicates that groundwater flows to the southwest and west. Please resolve this discrepancy and if the groundwater flow direction is variable,

provide additional groundwater elevation maps.

8. **Section 2.4, Utilities, Page 2-7:** It is not clear how storm drain lines in Site 25 were evaluated for leaks or whether storm drain lines in Alameda Annex IR-02 and Site 25 were evaluated for potential infiltration of groundwater. Since contaminated groundwater infiltrating storm drain lines is a potential source of contamination to Oakland Inner Harbor, please revise the RI/FS to clarify whether this possibility was evaluated.
9. **Page 3-4, Section 3.1.3, second paragraph:** Firstly, the Marsh Crust did warrant remedial action in the form of Institutional Controls (See Final Remedial Action Plan/Record of Decision for the Marsh Crust at the Fleet and Industrial Supply Center Oakland, Alameda Facility/Alameda Annex and for the Marsh Crust and Former Subtidal Area at Alameda Point, January 2001) to minimize exposure to the PAHs in the Marsh Crust. Secondly, the Marsh Crust was ruled out as a source of groundwater contamination because the types and concentrations of PAHs in the groundwater, most notably naphthalene, do not reflect the types and concentrations of PAHs found in the Marsh Crust.
10. **Page 3-5, Section 3.1.4, first paragraph and third paragraph:** Explain why different wells were used in each sampling event and why wells were destroyed during the removal actions.
11. **Figure 3-1:** This figure is confusing as Parcels 178, 179 and 180 are depicted as “Residential Parcels” which implies then that Parcel 181 is not. It would be more accurate and less confusing to either label them with Parcel numbers as they have been done in the OU 5 Soil FS or to label them as IR Sites 25, 30 and 31.
12. **Section 3.2, Previous Soil Gas Investigations, Page 3-12:** The text states that the highest detected concentration of benzene in soil gas was considered an anomaly because the sample was collected in an area where benzene was not detected in groundwater, but this statement does not consider that there may be other explanations. For example, vapors can migrate in soil, there could be preferred pathways for vapor migration, or there could have been a point source release to surface soil in the vicinity of the sampling point. Please revise the text to discuss possible explanations for this detection rather than dismissing it as an anomaly.
13. **Page 3-12, last paragraph:** Explain the factors that went into the model to yield an indoor air risk that is greater for a concrete slab foundation than a concrete perimeter foundation.
14. **Figures 4-1 through 4-5:** All computer-generated maps should be checked by a geologist for accuracy, but there is no indication that this was done. For example, Figure 4-1 has solid lines where there is little information and the contours should extend further north and west; this may indicate that there is too much contour smoothing. Similarly, on

Figure 4-2, contours should extend south toward S-16. On Figures 4-3, 4-4, and 4-5, the contours do not honor all of the data, particularly data below 50 micrograms/liter (ug/l). On Figure 4-3, there is only one data point in the western portion (P181-MW45), which is insufficient to contour this area. In addition, it is unclear why the shaded (contoured) area extends southwest of S-16 when there is no data in this area. On Figure 4-4, the computer-generated contours for all three plumes should extend farther to the northeast to honor all of the data. For the western plume on Figure 4-4, it appears that contours should also be extended farther to the south to incorporate data at OS-HP-09 and OS-HP-05. None of the contour maps have dashed lines where there is little data. None of the figures include a contour at the maximum contaminant level (MCL) or a zero contour. Please address these issues and consider replacing the computer-generated maps with hand-contoured maps. If hand-drawn maps are not used, please do not use white for the lowest range of concentrations, discuss the assumptions underlying the contouring algorithm and those input into the contour program, evaluate whether the degree of smoothing used is appropriate, and ensure that a geologist checks the contours for accuracy and inclusiveness. In addition, it is difficult to read the posted numbers. Please use a contrasting color for all posted numbers so that they can be read.

15. **Page 4-1, Section 4.0, last bullet:** Is there any connection between locations of storm/sewer pipes laid in high permeability trenching material and locations of soil gas concentration hits?
16. **Page 4-2, bulleted items:** There is also a plume that originates in the Mayport/Kollman Circle. Also, where is the MTBE plume located relative to the benzene and naphthalene plumes.
17. **Page 4-4, Section 4.2.2:** Unfortunately, use of the Surfer program does the report a disservice. It masks the real trends by artificially trying to fit the data to a pattern that doesn't exist. In addition, the contour maps show a fictitious delineation of the plume boundaries in the west and northwest portions, when in reality these areas are not yet bounded.
18. **Page 4-16, bulleted items:** I do not agree with the Mann-Kendall trend results presented in these bullets. Overall, concentrations of benzene from monitoring wells in the plume centers (i.e. EW-2, P181-MW45, P181-MW 47) are the same in 2001 as in 1994, despite a decrease in concentration in MW 45 and MW 47 in 1999. In fact, out of the nine wells that were sampled in 1994, 1999, and 2001, only one showed a continued decrease in concentration from 1994 to 1999 to 2001.
19. **Page 4-16, Section 4.2.5:** EPA does not agree that there is convincing evidence from trend evaluation that contaminant mass is being reduced. Rather, it appears that a contamination source is still present and/or contamination has moved vertically downward in the groundwater, attenuation has stalled and there is slow migration of the contamination in a general northwest direction.

20. **Section 4.2.5, Monitored Natural Attenuation Parameters, Page 4-16:** The results of analyses of monitored natural attenuation (MNA) parameters are listed in Table 4-1, but, with the exception of dissolved oxygen (DO) and oxidation-reduction potential (ORP) the results are not discussed. However, the RI/FS concludes that the MNA parameters indicate that biological degradation of benzene is occurring. Since the selection of the recommended alternative is based on the conclusion that biological degradation is occurring, the RI/FS should discuss, in detail, how the MNA parameters indicate that biological degradation is occurring and will remediate the site with the addition of nothing further than oxygen.
21. **Figure 4-18, Groundwater Elevation Map:** This map should include monitoring well symbols and groundwater elevation values on the map so that the contours do not appear arbitrary and unsupported by data. Please add this information to the map.
22. **Section 4.2.6, Groundwater Conceptual Model, Page 4-24:** The first bullet on this page states that the absence of benzene in soil-gas indicates that volatilization in the vadose zone has already occurred, or that vadose zone biodegradation has already removed shallow benzene; however, this statement is contradicted by the text of Section 4.3, which lists several other factors that may account for the absence of benzene in soil gas unrelated to biodegradation. Therefore, the absence of benzene alone does not provide evidence that biodegradation in the vadose zone is occurring. Since the recommended remedial option, biosparging, is based on the premise that contaminants volatilized in groundwater will be biodegraded in the vadose zone rather than be emitted to the atmosphere, the RI/FS should provide evidence to indicate that this will occur. Please revise the RI/FS to include a discussion of the evidence that suggests that volatilized contaminants will biodegrade in the vadose zone. If this data is unavailable, it should be obtained during the design phase.
23. **Page 4-25, Section 4.4.2, second paragraph:** EPA is concerned that the point source discharge located at Kollman/Mayport Circle has not been adequately remediated. In the absence of evidence documenting the remediation, EPA assumes that the remediation did not take place or at least not in a CERCLA approved manner. In addition, the high concentration of the plume in this location may be due to a continuing source.
24. **Page 4-25, Section 4.4.2, third paragraph:** Was MTBE found in the plumes underlying the Alameda Point site?
25. **Page 4-28, Section 4.6:** EPA does not agree with the conclusion that the plume center concentrations are decreasing. Rather, it appears that the plumes are migrating downward and also to the northwest. It is possible that soil at Kollman Circle is an ongoing source of groundwater contamination.
26. **Table 5-1:** Advection seems to be evident in the lower stratigraphy, i.e the 20 foot depth of contamination where the plume contour fits the northwest hydraulic gradient.

Sorption description states that BTEX compounds are hydrophobic. However, benzene has a high water solubility, so perhaps BTEX should be changed to PAHs. Under the infiltration block, it should be noted that approximately 50-60% of the Alameda Point site is uncovered surface, so actually the majority of the site allows for infiltration. (See OU 5 FS).

27. **Page 5-6, Section 5.5, third paragraph:** The plots do not show a first order decay of contaminants in groundwater. Even though the graphs claim that data up to mid-2001 is used, they only show data to 1999 which drastically skews the curves and the equations. For example, monitoring well P181-MW47 on Table 5-2 would show a 2001 data point of 1620 ppb benzene that exceeded the original 1994 data point of 1400 ppb if all data were used in the plot. This table is a prime example of using a computer program to produce an output which is not then double checked against reality. Tables 5-3, 5-5, and 5-6 exhibit the same problem. Tables 5-4 and 5-7 do not have data from 2001 and, for this reason, are poor choices to use to show trends.
28. **Page 5-14, Section 5.6, first paragraph:** The fact that PAHs adsorb to soil particles makes them harder to remediate through MNA. How will the problem of PAHs being a long term contaminant slowly desorbing off the soil into the groundwater be addressed?
29. **Page 5-14, Section 5.6, fourth paragraph:** EPA does not agree with the conclusion of decreasing concentrations. Only one well out of the nine that have been sampled in 1994, 1999 and 2001 showed an overall downward trend. The others have shown contaminant concentrations in 2001 returning to about the same level as the 1994 concentrations, in other words, the plumes exhibit stability, but no decrease in size.
30. **Page 5-15, second and third paragraph:** The 1994 and 2001 plume extents are fairly similar and show that not much degradation has occurred. How were data fluctuation from the different seasons taken into account, and what was the rationale for doing this given the assertion that infiltration at the site was negligible? Please note, EPA disagrees with the assertion that infiltration at the site is negligible since 50% to 60% of the site is uncovered.
31. **Page 5-15, last paragraph:** Actually, it appears that the plume at the deeper level has increased, while the plumes at the shallower depths have decreased. These trends should be acknowledged rather than glossed over. Comparison of shallow hydropunch data with monitoring well data serves only to aid in making the case that the plumes are shrinking, which is actually not the case for the deeper zone contamination. The monitoring wells are not all completed in the shallower zone, indeed six of the nine wells used in the 1994, 1999 and 2001 sampling events were screened to at least 18 feet, and as much as 19.5 feet.
32. **Page 5-22, Section 5.8.1:** Approximately 60% of the site at Alameda Point is uncovered and infiltration would not be considered minimal.

33. **Page 5-23, first paragraph:** It is unacceptable to reference data that is not included or readily available to the regulators as proof that indoor air is not a problem for this site. EPA requires that the Navy perform indoor air sampling to verify the assertion that this exposure pathway does not present a threat to residents of the area.
34. **Page 5-23, Section 5.8.4:** What about gas vapors migrating along the high permeability trenching material in which sewer and storm drain pipes are laid?
35. **Page 6-1, Section 6.1, second paragraph:** Again, EPA cannot agree with the assertion that indoor air does not pose an unacceptable risk until the data from the Coast Guard indoor air study is included in this report or until the Navy performs some sampling of its own.
36. **Page 6-3, second paragraph:** Residential homes, a school and a day care center already are present at the site, so there is really no need to consider it a possible future development. Please reword
37. **Section 6.5, Ecological Risk Assessment, Page 6-5:** The RI states that Ecological Risk Assessments (ERAs) have been conducted for Alameda Point and the Alameda Annex. Please cite the documents containing these ERAs, and indicate whether these documents have been approved as final by EPA.
38. **Section 6.5.1, Alameda Point ERA Summary, Page 6-5:** Direct exposure to surface water was considered a complete exposure pathway in the ERA. The text mentions the storm sewer system and concludes that exposure would be minimal; however, the text does not describe whether discharge of shallow groundwater to the Bay was evaluated as a potentially complete exposure pathway. Please indicate how this exposure pathway was evaluated in the ERA.
39. **Section 6.5.2, Alameda Annex ERA Summary, Page 6-6:** The summary states that storm drain discharge from Alameda Annex poses no ecological risk to sediment-dwelling organisms in the Bay. However, it is unclear whether concentrations in surface water were measured or compared to state-promulgated water quality criteria. Please indicate whether this comparison has been conducted.
40. **Section 6.5.2, Alameda Annex ERA Summary, Page 6-6:** The RI cites a 1998 groundwater study that identified benzene as a chemical of concern, while polynuclear aromatic hydrocarbons (PAHs) and semi-volatile organic compounds (SVOCs) were “much less soluble and fairly immobile.” The text should be revised to discuss whether potential impacts to the Bay were quantified via a comparison of groundwater concentrations to surface water quality criteria. Additionally, the text in Section 6.0, Risk Assessment, page 6-1 states that additional shallow groundwater data was collected in 2002. It is unclear whether these results would modify the conclusions of the 1998 groundwater study with respect to chemicals of concern that have the potential to migrate

and discharge to the Bay. Please revise the RI to further discuss the potential for constituents in groundwater to impact surface water quality via discharge to the Bay.

41. **Table 7-1, Clean Water Act:** Why is this requirement considered relevant and appropriate if it has been shown that site contamination is not migrating to the Bay or surface waters? Is there a typo?
42. **Table 7-4:** If biosparging were converted to air sparging, wouldn't RCRA characterization and disposal regulations apply to the extracted waste stream as well?
43. **Page 8-4, Section 8.3.3:** Site monitoring is not a remedy. While site monitoring is part of the remedial investigation phase of a site and is also often a component of an active remedy, EPA does not accept site monitoring as a stand-alone remedy. In no way would this approach reduce or prevent risk and, of course, it would not provide any active treatment. This section and this alternative needs to be removed.
44. **Section 8.3.4, Containment - Phytoremediation, Page 8-5:** It is not clear why phytoremediation was the only containment technology considered. There are many more commonly used containment technologies and it appears that it would be appropriate to evaluate some of these technologies. Also, the RI/FS states that groundwater extraction is considered as a containment option, but this option is not discussed. Please revise this section to clarify why phytoremediation was considered the most promising containment option and why other technologies, including groundwater extraction, were eliminated or include other technologies and carry them through the screening process.
45. **Page 8-6, Section 8.3.5, third paragraph:** Until evidence is provided that Kollman Circle has been remediated, we cannot agree that no hot spots remain to be excavated.
46. **Page 8-7, Section 8.3.8, last paragraph, last sentence:** Please elaborate on the last sentence to explain what an increase in use of biological treatment means for the site. For example, is the technology cheaper than it used to be, is it more readily available, easier to use, more applicable to a wider variety of sites?
47. **Page 8-9, Section 8.3.8.2, bullets:** An extra bullet should be added regarding plume size as a factor to consider in air sparging.
48. **Page 8-10, Section 8.3.8.3, bullets:** An extra bullet should be added regarding plume size and concentration as a factor to consider in biosparging.
49. **8.3.8.3, Biosparging, page 8-10:** This section states that biosparging is most often used at sites with mid-weight petroleum products which do not readily volatilize but biodegrade more efficiently in aerobic environments. However, benzene volatilizes readily. It is not clear how biosparging, which is designed to eliminate fugitive emissions

by pushing volatilized contaminants into the vadose zone, will operate on benzene contamination. It is not clear how emissions can be controlled. Also, if vapor extraction wells are installed as a contingency, the advantage of operating the system as a biosparging system rather than as an air sparging system is not clear. Please revise the RI/FS to clarify the likelihood of benzene being volatilized rather than biodegraded and compare the relative advantages and disadvantages of biosparging and air sparging in the detailed analysis of alternatives.

50. **Page 8-12, Section 8.3.8.5:** EPA requests that nutrient/microorganism enhancement in conjunction with biosparging be evaluated as a remedial alternative. We believe that the combination of the two approaches may be much more effective than either one alone, and the slight additional cost would be more than offset by the time saved to achieve RAOs.
51. **Page 8-16, first paragraph and fourth paragraphs:** It should be noted that Site 5 is not a former UST site, and even though USTs probably contributed to the groundwater problem the primary contamination was a result of aircraft overhaul and plating activities. The steam enhanced extraction pilot study at Site 5 targeted DNAPLs in the groundwater and coincidentally managed to extract LNAPLs with the DNAPLs in a very effective removal action. The study evaluated the condition of the microbes in the subsurface and found that the microbe population returned to pre-steam injection levels within a few weeks indicating only a very short term adverse effect on the microbe population. The primary reasons not to consider steam injection as an alternative are that 1) the process is the most effective for treating DNAPL or extremely concentrated VOC plumes (which OU 5 does not have) and 2) the technology is fairly difficult and dangerous to implement in a residential area.
52. **Page 8-16, Section 8.4 and Table 8-1:** Remove "site monitoring" as a remedial alternative.
53. **Page 9-1:** Please include an Alternative 4: Biosparging with nutrient/microorganism enhancement followed by MNA and ICs.
54. **Page 9-6, Section 9.2.4:** Why does this alternative merit a ranking of 2 out of 5 for reduction of mobility, toxicity or volume through treatment? Where is the treatment on a no action alternative?
55. **Page 9-8, Section 9.3:** EPA has recently come out with a comprehensive MNA guidance document, which will assist the Navy further in determining how to meet the required lines of evidence necessary to establish MNA as a viable remedial alternative.
56. **Page 9-10, Section on Nature and Extent of Contamination:** It appears that the lower portion of the plume centered below the Kollman Circle may be migrating in the direction of groundwater flow to the northwest. This fact should be taken into

consideration when locating biosparging and possible nutrient enhancement wells.

57. **Page 9-11, fourth paragraph:** Please note that the 10^{-4} to 10^{-6} is not an acceptable risk range, but rather within the risk management range which allows the risk managers flexibility in determining how best to manage the risk.
58. **Page 9-12, fourth paragraph:** We disagree with the conclusions reached from reviewing data from P181-MW47. In 1994 data from this monitoring well yielded a concentration of 1400 ppb of benzene, in 1999 the concentration dropped to 251 ppb and in 2001 it shot back up to 1620 ppb. If this cyclic trend continues it is doubtful that the plume will decrease to any low concentration in our lifetimes and it is unbelievable that a time frame of 2016 (thirteen years from now) is projected for the concentration to degrade to 1 ppb. Again, a reality check would show that this assertion is completely unsupported by actual site behavior.
59. **Page 9-14, Section on Institutional Controls:** How will the ICs be enforced? What is the associated cost?
60. **Page 9-16, Section 9.3.3:** As far as the MNA component of the remedy is concerned, it is no different from the no action alternative with regards to long term effectiveness and permanence and so should receive a ranking of 1 out of 5. However, the IC component of the remedy gives this alternative a slightly better ranking in terms of long term effectiveness and permanence than no action and for this reason a ranking of 2 out of 5 can be used.
61. **Page 9-16, Section 9.3.4:** Like the no action alternative, MNA does not use any treatment to reduce mobility, toxicity or volume and so deserves a ranking of 1 out of 5.
62. **Page 9-16, Section 9.3.5:** The same logic thread should be used for evaluating short term effectiveness as was used in Section 9.2.5. In Section 9.2.5 the lack of ICs gave this criteria a low ranking, even though no wells were going to be placed. In Section 9.3.5, putting in a few wells is considered low risk, yet the placement of ICs is not mentioned. Please use consistency in evaluating the criteria between alternatives.
63. **Page 9-18, Section 9.4.5:** How can this alternative receive a higher ranking than MNA and no action when there is more short term risk from construction activities on site? Please use consistent logic here.
64. **Page 9-32, Section 9.5.7:** The assumption that the basewide groundwater monitoring program could absorb some of the costs of monitoring is not allowable. The basewide groundwater monitoring program will in all likelihood terminate with the completion of the last ROD signed for the base. Any groundwater monitoring requirements are considered part of the permanent remedy for as long as the remedy is in operation and as such must be factored into the cost for the duration of the remedy. Please redo the cost

estimates with this fact in mind.

65. **Page 9-32, Section 9.5.8:** Typically, when something is listed in order of preference, the most preferred alternative is listed first. Therefore, this paragraph should list Alternative 3 first, then Alternative 2 and lastly Alternative 1. Cost is usually not considered a significant factor in community acceptance of the best remedy unless the remedy is prohibitively expensive (none of these remedies are very costly).

Minor Comments:

1. **Page 1-5, Section 1.1.2, first paragraph:** What is a screening lot?
2. **Page 3-4, Section 3.1.3, last paragraph, first sentence:** Insert the word “that” between the words “reports” and “are”.
3. **Page 4-4, Section 4.2.2, last paragraph, first sentence.** Reword to correct grammar.
4. **Section 8.0 Identification and Screening of Technologies, Page 8-1:** “Sepia” is referenced throughout this section. It appears that this was a spell-checker substitute for U.S. EPA. Please use the correct acronym.

EPA Office of Regional Counsel Comments:

1. **General comment regarding Alternative 3--biosparging.** The FS is somewhat confusing as to whether Alternative 3 includes the possibility of air sparging and using vapor extraction wells. The discussion in chapter 8 indicates that air sparging is not retained as an alternative (page 8-10), and the ARARs charts (Table 4-1 in Appendix C and Table 7-4) state that the recommended alternative does not include vapor extraction and treatment. However, page 9-23 raises the possibility that air sparging “could be used” in Zone 2, and that “engineering controls for vapor capture and treatment may be considered.” This should be clarified.

Sec. 7 and Appendix C --ARARs

2. **Note:** Many of these comments refer to the ARARs discussions and tables in both Section 7 and Appendix C. EPA notes that both drafting and review of this document could be facilitated by having only one ARARs discussion and set of ARARs tables. Review of the ARARs is also made more difficult by putting the ARARs tables in Appendix C in the middle of the each portion of the ARARs text. Finally, we are curious why the Navy divided the location-specific ARARs tables into separate federal and state tables.

Other than the general and editorial comments, our comments are arranged by potential ARAR rather than by page number, since the discussion of each potential ARAR is found in a multitude of places (Sec. 7 text, Sec. 7 tables, Appendix C summary text, Appendix C detailed text, and Appendix C tables).

ORC General and Editorial Comments

3. **Page 7-1.** The document (fourth paragraph p. 7-1) refers to “TBC ARARs,” which is not technically correct, since TBC criteria are not ARARs; therefore, EPA recommends that the wording be changed to “To-be-considered criteria.” If the Navy chooses to adopt a TBC criterion as a requirement, then in the ROD it should be made clear that the requirement is no longer just a TBC, but rather a performance standard with which the chosen remedy must comply.
4. **Page C-1-3 fourth paragraph, third line:** Should “Alameda Point Site 5” be “Site 25”?
5. **Page C-1-3, fourth paragraph, end of next-to-last line:** The comma at the end of the line should be change to “or.”
6. **Page C-3-2, sec. 3.1.1, par. 2.** Should “OU-5” be changed to “Site 25”?

Chemical-specific ARARs

7. **Health advisory for naphthalene.** EPA considers the health advisory level for naphthalene to be a TBC rather than an ARAR. EPA 822-R-02038 (Drinking Water Standards and Health Advisories) states that a health advisory is not a legally enforceable federal standard, but serves as technical guidance.
8. **MCLs.** The tables list both State and federal MCLs. The Navy should include only the more stringent. The text on page 7-1, text in Appendix C, and Appendix C Table 2-2 all indicate that the State MCL for benzene is the more stringent and is the controlling ARAR. EPA recommends that the federal MCL be removed from the tables to avoid confusion.
9. **SMCLs.** The tables include SMCLs as a TBC but state that they do not directly relate to any contaminants of concern. Thus, it is unclear why the SMCLs are considered a TBC, or what SMCLs are being considered. The text at C-2-4 indicates that SMCLs for aesthetic qualities such as odor are considered to be TBCs. Unless the Navy expects to select this SMCL as a performance standard in the ROD, it is not necessary to discuss this in either the FS or the ROD.
10. **Water quality standards.** It is not clear why these are included when the contaminants are not migrating or discharging to surface water.

location-specific ARARs

11. **General comment:** Several of the proposed location-specific ARARs deal with laws generally requiring that actions do not harm the Bay or wildlife. It is not clear how the particular remedial alternatives being discussed in this FS could cause such harm, although there is some mention in the FS (p. C-3-3) of sediment being generated by construction activities, of wells being a route for entry of sediments and illegal surface dumping of toxic chemicals, and the potential risk of toxic pollutants dumping into marine waters. If the Navy in fact considers these laws to be ARARs, it should more clearly state which specific remedial action could implicate which specific portion of each law. Additionally, if there are concerns such as those noted on page C-3-3, the Navy should also discuss whether there are any action-specific ARARs which address those concerns. For example, if the concern is disposal of contaminated remediation waste, the Navy should explain how the waste is to be disposed of, and discuss the action-specific remedies related to that disposal. If the concern is members of the general public taking remediation waste and illegally dumping it, or birds being exposed to remediation waste, then the Navy needs to discuss whether there are any action-specific ARARs for storage or management of remediation waste. If the concern is runoff from the site, the Navy should consider whether substantive portions of the State's general permit for stormwater discharges from construction sites greater than one acre should be considered an ARAR.
12. **Fish and Wildlife Coordination Act.** EPA questions whether this remedial action will involve a waterbody being "impounded, diverted, the channel deepened, or otherwise controlled or modified" such that this Act should be considered an ARAR.
13. **Water quality standards.** The inclusion of water quality standards as ARARs is confusing for several reasons. First, they are included, but not consistently, as both chemical-specific and location-specific. Under chemical-specific ARARs, the comment in the FS table is that the contamination is not migrating to surface waters. Under location-specific, there is mention of the remedial actions possibly affecting the San Francisco Bay. It needs to be clarified whether the actions could in fact affect the Bay, and, if so, how. It would also be helpful to explain what specific WQS are considered to be relevant and appropriate. For example, there is a citation to the California Toxics Rule, but no discussion of whether there are any specific toxic pollutants covered by the California Toxics Rule that the Navy expects could be discharged to the Bay during the remedial action. (Additionally, the text on page C-3-2 refers to 40 CFR 137.38, whereas the ARARs table refers to 131.38.)
14. **CZMA.** Here, too, it needs to be clarified whether the actions could in fact affect the Bay, and, if so, how. Page C-3-6 indicates that a remedial action could result in sediment deposit in coastal waters. It is unclear which of the alternatives could have that result, and how. If the Navy in fact concludes that CZMA is an ARAR, the specific sections of the CZMA with which the remedial action must comply should be specified.

15. **McAteer-Petris Act.** Same comment as regarding CZMA.
16. **California Water Pollution Prohibition Act.** It is unclear how any of the remedial alternatives could implicate this law. If the concern is with regard to materials passing into waters of the State, the Navy should more clearly discuss how remediation wastes will be disposed of and whether the proposed means of disposal triggers any ARARs.

action-specific ARARs

17. **BAAQMD requirements.** The tables indicate that certain BAAQMD requirements in Rules 2 and 47 are relevant and appropriate, but that they would be applicable “if the biosparging were converted to air sparging, and vapor extraction and treatment were added.” The implication is that if the biosparging were not converted to air sparging, then the Navy considers these requirements to be appropriate and relevant for the biosparging. This should be clarified. Also, the text on page 8-11 suggests that even with the biosparging, there may be vapor extraction, although the ARARs table suggests that vapor extraction would only be used with air sparging. This should be clarified.
18. **SIP.** It is unclear what specific portions of the SIP are considered to be ARARs, and whether they add any requirements beyond the BAAQMD requirements. Additionally, the reference to the Clean Air Act in Table 4-1 of the Appendix should be to 42 USC, not 40 USC. Also, the text on page C-4-3 indicates that NAAQS are relevant and appropriate requirements because they are not enforceable. EPA’s position is that because NAAQS are not enforceable, they are not considered to be ARARs. However, State requirements based on the NAAQS could be ARARs.
19. **RCRA characterization requirements.** The text in chapter 7 indicates that RCRA requirements regarding characterization of hazardous waste would be included, and Appendix C discusses at length the requirements regarding characterization of waste under RCRA and State law; however, none of these requirements are included in the ARARs tables. EPA generally considers requirements to characterize waste such as those found in 22 CCR 66262.11 to be action-specific ARARs. The Navy should indicate whether there are any ARARs of this type given that the FS (p. C-1-9) indicates that some investigation derived wastes may be generated during the remedial actions.
20. **RCRA management requirements.** The text in Appendix page C-4-2 mentions RCRA requirements for management of solid and hazardous waste, but none are included in the tables. The text also indicates that groundwater from some wells at the center of the plume has the potential to be classified as a RCRA hazardous waste, and that “the appropriate requirements for storing, manifesting, and transporting this material for final disposal will be followed if soil cuttings and well purge water are classified as RCRA characteristic hazardous waste,” but does not indicate what those requirements are. EPA recommends that the Navy consider whether the RCRA management requirements

identified by the Navy in the recently-submitted FS for Site 26 groundwater are also ARARs for this action. Additionally, the implication from the discussion in the Appendix is that any remediation wastes would be disposed of off-site; however, this is not clear, and should be clarified.

21. **Disposal of wastes.** As noted above, the Appendix indicates that some wastes will be generated during remedial action. EPA recommends that the Navy clarify how such wastes will be disposed of and whether there are any requirements which are applicable or relevant and appropriate to such disposal.
22. **Monitoring.** The FS recently submitted by the Navy for Site 26 groundwater includes several RCRA ARARs regarding monitoring. The Navy should consider whether those ARARs should be included in this FS.
23. **NPDES.** The FS includes substantive portions of a NPDES permit as relevant and appropriate. This is somewhat confusing. First, the text at C-4-2 says, “The proposed response alternatives do not involve discharge of wastes to surface water. However, in the event of a discharge to the surface waters the DON will comply with substantive effluent limitations of an NPDES permit...” This should be clarified; specifically, the Navy should clearly indicate whether it intends to discharge any wastes to surface water. Additionally, the ARARs table is overbroad and lists CWA 302-307 as the citation for the NPDES requirements. Instead, the Navy should consider what NPDES requirements in 40 CFR parts 122 and 125 would be ARARs.

Sec. 8 -- Identification and Screening of Technologies

24. **P. 8-1.** What is the reference to “Sepia” in the first paragraph? Is this a typo for “USEPA”? Note that references to “Sepia” occur throughout the document.
25. **Sec. 8.1, p. 8-1, second paragraph, second sentence.** It appears that the word “where” should be “which”.
26. **Sec. 8.3.2.1, p. 8-3, Deed Notification.** The discussion confuses deed notification with deed restriction. EPA does not consider deed notification to be an effective LUC and prefers deed restrictions and land-use covenants. EPA also recommends that at some point in the FS, there should be a discussion of the layered approach and the need for both a deed restriction in the Navy’s transfer document and a LUC with the State. Additionally, there needs to be a citation to the RWQCB requirements (third bullet on page 8-3).
27. **page 8-4, “Institutional Controls” General Screening.** Because of the permanent nature of most ICs and the need for periodic monitoring and enforcement of ICs, EPA does not concur that the cost of ICs in general is necessarily low compared to more

aggressive remedial technologies.

Sec. 9--Development and Screening of Remedial Alternatives

28. **Sec. 9.1, page 9-3 and following - Evaluation criteria.** In this and the following section, the Navy assigns numbers for all the evaluation criteria, including the threshold criteria of protectiveness and compliance with ARARs. For the two threshold criteria, the Navy should simply state whether the criteria are met rather than assigning numbers between 1 and 5. It is neither necessary nor appropriate to develop complicated rating schemes for these two criteria. An alternative has to meet them in order to be considered further -- it can't partially meet them.
29. **Sec. 9.1--ARARs.** It is not appropriate to rank "applicable" ARARs higher than "relevant and appropriate" ARARs. As noted on page C-1-2 of the FS, when the analysis determines that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable. Thus, the selected alternative needs to comply with all ARARs, regardless of whether they are applicable, or relevant and appropriate.
30. **p. 9-14, Institutional Controls to Accompany MNA.** There needs to be monitoring of the ICs at least annually. The Navy needs to commit to being a party to, and enforcing, the LUC (see Navy's 2000 agreement with the State of California regarding LUCs), and the Navy should commit to having a deed restriction in the Navy's deed transferring the property. (It appears from the line items in Appendix F that a deed restriction is in fact contemplated.)
31. **9.3.1. page 9-14. MNA--protectiveness.** It is not clear whether the Navy considers this criterion to meet the threshold criterion of overall protection of human health and the environment.
32. **9.3.2. MNA--compliance with ARARs.** It is not clear whether the Navy considers this criterion to meet the threshold criterion of compliance with ARARs.
33. **9.3.7. MNA--cost.** It is not clear whether the cost estimate includes the costs of implementing, monitoring, and enforcing the ICs. (It appears from Appendix F that some IC costs are contemplated.)

Appendix F -- MNA Cost Estimate

34. **Line item 5 (p. 3)--5-year review.** Limiting review to every five years is insufficient. There needs to be at least annual monitoring of ICs, under either the MNA or the biosparging remedy.

Comments from EPA's toxicologist, Dr Sophia Serda:

1. Most of the risk assessment text is taken verbatim from the January 2000 Baseline Human Health Risk Assessment, Fisco Alameda Facility/Annex Site. In fact the major changes are the benzene & naphthalene concentrations terms used to calculate tier 2 risk.
2. Contamination remains in groundwater I recommend soil vapor sampling be conducted biannually to ensure the vapor concentrations are not increasing. Also, I recommend that future construction on the property require both periodic soil vapor sampling and buildings be built with vapor barriers and ventilation systems.